# Table of Contents

## 01 00 00 GENERAL REQUIREMENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 11 01</td>
<td>Confidentiality, Patient Privacy, and Code of Conduct</td>
</tr>
<tr>
<td>01 14 19</td>
<td>Use of the Premises</td>
</tr>
</tbody>
</table>
| 01 29 00 | Project Invoicing Procedures  
Exhibit A – Standard Cost Events Tracking Log  
Exhibit B – Equipment Invoicing Sheet |
| 01 31 13 | Project Administration Requirements  
Exhibit A – Diversity and Inclusion Plan and Attachments  
Exhibit B – BIM Protocol |
| 01 32 16 | Project Scheduling Requirements |
| 01 33 00 | Submittals |
| 01 33 13 | Special Procedures for Working in Healthcare Facilities  
Exhibit A – ID Badge Request Form  
Exhibit B – Key Request Form |
| 01 35 23 | Safety Requirements for Contractors  
Exhibit A – Daily Site Safety Audit |
| 01 35 33 | Project Risk Assessments  
Exhibit A – PCRA Form  
Exhibit B – Prevention of Infections Related to Hospital Construction  
B.O. – ICRA Matrix and Work Permit |
| 01 35 34 | Interim Life Safety Measures (ILSM)  
Exhibit A – ILSM Assessment Form  
Exhibit B – ILSM Daily Checklist Form |
| 01 35 35 | Disruption Avoidance and Planning (DAP)  
Exhibit A – Shutdown Request Form  
Exhibit B – Dig Permit |
| 01 35 43 | Environmental Procedures |
| 01 36 00 | Medical Equipment Coordination  
Exhibit A – Equipment Responsibility Matrix |
| 01 37 00 | Coordination of Work by Owner |
| 01 43 00 | Quality Assurance Requirements for Contractors |
| 01 45 23 | Testing & Inspection Services |
| 01 51 00 | Temporary Facilities, Utilities, & Controls  
Exhibit A – Temporary Construction Site Signage |
| 01 56 15 | Airborne Contaminants Control |
| 01 56 20 | Construction Noise Control |
| 01 74 20 | Construction Waste Disposal and Recycling |
| 01 77 00 | Owner Closeout Requirements  
Exhibit A – Project Closeout Checklist  
Exhibit B – Asset Tagging  
Exhibit C – Operations Review Form  
Exhibit D – Closeout Documentation Delivery Schedule  
Exhibit E – Closeout Folder Structure |
| 01 78 00 | Closeout Submittals  
Exhibit A – New Asset Information Form  
Exhibit B – Warranty Statement |
| 01 91 13 | General Commissioning Requirements |
| 01 91 19 | Building Enclosure Commissioning Requirements |

**END OF SECTION**
SECTION 01 11 01
CONFIDENTIALITY & PATIENT PRIVACY

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Requirements for maintaining confidentiality and patient privacy according to the Health Insurance Portability and Accountability Act (HIPPA).
   2. Proper code of conduct for individuals conducting work within Froedtert Hospital.

1.2 APPLICABILITY

A. This Section applies to all Contractors, Architects, Vendors, and Suppliers that conduct project activities within the hospital facility (ies) and on the hospital grounds.

1.3 DEFINITIONS

A. Not used.

PART 2 PRODUCTS

A. Not used.

PART 3 EXECUTION

3.1 CONFIDENTIALITY

A. Privacy of patients is a priority for the hospital. Contractor’s personnel must respect the privacy of hospital patients and their guests / visitors. Under no circumstances shall Contractor reveal the presence of a patient at the hospital to anyone else. Contractor shall not approach patients with whom they may be familiar with unless the patient first initiates communication. Any information Contractor may overhear, or records/documents Contractor may inadvertently view is strictly confidential. Breach of any confidentiality may result in Contractor’s personnel being directed to leave hospital property immediately.

3.2 HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT (HIPPA)

A. Federal HIPPA regulations mandate various patient rights and protections for handling of private health information. Every Contractor is responsible for safeguarding patient confidentiality whether communicating verbally, in written or electronic form, or in any other medium.

END OF SECTION
PART 1 GENERAL

1.1 DESCRIPTION  
A. Section Includes:  
1. Situations in which the Contractor or their representatives, including but not limited to, suppliers, subcontractors, employees, etc. enter the Owner’s property.

1.2 APPLICABILITY  
A. This Section applies to all Contractors, Architects, Vendors, and Suppliers that conduct project activities within the hospital facility (ies) and on the hospital grounds.

1.3 RELATED SECTIONS  
A. Reference Section 01 35 13 – Special Procedures for Working in Healthcare Facilities for

PART 2 PRODUCTS  
A. Not used.

PART 3 EXECUTION

3.1 USE OF SITE  
A. Site Utilization Plan. Contractor shall prepare a Site Utilization Plan (SUP) for the project. The SUP shall be a hi-level overall project document that can be used for external communications and planning by facility staff. The SUP shall be submitted to Owner’s designated representative for approval. The SUP shall include, but not be limited to:  
1. Anticipated Phasing  
2. Construction Logistics  
3. Access Points  
4. Parking  
5. Material Storage Locations (if any)  
6. Other pertinent overall project information  
B. Smoking & Tobacco use. Smoking and tobacco use is NOT permitted by any person anywhere on the Froedtert Hospital or MRMC campus. This includes all buildings, parking structures, parking lots, and grounds areas. Individuals discovered violating the hospital’s smoking and tobacco rules will be directed to leave hospital property.

C. Conduct, Attire & Language. Contractor’s personnel shall not wear abusive, suggestive, or inappropriate clothing or attire. Abusive, suggestive, or profane language or conduct are not permitted or tolerated. Individuals using inappropriate language, engaging in this type of behavior, or wearing inappropriate clothing may be directed to leave hospital property.

D. Parking. Contractors shall use parking areas as assigned by the Owner’s designated representative and the hospital parking office (414-805-7338). The parking office is located on the ground floor of the East Parking Structure.  
1. Parking costs are the responsibility of the individual Contractor’s personnel. Parking in existing Hospital lots or parking structures is not permitted.  
2. Contractors shall not park vehicles at any loading dock area, except to load and unload materials.
3.2 USE OF FACILITIES

A. Construction personnel shall not enter the premises of the facilities unless required to complete the Contractor’s scope of work. It is expected that Contractor’s and their representatives, suppliers, subcontractors, employees, etc. use the facility to conduct their business only in areas appropriate to the scope of work.

B. Use of existing lunch facilities, cafeteria, café’s, and toilet facilities shall be discussed with Owner’s designated representative and Contractor, and documented approvals shall be indicated on the Site Utilization Plan.

3.3 CONTRACTOR ORIENTATIONS

A. Contractor shall review the Site Utilization Plan, facility rules and regulations, and corresponding safety, quality, and work expectations with all suppliers, subcontractors, vendors, employees during a first-day, first-hour orientation at the project site. Contractor shall obtain sign-off from the individual(s) receiving orientation guidelines and training upon completion.

B. Contractor shall prepare a written set of project guidelines to be reviewed with all workers participating on the project. Documentation of orientations shall be kept by Contractor (i.e. logs, minutes, sign-offs, hard hat stickers, etc.).

END OF SECTION
PART 1 GENERAL

1.1 SUMMARY

A. Froedtert Health (FH) has developed specific procedures, guidelines and forms to be followed and utilized for every project. This standardized process will reduce errors and confusion and will result in an efficient and harmonized process among Team members. The following outlines the established processes and references tools that are to be used consistently on all FH projects.

B. For the purposes of invoicing procedures, a project will be defined as a significant/capital project, assigned a Project Manager as set out in the following sections. For any services or repairs coordinated directly with the Froedtert Health department leads (e.g. Facilities, Security), blanket POs will be established in accordance with contracted rates. Invoices for services or repairs should meet the requirements as outlined in section 3.1.D. below.

1.2 INITIAL PROJECT CONCEPT AND PLANNING PHASE - BACKGROUND

A. Every project starts as a concept to accommodate and support strategic initiatives. The FH Director, Facility Planning & Development will assign a FH Project Manager at the concept stage and work with that Project Manager to develop an initial Total Project Cost Status Report (TPCSR). The initial TPCSR will reflect the total approved project budget, approved by FH Administration.

B. After the Project is approved and funded, FH Facility Planning & Development will communicate with FH Finance to establish a capital project number. This step must be accomplished before any project related cost commitments are made.

C. The assigned FH Project Manager will then begin to retain professional services related to project planning, design, construction, etc.

PART 2 PRODUCTS

A. Not used.

PART 3 EXECUTION

3.1 PROJECT INVOICING PROCEDURES

A. Prior to submitting a capital project initial invoice, the CM/GC shall submit an initial draft copy of the invoice 1 week prior to the due date specified below. The invoice format and level of detail shall be reviewed and approved by the FH Project Manager prior to submitting the final invoice.

B. All capital project related invoices must be sent to the FH Project Manager no later than the 5th day of each month. All invoices must be accompanied by an appropriate lien waiver; if applicable.

C. Any capital project invoices received by the Project Manager after the 5th of each month will miss the current invoice timeline and will await the following month’s draw cycle.

D. Invoices shall include the following minimum level of detail. This section shall apply to invoices for capital projects as well as services and repairs:

   1. Labor, materials and equipment charges shall be provided with separate subtotals for each scheduled value with self-performed work (SPW)

   2. Labor charges shall identify the individual, including role/title, hourly rate and hours billed for the period of the invoice.
3. An equipment rental summary shall be provided which itemizes each piece of billable equipment, identifies the billing rate established in the Agreement between Owner and Contractor, duration charged to the Project, and cumulative charge for each piece of equipment in relation to the Contract equipment billing cap. See sample sheet provided in Section 01 29 00B.

E. Further information related to project invoicing requirements, format, and inclusions shall be found in the Agreement between Owner and Contractor.

3.2 LIEN WAIVER PROCEDURES FOR PROJECT INVOICING

A. Invoices must be submitted with an appropriate lien waiver.

B. Types of Lien Waivers
   1. Conditional Waiver of Lien (Conditional Waiver)
      a. A waiver releasing any claim to the portion of work performed or materials provided to Froedtert Health on the referenced project “to date” or to a specific invoice number(s) with the condition that specific dollar amount /payment is received, upon such time a clean waiver will be provided prior to receipt of further payments. (Please note: dollar amount(s) and invoice number should be listed on conditional waivers.)
   2. Unconditional Waiver of Lien (Clean/Partial Waiver)
      a. A waiver releasing any claim to the portion of work performed or materials provided to Froedtert Hospital on the referenced project. This should specify for “work performed to date” or should list corresponding invoice number(s) that are being submitted for payment. No dollar amounts or invoice numbers should be inserted for final waivers.

3.3 CONTRACTOR’S TAX EXEMPT CONSTRUCTION PURCHASE ORDERS

A. Since Froedtert is a not-for-profit entity all purchases made on behalf of Froedtert by the CM/GC are tax exempt.

B. Contractor’s shall obtain a copy of the Owner’s tax exempt number, if needed, from the Owner’s designated representative.

3.4 PROJECT FINANCIAL REVIEW & MONTHLY REPORTING

A. On a monthly basis, CM/GC shall prepare and submit to Owner electronically and in hard copy format a Monthly Progress Report with the following standard/default components (subject to change based on individual project needs):
   1. Executive Summary (CM/GCs narrative of current project status)
   2. Construction Schedule
      a. Past 30 days accomplishments
      b. Next 30 days planned activities
      c. Updated overall project schedule
   3. Financial Update
      a. Updated TPCSR
      b. Contract Status Report (by CM/GC)
         1) Initial Contract Amount
         2) Approved Change Orders to Date
         3) Pending Change Order to Date (approved and open)
         4) Estimated Pending Change Orders
      c. Current Cost Event Tracking Log (by GC/CM on Froedtert Health Form found in Exhibit A)
      d. Contingency summary
      e. Forecasted or anticipated final Contract Amount
   4. Other Project Information Tracking
      a. RFI Log
      b. Submittal Log
   5. Project Photos
3.5 PROJECT CLOSE-OUT PHASE

A. CM/GC shall submit completed “Consent of Surety” forms for all subcontractors that are bonded.

B. Upon completion of the project the Project Manager and CM/GC will reconcile the following:
   1. All outstanding change order requests.
   2. All outstanding change orders.
   3. Reconcile construction contingency returning all savings to Owner via deductive change order.
   4. Reconcile all set-aside funds returning all savings to Owner via deductive change order.
   5. Reconcile all project allowances making necessary final adjustments via change order as required.
   6. Reconcile all general conditions costs (if contract includes a not-to-exceed general conditions provision) returning any savings to Owner via deductive change order.
   7. Reconcile any cost-plus self performed work categories (if contract allows for self performed work) returning any savings to Owner via deductive change order.
   8. Release final retainage when all project close-out issues are resolved to satisfaction.

C. Owner will not release final payment without final (not conditional) waivers from CM/GC and all first tier subcontractors and vendors.

D. Owner can and will mitigate the “financial time gap” by allowing reduction in retainage (contingent upon other close-out tasks/requirements being completed to satisfaction) to allow CM/GC to receive and distribute the funds in exchange for final waivers followed by a final pay application for the small retainage amount all with final waivers.

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End of Summary

Form created by Ric Miller Construction Consulting, LLC
SECTION 01 31 13
PROJECT ADMINISTRATION REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY
A. Section Includes:
   1. Guidelines and expectations for Contractor’s project supervision.
   2. Project Meetings.
   3. Project Reporting (Monthly & Daily)
   4. Solicitation, Recommendation, and Award of Subcontractors
   5. Coordination with Authorities Having Jurisdiction (AHJs)
   6. Requests for Information
   7. Project Document Control
   8. Tax Exempt Construction Purchase Orders (TEPCOs)
   9. EBE/DBE/MBE/WBE Requirements
   10. BIM Protocol
   11. Coordination Between Architect and Contractor

1.2 RELATED SECTIONS:
A. 01 31 13A – Diversity and Inclusion
B. 01 31 13B – BIM Protocol

PART 2 PRODUCTS
A. None

PART 3 EXECUTION

3.1 CONTRACTOR’S SUPERVISION
A. Contractor shall provide adequate supervision for the duration of the project.
B. At request of the Owner, Contractor shall submit a proposed organization chart of proposed project staff for approval prior to starting work. Contractor shall designate one (1) individual as the ‘project lead’. Authorized person must be approved by hospital Facilities Planning & Development and Plant Operations prior to commencement of the work.
C. Proposed project organization chart, at a minimum, must include the following roles: Principal-In-Charge, Project Manager, Superintendent, and Construction Foreman.
D. Contractor’s personnel may not be replaced or substituted without approval of the Owner.
E. Contractor shall prepare and emergency contact list for use on the project and submit to Owner for review. This contact list must be posted within the project limits during construction activities.

3.2 PROJECT MEETINGS
A. Contractor shall facilitate the following meetings throughout the duration of the project:
   1. Owner/Architect/Contractor (OAC) Meetings – Weekly at a minimum.
   2. Subcontractor Coordination Meetings – Weekly.
   3. Disruption Avoidance Meetings – Weekly at a minimum. More frequent meetings may be required depending on construction activities.
   5. User Group Coordination – Weekly at a minimum.
6. Move & Relocation Meetings – Reference Section 01 37 10 for further responsibilities related to this series of meetings.
7. Major Medical Equipment Meetings.
8. Minor Medical Equipment Meetings.
9. All other meetings as determined by Owner.

B. Location. All meetings shall be held at the hospital, in a location specified by Owner. Contractor to coordinate with Owner to determine attendees list and for scheduling of conference room(s) to facilitate meetings.

C. Minutes. Contractor shall keep, maintain, and publish minutes for each meeting and distributed electronically to all participants within 48 hours following the meeting.

D. Agendas. Meetings shall have a consistent agenda from week to week. Agenda’s shall be published electronically by Contractor at least 24 hours prior to the next scheduled meeting.

E. Sign-In Sheets. Contractor shall prepare, pass around, and include a copy of the meeting sign-in sheets with the minutes.

3.3 PROJECT REPORTING

A. Monthly Reports. Contractor shall prepare and publish a monthly project report to Owner that includes, but is not limited to:
   1. Summary of work activities completed in the previous month.
   2. Forecast of work activities scheduled for the next month.
   3. Project Financial Summary – format and content to be determined by Owner, including TPCSР from Owner
   4. Look ahead Schedule.
   5. Project progress photos.

B. Daily Reports. Contractor shall prepare and file a comprehensive daily report of project activities. Daily reports shall be made available to Owner at their request, and turned in with the project documentation at the completion of the project. Daily Reports includes, but is not limited to:
   1. Number of workers and subcontractor on-site during that day.
   2. List of visitors to the project site.
   3. Narrative of work activities completed that day.
   4. Other pertinent information including site conditions, weather (if applicable), temperature, etc.

3.4 SOLICITATION, RECOMMENDATION, AND AWARD OF SUBCONTRACTORS

A. Initial Proposed Bidders List. Upon award of a project, Contractor shall prepare an initial list of proposed subcontractors that will/may be solicited during the project. Contractor shall submit the list to Owner for review and approval prior to issuance of solicitation(s) and requests for bids/proposals.

B. Pre-Qualification. Proposed Subcontractors must be capable of performing respective work packages, in stable financial condition, and familiar with requirements associated with work in occupied healthcare facilities. Contractor is responsible for pre-qualification efforts associated with subcontracted work.

C. Multiple Packages. If a project consists of multiple bid packages, a separate bidders list must be submitted to Owner for each bid package.

D. Organization. Contractor’s proposed bidders list shall be organized by type of work and include firm name(s), location, and union affiliation(s) (if any). Owner has the right to review, approve, reject, add, or remove subcontractors.

E. Bid Summaries. Upon receipt of bids, Contractor shall prepare a bid summary for presentation to Owner. Bid Results summary shall include list of solicited Subcontractor(s), initial bid results, scoping adjustments, post-scoping results, and listing of alternates (if any) organized by type of work.
F. Recommendation. For each type of work, Contractor shall prepare a Subcontractor recommendation letter for Owner approval and signature. Recommendation letters shall include all applicable bid results, narratives, and other pertinent information applicable to the type of work being recommended. Contractor is not allowed to hire any Subcontractor without prior written consent of Owner. Copies of award recommendation(s) must be kept with project files and be made available to Owner at any time.

G. Contractor may self-perform work as appropriate to project scope. Prior to self-performing any work, Contractor shall discuss with Owner’s designated representative with regards to agreement terms and conditions for self-performed work scope, schedule, and price. Owner may require Contractor to competitively bid/compete for the opportunity to self-perform work. Discussions, determination, decisions, and process shall be documented by Contractor and approved by Owner prior to commencement of the work (whether bid or negotiated).

3.5 COORDINATION WITH AUTHORITIES HAVING JURISDICTION (AHJS)

A. Contractor shall coordinate all required inspections by Authorities Having Jurisdiction (AHJs). This includes, but is not limited to, all inspections (final or progress) with the following:
   1. Local Municipalities – General Building inspections such as in-wall, above-ceiling, and progress inspection(s), occupancy inspections.
   2. Local County – If applicable.
   3. Local Fire Department.
   4. State of Wisconsin Department of Health Services (DHS) - General Building inspections such as in-wall, above-ceiling, and progress inspection(s), occupancy inspections.
   5. OSHA

B. Contractor shall schedule these meetings in advance, and ensure that Architect, Owner, and/or Owner’s designated Representative are in attendance.

C. Contractor shall prepare a written report of all inspection(s) and publish electronic minutes of the meetings with AHJs within 24 hours of the inspection.

3.6 REQUESTS FOR INFORMATION (RFI)

A. Contractor shall coordinate with Architect and Owner prior to issuance of Requests for Information. When preparing project RFIs, Contractor shall provide recommended solutions to Owner and Architect for review. Copies of RFIs must be kept with Contractor on-site, and incorporated into the project As-Builts at the completion of the project.

B. Contractor shall work with Architect to define a process for timely RFI resolution, documentation, and format.

3.7 PROJECT DOCUMENT(S) CONTROL

A. Contractor shall maintain copies of all project documents including, but not limited to:
   1. Progress Drawings. SDs, DDs, and CDs.
   2. State Approved Drawings. Copies of all state approved drawings and documents must be kept at the project site and made available during applicable inspection(s).
   3. Construction Document Changes. CBs, ASIs, Field Instructions, etc. that change the construction drawings shall be kept current on Contractor’s field set throughout the project.
   4. Requests for Information (RFIs).
   5. Submittals.
   6. Project Photos. Photos shall be organized by area, and labeled with a corresponding date in which the photo was taken.
   7. Other miscellaneous project documentation.

B. Transmission of Project Documents. Contractor shall work with Architect and Owner to determine how project documents will be transmitted, stored, and retrieved (ex. Via email, FTP site, shared project website, or collaboration portal, etc.). Reference Section 01 33 00 Submittals for more information.
C. All project documentation may be kept in hard copy or electronic format at the preference of Contractor. However, all project documentation must be submitted electronically at the completion of the project consistent with Owner’s Project Closeout Requirements.

3.8 TAX EXEMPT CONSTRUCTION PURCHASE ORDERS (TEPCO)
A. Contractor shall utilize Owner Direct Purchase Orders for materials with a minimum aggregate value of $5,000.
B. Contractor shall procure ODP materials consistent with the terms and conditions of Agreement between Owner and Contractor.

3.9 EBE/DBE/MBE/WBE REQUIREMENTS
A. See Section 01 31 13A for the Froedtert Diversity and Inclusion Goals.

3.10 BIM PROTOCOL
A. See Section 01 31 13B for BIM policies and procedures.

3.11 COORDINATION BETWEEN ARCHITECT AND CONTRACTOR
A. Contractor and Architect commit at all times to cooperate fully with each other, and proceed on the basis of trust and good faith.
B. It is the Owner’s expectation that the Contractor and Architect approach the project as a team and strive to resolve construction related issues proactively with the best interest of the Owner and Project in mind.

3.12 SECURITY OF THE SITE
A. Watchman. Watchmen will not be provided by Owner. Each Contractor shall be responsible for loss or injury to persons or property where their work is involved, and shall provide such watchmen and take such precautionary measures as may be deemed necessary.
B. Security. Contractor shall be responsible for and make good any loss or damage due to vandalism or robbery during construction.
C. Contractor shall be responsible for loss or injury to persons or property wherever their work is involved. Each Contractor shall take precautionary measures to secure materials, equipment and finished or in-progress work.

END OF SECTION
PURPOSE: In direct support of the Froedtert Health Strategic Goals, this policy states Froedtert Health’s position of maximizing procurement and employment opportunities for minority and women owned businesses and workers on facility projects. All Froedtert Health facility projects will require minority and women owned business and worker inclusion.

POLICY:
1. It is the policy of Froedtert Health that minority and women owned businesses (“MWBE”) are given equal access and opportunity to provide high quality goods and services to any and all aspects of our organization.
2. Froedtert Health is committed to being a leader in the development of mutually beneficial relationships with diverse suppliers.
3. Froedtert Health is committed to being a leader within our industry and community within the area of supplier diversity.

VALUE PROPOSITION:
Froedtert Health believes that it is essential to develop a more inclusive supplier base because:
1. We are committed to our local community and its economic development.
2. We are committed to diversity and inclusion for our organization and the community.
3. We choose to be a leader in strengthening our local diverse business community.
4. We are committed to act as a role model for corporate citizenship to our employees and the community.
5. We are committed to a healthy community.
6. We realize that supplier diversity makes good business sense and will add value to the organization.

DEFINITIONS: Apprentice - A person who is learning a trade from a skilled employer, having agreed to work for a fixed period at lower wages.
Approved Certifying Agency – an organization whose certifies a business as a minority business enterprise or women business enterprise and its’ certification is accepted by Froedtert Health. The approved certifying agencies are:

1. National Minority Supplier Development Council (“NMSDC”) or a regional council
2. North Central Minority Supplier Development Council (“NCMSDC”)
4. Wisconsin Department of Administration (“WDOA”)
5. Wisconsin Unified Certification Program (“WI UCP”)

Inclusion – The active, intentional, and ongoing engagement which seeks, accepts, and welcomes diverse suppliers and workers.

Minority Business Enterprises (“MBE”) - A business that has been certified by an approved agency and that is at least 51% owned, operated and controlled by a minority individual or minority group. In the case of publicly owned businesses, at least 51% of the stock is owned, controlled, and managed by one or more such individuals.

Minority Classifications: As defined by the National Minority Supplier Development Council (“NMSDC”), a minority group member is an individual who is a U.S. Citizen with at least ¼ or 25% minimum of the following:

1. African American / Black – A US Citizen having origins in any of the Black racial groups of Africa.

2. Hispanic American – A US citizen of true-born Hispanic heritage, from any of the Spanish speaking areas of the following regions: Mexico, Central America, South America, and the Caribbean basin only. Brazilians (Afro-Brazilian, indigenous/Indian only) shall be listed under Hispanic designation for review and certification purposes.

3. Native American – A person who is an American Indian, Eskimo, Aleut, or native Hawaiian and regarded as such by the community of which the person claims to be part. Native Americans must be documented members of a North American tribe, band of otherwise organized group of native people who are indigenous to the continental United States and proof can be provided through a native American Blood Degree Certificate (for example, a tribal registry letter, tribal roll register number).

4. Asian Pacific American – A US citizen whose origins are from Japan, China, Indonesia, Malaysia, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Thailand, Samoa, Guam, the US Trust Territories of the Pacific of the Northern Marianas.
5. Asian Indian American – A US citizen whose origins are from India, Pakistan, and Bangladesh.

MWBE – Minority and Women Business Enterprise

MWW – Minority and Women Workers

NCMSDC – North Central Minority Supplier Development Council is a regional council of NMSDC and certifies businesses in Iowa, Minnesota, North Dakota, South Dakota and Wisconsin as minority business enterprise.

NMSDC - National Minority Supplier Development Council advances business opportunities for certified Asian, Black, Hispanic and Native American business enterprises and connects them to corporate members. NMSDC’s rigorous certification process is considered the gold standard for certifying minority-owned businesses by corporate America.

On-the-Job Trainee – A person that acquires both general skills that they can transfer from one job to another and specific skills that are unique to a particular job in a normal working situation.

Professional Service - means occupations requiring special training in the arts or sciences. Some professional services require holding professional licenses such as architects, auditors, engineers, and lawyers. Other professional services involve providing specialist business support to businesses of all sizes and in all sectors; this can include tax advice, supporting a company with accounting, or providing management advice.

Supplier Diversity – The process of developing a supplier base that mirrors Froedtert Health’s community and emerging diverse patient base. It is a key part of the overall Diversity and Inclusion Strategic Focus for Froedtert Health.

WBENC - Women’s Business Enterprise National Council is dedicated to advancing the success of Corporate Members, certified women business enterprises and government entities in partnership with its 14 Regional Partner Organizations. WBENC is the largest third-party certifier of businesses owned, controlled and operated by women in the United States

WI UCP - Wisconsin Unified Certification Program (UCP) is a cooperative of 24 different Wisconsin cities, counties, and airport authorities that benefit from USDOT funding. These state and local agencies certify minority and women owned enterprises as disadvantaged business enterprises.

Women Business Enterprises (“WBE”) - A business that has been certified by an approved agency and that is at least 51% owned and controlled by a woman or
women. In the case of publically owned business, at least 51% of its stock is owned by one or more women, and whose management and daily business operations are controlled by one or more women.

**Worker Hours** – The total hours worked on a construction project by skilled and unskilled construction trade workers, where those workers are employed by the contractor or any subcontractor. In determining the total worker hours to be furnished at the construction site, the number of hours devoted to all tasks customarily performed on a construction site shall be included, whether or not such tasks are performed on the construction site. “Worker hours” includes work performed by persons filling apprenticeships and participating in on-the-job training programs.

**INCLUSION:**

In accordance with the Froedtert Health Policy and Value Proposition, the Facilities Diversity Policy specifies the inclusion requirements for Minority and Women Business Enterprises, minority and women workers (“MWW”), and apprentices and on-the-job trainees on a Froedtert Facility Project. The inclusion goals are:

1. 15% of Professional Service spending with Minority and Women Business Enterprises.
2. 15% of Construction spending with Minority and Women Business Enterprises.
3. 15% of the total construction hours worked by Minority and/or Women workers.
4. Apprentice or On-The-Job Trainees employed by each contractor and subcontractor in accordance with the maximum ratio of apprentices to journeymen established by Froedtert Health.

**PROCEDURES:**

**A. MWBE Inclusion Goal**

1. Percentage Requirements – 15% of the contract value of Professional Service and Construction contracts.
2. Inclusion Levels – Professional Service firms and Contractors shall seek to include MWBE at all levels of the project and document their efforts to achieve the inclusion goal.
3. Measuring - The following criteria will be used to determine if the inclusion level has been met:
   a. A MBE or WBE must be certified as such by an approved certifying agency.
b. A MWBE may participate as a prime contractor, consultant, subcontractor, joint venture partner with a prime or subcontractor, or vendor of materials, supplies, equipment, or trucking.

c. A MWBE must be responsible for a clearly defined portion of the work to be performed, in addition to satisfying the statutory requirement for ownership and control.

d. A MWBE must perform a commercially useful function, i.e., must be responsible for the execution of a distinct element of the Project work and must carry out its responsibility by actually performing, managing, and supervising the work involved. To determine whether the MWBE is performing a commercially useful function, the professional service firm, contractor, or vendor and Project Team will evaluate the amount of work subcontracted, usual and customary industry practices, and other relevant factors.

e. Only that portion of the total dollar value of the contract equal to the percentage of inclusion of the MWBE joint venture partner in a certified MWBE Joint Venture will be counted.

f. Credit for the inclusion of MWBE subcontractors, which are suppliers of materials, equipment, and supplies, will be counted as follows:

1.) One hundred percent (100%) of the expenditures of equipment, materials and supplies required under the contract and obtained from a wholesale or retail distributor that owns, operates, or maintains a store, warehouse, or other establishment in which the materials or supplies required for the performance of the Project are bought, kept in stock, and regularly sold to the public in the usual course of business. The distributor must engage in, as its principal business, and in its own name, the purchase and sale of the products in question. A distributor in such bulk items as steel, cement, gravel, stone, and petroleum products need not keep such products in stock if it owns or operates distribution equipment.

2.) One hundred percent (100%) of expenditures for equipment, materials and supplies obtained from an MWBE manufacturer, subcontractor, or supplier who substantially alters the material before resale or installation.

3.) Equipment, materials and supplies obtained from an MWBE wholesale broker, retail broker, or packager that owns, operates, or maintains an establishment in which the materials or supplies required for the performance of the project are ordered, not kept in stock, and/or not regularly sold to the public in the usual course of business may only be counted for up to 20% of the 15% MWBE inclusion goal. The broker or packager must engage in, as its principal business, and in its own name, the brokering or packaging of the products in question.
4. Maintaining Certification - MWBE firms participating on a facility project must maintain MWBE certification during the entire term of their contract on the project. Should the MWBE firm lose its certification during the performance of any contract on this Project, expedient and diligent efforts shall be made by the contracting firm and the MWBE firm to meet all requirements for reinstatement.

B. Minority and Women Worker Inclusion Goal

1. Percentage Goal – 15% of the construction worker hours shall be performed by minority or women workers (“MWW”).

2. Inclusion Levels – MWW shall be utilized in all trades performing work on a facility project.

3. Measuring – Hours worked by MWW will be measured as a percentage of the total worker hours on the construction of the project, including hours worked by apprentices and on-the-job training participants.

C. Apprentice and On-the-Job Trainee Requirements

1. Inclusion Levels – Each contractor and subcontractor shall employ apprentices or on-the-job trainees in performance of its’ construction contract for the project in accordance with the maximum ratio of apprentices to journeymen established by Froedtert Health. The Construction Trades Ratios is attached as Form D.

2. Measuring – Apprentice or on-the-job trainee to journey ratio will be measured on a per-person basis.

D. Community Outreach

Professional Service firms and Construction Managers shall create and implement a Community Outreach Plan to bring awareness within the minority and women business community about the project and contract opportunities. The community outreach plan shall include, but is not limited to:

1. Identifying MWBE professional service firms, contractors and vendors by trade required for the project.

2. Distributing lists of MWBE professional service firms, contractors and vendors to the invited, non-minority contractors.
3. Depending on project size, host an event to inform construction industry (non-minority, minority and women) about the project and the Froedtert Health Facility Diversity Policy.

4. Requesting MWBE firms to complete pre-qualification forms.

5. Establishing Targeted Bid Packages with bids solicited from MWBE firms only.

6. Electronic notification of bid release to each MWBE contractor and vendors whose trade is included in the bid package.

7. Hosting pre-bid meetings and invite MWBE contractors and suppliers

8. Following up via email or phone with MWBE contractors and encouraging them to bid as prime or subcontractor.

9. Distributing information about the project, bid package release, pre-qualification requirements, etc. to the community plan rooms listed below.

   - African American Chamber of Commerce, info@aaccmke.org
   - American Indian Chamber of Commerce, beverly@aiccw.org
   - Hispanic Chamber of Commerce, bids@hccw.org
   - Hmong Chamber of Commerce, info@hmongchamber.org
   - National Association of Minority Contractors – WI Chapter contactus@namcwi.com

E. Reporting

Professional Service firms and Construction Managers shall submit the following reports about its’ inclusion on a facility project:

1. Inclusion Plan. Each Professional Service firm and Construction Manager awarded a project by Froedtert Health must submit an Inclusion Plan detailing how the firm will achieve the inclusion goals on the project. The plan shall include, but is not limited to,
   - The expected dollar value and percentage inclusion by professional/trade/division along with the anticipated MWBE firms that may perform the work.
   - The Community Outreach Plan to inform the minority and women professional service and/or contracting community about the project.
   - The procedures the Professional Service firm and Construction Manager will implement to inform consultants and subcontractors of the
minority, women and apprentice worker goals for the project and reporting requirements to measure compliance.

- **Form IP-1 - Project Cost Subject to Inclusion** shall be submitted with the Inclusion Plan. This form itemizes the deductions from the project costs to determine the project costs to which the inclusion percentage goal will be applied to calculate the dollar value needed to meet the MWBE inclusion goal. The deductions may include construction manager fee, permits fees, insurance, and bonds, and estimated cost for divisions or trades for which a MWBE does not perform that work (i.e. elevators, precast, et.al.).

2. **Form A – Proposed MWBE Inclusion Achieved** shall be submitted along with the Award Letter for each bidder or group of bidders submitted for approval by Froedtert Health during the bidding phase of the project. On Form A, the Professional Service firm and Construction Manager shall include the following information for all contracts awarded to date:
   - The Contract or Award Numbers
   - Name of Firm receiving contract
   - Services to be performed or materials supplied by firm
   - Value of contract
   - MWBE % Inclusion Proposed by firm receiving contract
   - Dollar Value of Proposed MWBE Inclusion
   - Name of MWBE Professional Service firm, Contractor or Supplier
   - Services to performed or materials supplied by MWBE

2. **Form B – Minority and Women Business and Workforce Inclusion Report** shall be submitted with the monthly invoice or Application for Payment. On this form, the Professional Service firm or Construction Manager will report narrative and numerical information about the MWBE, MWW and apprentice and on-the-job trainee on the project.

3. **Form C - MWBE Payment Certification** shall be prepared by each MWBE firm and submitted with the Professional Service firm or Construction Manager’s final Form B – Minority and Women Business and Workforce Inclusion Report. On Form C, MWBE firms will enter the total amount paid for work performed or materials supplied on the project.
# PROPOSED MWBE INCLUSION ACHIEVED

<table>
<thead>
<tr>
<th>Project Cost Subject to Inclusion</th>
<th>Report Number</th>
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| Contracts Awarded | $ - | $ - |

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<th>CONTRACT AWARDED TO</th>
<th>SERVICE PERFORMED OR MATERIALS SUPPLIED</th>
<th>VALUE OF CONTRACT AWARDED</th>
<th>PROPOSED MWBE % INCLUSION</th>
<th>DOLLAR VALUE OF PROPOSED MWBE INCLUSION</th>
<th>PROPOSED MWBE CONTRACTOR OR SUPPLIER</th>
<th>SERVICES TO BE PERFORMED OR MATERIALS SUPPLIED BY MWBE</th>
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| TOTAL VALUE OF CONTRACTS AWARDED AND PROPOSED MWBE INCLUSION | $ - | $ - |

| PROPOSED MWBE % INCLUSION ACHIEVED TO DATE | $ - |

Prepared by: [Signature]
Date: 10/11/2018
Project name

Minority and Women Business and Workforce Inclusion

Monthly Report – [Month Year]

Presented by:

Date:
Project Description

Summary

Project Address:
Professional Service Firm or Construction Manager:
Total Cost Subject to Inclusion
Minority and Women Business Inclusion
Minority and Women Workforce Hours hours or % of Total Hours Worked
Apprentices

Minority and Women Business Enterprise Inclusion

[Enter a narrative summary of the MWBE inclusion achieved or expected. Provide information about any activities performed to meet or exceed the inclusion requirement, any mentor/protégé relations or any training to assist an MWBE improve their capacity. Include charts or graphs that depicts the inclusion. In the table below, enter information for each minority and women contractor or vendor.]
**FORM B - MINORITY AND WOMEN BUSINESS AND WORKFORCE INCLUSION REPORT**

Total Cost Subject to Inclusion: $ __________

Payments Received to Date: $ __________

**MWBE Inclusion:** 15%

<table>
<thead>
<tr>
<th>MWBE FIRM</th>
<th>SUBCONTRACTOR TO</th>
<th>MBE or WBE</th>
<th>SERVICES PERFORMED OR MATERIALS SUPPLIED</th>
<th>TOTAL CONTRACT AMOUNT</th>
<th>AMOUNT PAID THIS MONTH</th>
<th>TOTAL PAID TO DATE</th>
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</table>

**TOTAL MWBE INCLUSION**

MWBE INCLUSION, AS PERCENT OF TOTAL CONTRACT VALUE AND PAID TO DATE: __________
Minority and Women Workforce Inclusion

[Enter a narrative summary of the minority and women workforce inclusion achieved or expected. Provide information about any special efforts by contractors to meet or exceed the inclusion requirement. Include any charts or graphs that depicts inclusion. In the table below, list every contractor, minority and women worker hours, total hours and the % of minority and worker hours.]

[Professional Service firms should not complete this section.]

<table>
<thead>
<tr>
<th>CONTRACTOR</th>
<th>TRADE</th>
<th>MINORITY AND WOMEN HOURS</th>
<th>TOTAL HOURS</th>
<th>MINORITY AND WOMEN %</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

Project Total

[PROJECT NAME] – MONTH YEAR

PAGE 3
Apprentices and On-the-Job Trainees

[Enter a narrative summary of the apprentices and on-the-job trainees. Provide information about any special efforts by contractors to assign apprentices or become a company that can hire apprentices. In the table below, list every contractor, the number of journeymen/foremen and the number of apprentices or on-the-job trainees that have worked on the project.]

[In lieu of completing with section, Professional Service firms should include information about any interns working for the firm.]

<table>
<thead>
<tr>
<th>CONTRACTOR</th>
<th>TRADE</th>
<th>NUMBER OF APPRENTICES OR ON-THE-JOB TRAINEES</th>
<th>NUMBER OF JOURNEYMEN FOREMEN</th>
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<tr>
<td>PROJECT TOTAL</td>
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</tbody>
</table>
Community Outreach

[Enter a narrative summary of the outreach activities to bring awareness to minority and women consultants, contractors and vendors. Provide information about any special activities performed to meet or exceed the inclusion goals, increase the number of MWBE firms that became pre-qualified, certified, formed mentor/protégé relationships etc. Include charts or graphs that depicts the inclusion achieved.]
MWBE PAYMENT CERTIFICATION

Project Name:

MWBE Firm:

Subcontractor To:

Scope of Work:

This certificate is to be prepared and signed by the MWBE Firm that was utilized in connection with the above-referenced project, either for service performed, and/or material supplied.

I, _________________________________ hereby certify that our firm has received $________________________

(Print Name)

for work performed and/or material supplied on the above-referenced project.

Signature: _________________________________ Title: ____________________

Print Name: _________________________________ Date: ____________________

THIS FORM MUST BE ATTACHED TO FINAL MINORITY AND WOMEN BUSINESS
AND WORKFORCE INCLUSION REPORT

Updated 07/01/2020
# Construction Trades Ratio

<table>
<thead>
<tr>
<th>Trades</th>
<th>Journeymen</th>
<th>Apprentice</th>
<th>Subjourneymen</th>
<th>Union Local</th>
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<tbody>
<tr>
<td>Boilmakers</td>
<td>5</td>
<td>1</td>
<td></td>
<td>107</td>
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<tr>
<td>Bricklayer</td>
<td>5</td>
<td>1</td>
<td></td>
<td>8</td>
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<tr>
<td>Building</td>
<td>3</td>
<td>1</td>
<td></td>
<td>113</td>
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<tr>
<td>Cabinet Maker</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>Carpenter</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceiling (Interior system carpenter)</td>
<td>4</td>
<td>1</td>
<td></td>
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<tr>
<td>Cement Mason</td>
<td>3</td>
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<tr>
<td>Drywall Taper</td>
<td>3</td>
<td>1</td>
<td></td>
<td>AFL-CIO 7</td>
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<tr>
<td>Electrical Workers</td>
<td>4</td>
<td>1</td>
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<tr>
<td>Elevator Constructors</td>
<td>N/A</td>
<td>N/A</td>
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<td>15</td>
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<tr>
<td>Finisher</td>
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<td>1</td>
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<td>AFL-CIO 7</td>
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<tr>
<td>Floor Coverer</td>
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<td>General Laborer</td>
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<td>Glaziers</td>
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<td>1204</td>
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<td>Heat / Frost Insulators</td>
<td>3</td>
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<td>Heavy Highway</td>
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<td>Ironworkers (Structural)</td>
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<td>Ironworkers (Ornamental)</td>
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# Project Cost Subject to MWBE Inclusion

## Project:

<table>
<thead>
<tr>
<th>Line</th>
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<tbody>
<tr>
<td>1</td>
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<td>Bond Fee</td>
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<td>6</td>
<td>Insurance</td>
<td>$</td>
</tr>
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<td>7</td>
<td>Permit Fee - Building</td>
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<tr>
<td>8</td>
<td>Permit Fee - Electrical</td>
<td>$</td>
</tr>
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<td>9</td>
<td>Permit Fee - Plumbing</td>
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<td>10</td>
<td>Permit Fee - HVAC</td>
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20  **Total Deductions (Sum of Line 2 - 19)**  

21  **Project Cost Subject to Inclusion (Line 1 - Line 20)**  

22  **15% MWBE Inclusion (Line 21 x .15)**  

---

### Facility Planning & Development

The undersigned approves $________________________ as the Project Cost Subject to Inclusion for the___________________________ Project.

<table>
<thead>
<tr>
<th>Signature</th>
<th>Date</th>
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<table>
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<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec</td>
<td>Subsections</td>
</tr>
<tr>
<td>-----</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| 1.0 | Executive Summary | - Define general purpose of the document / context  
 | | | - Document is “in progress” with expected continued development in coming years  
 | | | - Discuss goals and general expectations related to use of BIM on all projects |
| 2.0 | BIM Management | - Present standardized BIM management plan and establish as required submittal to Froedtert Health  
 | | | - Define duties and expectations of design team BIM manager  
 | | | - Define duties and expectations of construction team BIM manager  
 | | | - Level of Development  
 | | | - Describe Froedtert Health expectations of uniform Level of Development for all projects  
 | | | - Establish LOD Matrix as required submittal on all projects (customized for project design packaging strategy)  
 | | | - Define levels of Development  
 | | | - Present standardized generic Level of Development Matrix  
 | | | - Mandate use of common Shared Coordinates model provided by Froedtert Health for all projects. No deviations permitted.  
 | | | - Define model sharing requirements and protocols  
 | | | - Design phase  
 | | | - Construction phase  
 | | | - Define requirements and process relative to Clash Detection. More strictly define responsibilities of design versus construction BIM teams |
| 3.0 | Design Models | - Define Design Models as working models used through course of design and construction phases of the project. Delineate as separate from Campus Plan models, which are simplified for efficiency  
 | | | - Define basic modeling requirements and expectations for design disciplines, regardless of who performs modeling  
 | | | - Example, Architecture:  
 | | | - All partitions modeled at actual thickness and height  
 | | | - All ceiling planes modeled at actual distance AFF  
 | | | - All spaces must be defined with a room object  
 | | | - All room objects must contain building, floor, room number, room name, area, department, cost center  
 | | | - Example, Structural  
 | | | - All primary structural members |
must be modeled to conform to actual shapes/sizes
- Miscellaneous metals construction need not be modeled
- Consider Mechanical requirements as optional given current lack of BIM use in fabrication

<table>
<thead>
<tr>
<th>4.0 Building &amp; Collector Models</th>
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<tbody>
<tr>
<td><strong>4.1 Building Model Purpose &amp; Definition</strong></td>
</tr>
<tr>
<td><strong>4.2 Collector Model Purpose &amp; Definition</strong></td>
</tr>
<tr>
<td><strong>4.3 Structure of Building Models</strong></td>
</tr>
<tr>
<td><strong>4.3.1 Required Content</strong></td>
</tr>
<tr>
<td><strong>4.3.2 Required Nomenclature</strong></td>
</tr>
<tr>
<td><strong>4.3.3 Required View Setup</strong></td>
</tr>
</tbody>
</table>

- Define Building models as distinct from Design Models. Explain primary purposes / uses
- Define structure of Building model structure in Revit
  - Collector Model
  - Individual Models (breakdown TBD)
- Define required model content to inform Collector Model
  - Exterior Assemblies
  - Interior Assemblies: Partitions, doors, ceilings, raised floors, rooms, graphics and views for Life Safety Plans
- Define nomenclature for views
  - General floor plan working views, life safety working plan views, life safety sheet views
- Define sheet setup
  - Title block families to be employed (provided by Froedtert Health)
  - Sheet setups

**Suggested TOC and Document Format – Future/Longer Term (List to be Developed)**

<table>
<thead>
<tr>
<th>Section to be Edited</th>
<th>New Content</th>
<th>Notes</th>
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<tr>
<td>3.2</td>
<td>Partition families</td>
<td>Provide Froedtert Health specified families for all partitions which shall be employed on all projects</td>
</tr>
<tr>
<td>3.2</td>
<td>Door families</td>
<td>Provide Froedtert Health specified families for all doors which shall be employed on all projects</td>
</tr>
<tr>
<td>3.2-3.7</td>
<td>Asset management</td>
<td>Define protocol and requirements to include asset ID data in modeled objects</td>
</tr>
<tr>
<td>3.7</td>
<td>MEP modeling requirements</td>
<td>Provide more definitive requirements relative to modeling HVAC</td>
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END OF SECTION
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<thead>
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<tr>
<td>1.1</td>
<td>Purpose</td>
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<td>Goals</td>
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<td>BIM Management Plan</td>
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<td>Construction Team BIM Manager</td>
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<td>LOD Requirements</td>
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<td>Shared Coordinate System</td>
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<td>Model Sharing Protocols</td>
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<td>3.1</td>
<td>Design Models: Purpose and Definition</td>
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<td>3.2</td>
<td>Design Models: Architectural Requirements</td>
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<td>3.3</td>
<td>Design Models: Structural Requirements</td>
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<td>3.4</td>
<td>Design Models: Plumbing and FP Requirements</td>
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<td>Design Models: Electrical Requirements</td>
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<td>Building Models: Purpose and Definition</td>
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<td>4.2</td>
<td>Building Models: Structure</td>
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<tr>
<td>5.1</td>
<td>Campus Models: Purpose and Definition</td>
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1. General Background
   a. The design and construction industry has embraced Building Information Modeling (BIM) in lieu of two-dimensional CAD for the development of new construction projects. The benefits of BIM are clear and numerous, such as:
      i. Three-dimensional visualization of building components to facilitate dynamic viewing
      ii. Powerful data-driven graphical representations of building objects
      iii. Robust database capabilities that allow for multiple methods to control and modify objects (rooms, doors, ceilings, MEP components, etc.)
      iv. More accurate coordination and clash detection between disciplines
      v. Facilitated annotation, sheet, and project management
   b. The Building Information Model Project Standard Committee formally defines BIM as follows: “Building Information Modeling (BIM) is a digital representation of physical and functional characteristics of a facility. A BIM is a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition” 1

2. Building Management at Froedtert Hospital
   a. Until very recently, Froedtert Hospital Facility Planning and Development (FP&D) has recorded campus building information using a combination of CAD facility drawings and a visual database software package. Together, these tools have been utilized to manage physical space assignments and inform lease documents. They have also informed the campus-wide building occupancy and life safety plans, which are crucial to demonstrate compliance and to facilitate future planning.
   b. Froedtert Health recognizes the long term benefits of using BIM in lieu of two-dimensional CAD platform / visual database combinations, particularly with respect to facility planning, asset management, and space management. As such, FP&D has discontinued the use of visual database software in favor of a CAD-only based management protocol. This temporary measure is a bridge strategy until the campus drawings are fully migrated to a BIM platform – a procedure that will take several years to complete.

3. Purpose
   a. In order to facilitate an orderly migration from two-dimensional CAD to a multi-dimensional BIM environment, and to support longer-range facility management goals, FP&D has developed this BIM Standards document (a.k.a. “Standards”) in concert with its design and construction partners.
   b. The BIM Standards document is intended to define Froedtert Health requirements with respect to the use of BIM and tendering of BIM-related deliverables, as further outlined in Section 1.2. The Standards shall be referenced by the following parties:
      i. Architects

ii. Interior Designers

iii. Consulting Engineers

iv. Construction Managers / General Contractors

4. Application

a. These Standards are intended as an exhibit to Agreements pertaining to facility design and construction, which may be individual project Agreements (i.e. A101 or B101) or Master Services Agreements (MSA’s) that control a variety of smaller projects via Individual Project Scope Orders.

b. Froedtert Health recognizes that architects, consulting engineers, GC’s, CM’s and related parties have variant amounts of experience with BIM. As such, any party to this document shall carefully review the information contained herein to assess whether it is capable of complying with the Standards prior to entering into an agreement with Froedtert Health.

c. In the event that the Standards cannot be supported by a potential design or construction partner, for any reason, such matters shall be discussed with the Director of Facility Planning and Development prior to executing any project agreements. The parties shall mutually agree on a combination of the following:

i. Limiting the Standards by striking language

ii. Amending the Standards by adding language

iii. Waiving the Standards in their entirety

5. Scope

a. All projects, unless determined otherwise, shall comply with these Standards.

6. Software

a. For the purposes of this document, it is assumed that the design team will utilize the most current version of AutoDesk Revit® software for project production. The software platform shall be cleared with Froedtert Health at the project outset and also presented on the BIM Management Plan (See also Section 2.1)

7. Structure

a. Working Models are used by design professionals to execute the project, facilitate documentation, and generally produce contract documents. Generally, working files are created for each major design discipline. This BIM standard does not address Working Models, which shall be the purview of design teams, and which are not required as a deliverable to Froedtert.

b. In order to manage BIM execution for the Froedtert Hospital campus, a three-tier approach to model management shall be utilized by project teams and the hospital:

i. Design Models are versions of the working models that have been cleaned of extraneous families, views, metadata and other unnecessary content. In general, a design model will be created from each working model. Design Models shall conform to the standards set forth in this document in Section 3. Design models are retained by Froedtert to enable future remodeling of newly built space.
ii. A **Building Model** is created and/or modified at the end of a project. This essentially collects a required set of content and views into one single building model. Each campus building shall have only one building model (i.e. West Clinics, CFAC, North Tower, etc), and therefore this model must be refined when renovations are completed.

iii. The **Campus Model** is managed by Froedtert or a consultant to Froedtert. This model contains links to each Building Model, and therefore allows for collected views of the entire campus by level. Formerly known as a Collector File, the Campus Model is simply a device to facilitate campus master drawing views which exhibit the following:

iv. Formerly known as a Collector File, the Campus Model and Building Model is simply a device to facilitate campus master drawing views which exhibit the following:

1. Life Safety
2. Occupancy Plans
3. Department Plans
4. Fire Protection One-lines
5. HVAC
6. Medical Gas One-lines
7. Plumbing Plans
8. Electrical Plans

c. The diagrams below further explains the logic of the Froedtert Hospital model setup:

*Design Models* are linked to a building-specific *Building Model* and are replaced/updated as needed.
Each **Building Model** is linked to an overall **Campus Model** that documents the entire facility.
1. Principle
   a. This document is meant to evolve as the use of BIM in the design and construction arenas continues to develop, and as Froedtert Health develops its internal use of BIM.

2. Short-Term Goals
   a. All new projects shall be designed using BIM software (presumably AutoDesk Revit®). The model(s) used to facilitate design shall hereafter be termed Design Models.
   b. At the completion of any project, the Architect shall tender all Design Models to Froedtert Health FP&D. These models will be used by the owner as further defined in an Owner-Architect or Owner-Consultant Agreement.
      i. Design models shall conform to the requirements of Section 3.0
   c. At the completion of any project, the Architect shall prepare and tender Building Model(s) of the project, which will be used for campus life safety plans, occupancy plans, and to facilitate space management.
      i. Building Models will conform to the requirements of Section 4.1.
   d. Froedtert Health or a consultant to Froedtert Health will maintain master campus plans in BIM via the use of a Campus Model. The Campus Model will contain a combination of linked Building Models (for new projects / buildings) and linked CAD files (for existing buildings) so that the entire campus can be viewed in one model. The Campus Model will enable the following:
      i. Management of room information (name, area, department, cost center, building, floor)
      ii. Viewing life safety information (rated partitions, stairs / exit doors)
      iii. Viewing building occupancy classifications
      iv. Viewing departmental information
      v. Viewing MEP model/diagram information

3. Long-Term Goals
   a. A variety of long-term goals may be of interest to Froedtert Health, including the following:
      i. Froedtert may internally manage its campus models using a BIM manager FTE
      ii. Froedtert may internally manage and mandate the use of a BIM template file that standardizes the model structure, view names, etc. This template is used for all new project work.
      iii. Froedtert may internally manage and mandate the use of standard families for any of the following
         1. Title Blocks
         2. Annotations and symbols
         3. Partitions
         4. Ceilings
5. Other TBD

iv. Building Models are used to track campus assets, such as:

1. VAV boxes
2. Dampers
3. Valves
4. Doors
5. Other TBD
1. Overview
   a. The intent of a BIM Management Plan is to provide a framework that will let the owner, architect, engineers, and construction manager deploy building information modeling (BIM) technology and best practices on a project faster and more cost-effectively. The plan delineates roles and responsibilities of each party, defines the detail and scope of information to be shared, and establishes relevant business processes and supporting software.
   b. An example BIM management plan will be made available to the design team by Froedtert Health. This document shall be amended by the design team as needed to define the specific management plan for the project.
   c. The information below is meant to provide guidance to the design team as to how to complete the BIM Management Plan. The team shall thoroughly review the Management Plan to ensure that it addresses the project at hand.

2. Project Information
   a. This section defines basic project information (Name, project numbers used by all organizations, etc). Enter information into this section to define general project information.

<table>
<thead>
<tr>
<th>Project Name*</th>
<th>Project Numbers</th>
<th>Project Address</th>
<th>Project Description</th>
</tr>
</thead>
</table>

   *Note: The Project Name defined herein is a Parameter that is reused by multiple applications; it must be an agreed-upon name by all parties as it is used across applications for coordination of specifications and cost estimating.

3. Core BIM Collaboration Team
   a. Provide a list of lead BIM contacts for each organization that will access the BIM models.

<table>
<thead>
<tr>
<th>Contact Name</th>
<th>Role/Title</th>
<th>Company</th>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector Model Manager</td>
<td>HGA</td>
<td></td>
<td></td>
<td>(414) 278-8200</td>
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4. Project Phases / Schedule
   a. Provide details on project phases and milestones, listing phase names, start and completion dates, and key stakeholders.
<table>
<thead>
<tr>
<th>PROJECT PHASE / MILESTONE</th>
<th>ESTIMATED START DATE</th>
<th>ESTIMATED COMPLETION DATE</th>
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<tr>
<td>CONSTRUCTION</td>
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</tbody>
</table>

5. Project BIM Goals and BIM Uses
   a. State the major BIM goals into the table below. Use the “Potential BIM Uses” cells for additional uses not listed.
      • For example, if the goal is defined as:
        “Goal: Quickly assess cost associated with design changes.” Then, the BIM Uses would be: “Use: Cost Estimation”
   b. Priorities are established to resolve conflicting goals.

<table>
<thead>
<tr>
<th>BIM Goal</th>
<th>Potential BIM Uses</th>
<th>Priority (L,M,H)</th>
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<tr>
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</table>

6. BIM Uses Table
   a. Fill out the BIM use table as shown below. Mark all intended uses with an “X”

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<td>DIGITAL FABRICATION</td>
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<td>SPACE MANAGEMENT / TRACKING</td>
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</tr>
<tr>
<td></td>
<td>LIGHTING ANALYSIS</td>
<td></td>
<td>3D CONTROL AND PLANNING</td>
<td></td>
<td>DISASTER PLANNING</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ENERGY ANALYSIS</td>
<td></td>
<td>RECORD MODELING</td>
<td></td>
<td>RECORD MODELING</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MECHANICAL ANALYSIS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. BIM Collaborative Process Mapping (Coordination Plan)

a. This chart outlines the expectations of the team members at the different phases of the project. It is meant as a guide and should be adjusted as needed, according to the project needs.

<table>
<thead>
<tr>
<th>Conceptualization / Program of Requirements</th>
<th>Owner</th>
<th>Architect</th>
<th>Engineers</th>
<th>Construction Manager</th>
<th>Commissioning Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide requirements related to form, function, cost and schedule</td>
<td>Provide design intent model with massing concepts and site considerations</td>
<td>Provide feedback on initial building performance goals and requirements</td>
<td>Provide feedback on initial building cost, schedule, and constructability</td>
<td>Provide feedback on advanced commissioning requirements</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria Design / Schematic Design</th>
<th>Owner</th>
<th>Architect</th>
<th>Engineers</th>
<th>Construction Manager</th>
<th>Commissioning Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide design review and to further refine design requirements</td>
<td>Refine Design Model with new input from Owner, Consulting Engineers, and Construction Manager. Conduct Reverse Phase Scheduling Activity</td>
<td>Provide schematic energy modeling and system iterations as Design Model continues to develop</td>
<td>Provide design review and continued feedback on cost, schedule, and constructability</td>
<td>Refine advanced commissioning requirements</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Detailed Design / Design Development</th>
<th>Owner</th>
<th>Architect</th>
<th>Engineers</th>
<th>Construction Manager</th>
<th>Commissioning Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department design reviews. Final approval of project design and metrics</td>
<td>Continue to refine Design Model. Introduce consultants models and perform model coordination</td>
<td>Create Discipline specific Design Models. Create detailed energy model.</td>
<td>Create Construction Model for simulation, coordination, estimates, and schedule</td>
<td>Review design model for all disciplines</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implementation Documents / Construction Documents</th>
<th>Owner</th>
<th>Architect</th>
<th>Engineers</th>
<th>Construction Manager</th>
<th>Commissioning Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finalize Design Model, Construction Documents, and Specifications</td>
<td>Finalize Discipline specific Design Models and Final Energy Model</td>
<td>Enhance Construction Model and perform final estimate and final</td>
<td></td>
<td>Review design model for all disciplines</td>
<td></td>
</tr>
</tbody>
</table>

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## Agency Coordination/Final Buyout

- Assist with code compliance negotiations and permitting
- Work with agencies on code compliances, plan acceptance and respond to construction RFI's
- Work with agencies on code compliances, plan acceptance and respond to construction RFI's
- Manage bid process, project buyout, and preconstruction RFI's

## Construction

- Monitor construction and give input to construction changes and issues
- Perform contract administration, update Design Model with changes
- Assist with RFI's and update Discipline specific Design Models, field conditions, and commissioning
- Manage construction with subcontractors and suppliers, inform changes to Design Model
- Observe construction and perform advanced commissioning.

## Facility Management

- Engage Architect and Facilities Group for model turnover to staff.
- Coordinate information exchange through model to Facilities Group

### 8. Project Phases/Milestones

a. Use this table to identify key dates and project stakeholders.

<table>
<thead>
<tr>
<th>Project Phase / Milestone</th>
<th>Estimated Start Date</th>
<th>Estimated Completion Date</th>
<th>Project Stakeholders Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conceptualization/ Program of Requirements Phase</td>
<td></td>
<td></td>
<td>Owner, Architect, Consulting Engineers, CM</td>
</tr>
<tr>
<td>Criteria Design/Schematic Design Phase</td>
<td></td>
<td></td>
<td>Owner, Architect, Consulting Engineers, CM, Commission Agent</td>
</tr>
<tr>
<td>Detailed Design/ Design Development Phase</td>
<td></td>
<td></td>
<td>Owner, Architect, Consulting Engineers, CM, Commission Agent</td>
</tr>
<tr>
<td>Implementation Documents/ Construction Documents Phase</td>
<td></td>
<td></td>
<td>Owner, Architect, Consulting Engineers, CM</td>
</tr>
<tr>
<td>Agency Coordination/Final Buyout Phase</td>
<td></td>
<td></td>
<td>Owner, Architect, Consulting Engineers, CM</td>
</tr>
</tbody>
</table>
9. Planned Modeling

   a. In the table provided, outline the models that will be created for the project. List the model name, model content, project phase in which the model will be delivered, the model’s primary authoring company, and the model authoring tool that will be used. For models that will not be used or created in your project, leave the row blank. Add rows for planned model types that are not already listed. See the Model Progression Specification for detailed level of modeling requirements by phase.

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Model Content</th>
<th>Project Phase</th>
<th>Model Element Author</th>
<th>Authoring Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Architectural Model</strong></td>
<td>Architectural objects, code information</td>
<td>Conceptualization / Program of Requirements Phase</td>
<td></td>
<td><strong>Autodesk Revit Architecture</strong></td>
</tr>
<tr>
<td><strong>Civil Model</strong></td>
<td>Topography, site utilities to within 5 feet of perimeter, hard and soft surfaces, other site objects</td>
<td>Criteria Design / Schematic Design Phase</td>
<td></td>
<td><strong>Autodesk Civil 3D</strong></td>
</tr>
<tr>
<td><strong>Structural Model</strong></td>
<td>Floor and roof slabs, structural framing members, column grids, bearing and shear walls, analytical structural model, lintels</td>
<td>Criteria Design / Schematic Design Phase</td>
<td></td>
<td><strong>Autodesk Revit Structure</strong></td>
</tr>
<tr>
<td><strong>Mechanical Model</strong></td>
<td>Mechanical systems, equipment, load information,</td>
<td>Criteria Design / Schematic Design Phase</td>
<td></td>
<td><strong>Autodesk Revit MEP</strong></td>
</tr>
</tbody>
</table>
utilities within 5 feet of building perimeter

<table>
<thead>
<tr>
<th>Electrical Model</th>
<th>Electrical systems, equipment, load information, utilities within 5 feet of building perimeter</th>
<th>Criteria Design / Schematic Design Phase</th>
<th>Autodesk Revit MEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plumbing Model</td>
<td>Plumbing systems, equipment, load information, utilities within 5 feet of building perimeter</td>
<td>Criteria Design / Schematic Design Phase</td>
<td>Autodesk Revit MEP</td>
</tr>
<tr>
<td>Energy Model</td>
<td>Energy data, run iterations, life cycle costing, peak loads</td>
<td>Criteria Design / Schematic Design Phase</td>
<td>Autodesk Ecotect</td>
</tr>
<tr>
<td>Construction Model</td>
<td>Scheduling information, sequencing information</td>
<td>Criteria Design / Schematic Design Phase</td>
<td>Autodesk Navisworks</td>
</tr>
<tr>
<td>Estimate Model</td>
<td>Costing data, quantity takeoffs</td>
<td>Criteria Design / Schematic Design Phase</td>
<td>Autodesk Quantity Takeoff</td>
</tr>
<tr>
<td>Coordination Model</td>
<td>Design Intent Models and Fabrication information</td>
<td>Construction</td>
<td>Autodesk Navisworks</td>
</tr>
</tbody>
</table>

10. Model Management
   a. File Format
      • All Revit files will be the same version which shall be defined by the project team.
      • All exports to Cad from Revit and other applications will be saved to AutoCad DWG format.
   b. File Naming convention
      • Determine and list the structure for model file names as required for your project. Enter the model names into the table provided.
### File Names for Models Should Be Formatted as:

<table>
<thead>
<tr>
<th>Description</th>
<th>Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Number(optional)-Project Name- DISCIPLINE.rvt (example: XXXXX-Name-AR.rvt)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Architectural Core and Shell Model</th>
<th>-AR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural Fit Out model</td>
<td>-FO</td>
</tr>
<tr>
<td>Civil Model</td>
<td>-CV</td>
</tr>
<tr>
<td>Mechanical Model</td>
<td>-MECH</td>
</tr>
<tr>
<td>Electrical Model</td>
<td>-EE</td>
</tr>
<tr>
<td>Plumbing Model</td>
<td>-PL</td>
</tr>
<tr>
<td>Furniture/Equipment</td>
<td>-FE</td>
</tr>
<tr>
<td>Structural Model</td>
<td>-ST</td>
</tr>
<tr>
<td>Energy Model</td>
<td>-EM</td>
</tr>
<tr>
<td>Construction Services Model</td>
<td>-CS</td>
</tr>
<tr>
<td>Cost Estimate Model</td>
<td>-CE</td>
</tr>
<tr>
<td>Coordination Model</td>
<td>-COORD</td>
</tr>
<tr>
<td>Shared Coordinates Master</td>
<td>-MASTER_COORDINATES</td>
</tr>
</tbody>
</table>

11. Model Progression
   a. Refer to Level of Design requirements under section 2.4

12. Analysis Planning/Modeling
   a. The project scope of work may require certain types of analysis, such as those listed below, which may be performed on existing or specially created model(s). In most cases the quality of the analysis output depends on the quality of the model from which the data is derived. Team members who use BIM models for analyses shall first ensure with the model authors that they are contractually allowed to use models for these purposes.
   b. A list of potential uses has been provided in the example BIM Management Plan, and is outlined below:
      - Quantity Takeoff Analysis
        1. The objective of quantity takeoff analysis is to use modeling property data to automate or simplify the quantity takeoff process. This information from the quantity takeoff tool can then be imported or tied to cost-estimating software. In order for the quantity takeoff process to work seamlessly, the original modeling author will need to include the relevant property information in the design and an agreement of modeled content communities to estimate.
      - Scheduling Analysis
        1. Scheduling analysis allows the project team use the project model to analyze the timeline and sequencing for construction. This information can then be used to modify or adjust the construction schedule. Tools currently exist that allow project team members to visualize the construction over time, but no systems exist yet that interact automatically with scheduling tools.
• Visualization Analysis
  1. Visualization tools let the project team view the design or construction of the project in 3D, giving them a more accurate perspective of the end product.

• Structural Analysis
  1. Structural analysis tools use the model to analyze the building’s structural properties. Structural analysis programs typically use the finite element method (FEM) to measure the stresses on all structural elements of the design. For structural analysis to work seamlessly, the original structural modeling tool needs to be compatible with the structural analysis tool, and the original structural model property data must include information about the structural elements.

c. Detailed Analysis Plan
  • For each type of analysis that may be performed for your project, list the models used for the analysis, which party will perform the analysis, the file format required for the analysis, the estimated project phase, and the analysis tool that will be used. If there are other special instructions associated with the analysis, mark the Special Instructions column and list the details in the Special Instructions table in the next section.

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Analysis Tool</th>
<th>Model</th>
<th>Analyzing Company</th>
<th>Project Phase</th>
<th>File Format Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visualization</td>
<td></td>
<td>Architectural Model</td>
<td></td>
<td></td>
<td>.rvt/.nw</td>
</tr>
<tr>
<td>Structural</td>
<td></td>
<td>Structural Model</td>
<td></td>
<td></td>
<td>.rvt/</td>
</tr>
<tr>
<td>Quantity Takeoff</td>
<td></td>
<td>All Models</td>
<td></td>
<td></td>
<td>.rvt</td>
</tr>
<tr>
<td>Scheduling /4D</td>
<td></td>
<td>All Models</td>
<td></td>
<td></td>
<td>.rvt/.nw</td>
</tr>
<tr>
<td>Cost Analysis /5D</td>
<td></td>
<td>All Models</td>
<td></td>
<td></td>
<td>.rvt/.nw</td>
</tr>
<tr>
<td>Energy</td>
<td></td>
<td>Architectural Model</td>
<td></td>
<td></td>
<td>.rvt/.GB</td>
</tr>
<tr>
<td>Daylight/Lighting</td>
<td></td>
<td>Architectural Model</td>
<td></td>
<td></td>
<td>.rvt/.FB</td>
</tr>
</tbody>
</table>
13. As-Built Modeling
   a. The team shall define how as built modeling will be performed. The text provided in the example BIM Management Plan should be amended as needed to outline this process.

14. Collaboration Plan
   a. Creating a collaboration plan—including permissions and file structures—will help team members efficiently communicate, share, and retrieve information throughout the project. Use the table provided to define specific meetings and interactions that will occur to foster collaboration throughout the design and construction phases of the project.

<table>
<thead>
<tr>
<th>MEETING TYPE</th>
<th>PROJECT STAGE</th>
<th>FREQUENCY</th>
<th>PARTICIPANTS</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIM REQUIREMENTS</td>
<td>KICK-OFF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIM USAGE AND GOALS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIM PROCESS ID</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MODEL PROGRESSION</td>
<td>SPEC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DESIGN REVIEWS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COORDINATION REVIEWS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. A Design Team BIM Manager shall be identified for all new projects. This individual shall be responsible for maintaining the Design models throughout the design and construction phases of the project, and for coordinating the Building Model setup at the end of the project.

2. The Design Team BIM Manager shall be identified on the BIM Management Plan (see also Section 2.1), which shall be submitted to Froedtert.

3. For large projects using multiple Design models, it may be necessary to identify a Design Team BIM Manager for architectural models, one for structural models, and one for MEP-FP models or a combination thereof. This decision shall rest with the design team as a whole, but in any case shall be outlined in the BIM Management Plan and clearly communicated to the project team.

4. Design Team BIM Manager(s) shall possess the following:
   a. Proven experience and fluency with the BIM software
   b. Ability to manage a complex set of models
   c. Ability and willingness to troubleshoot model issues, which may include off-hours consultation during critical deadlines
   d. Excellent communication skills

5. Primary Design Team BIM Manager Responsibilities
   a. Administer the BIM Management Plan and submit this to the production team and Froedtert Health
   b. Set up regular Project Coordination meetings to discuss the Revit Model and progression of work.
      i. Coordination meetings may be held with internal production staff, other BIM Coordinators, the CM, and Early Trade Involvement Partners depending on the phase of work and topic of the meeting.
   c. Consult with their firms’ technical leadership to obtain necessary support, guidance and management when the project has special requirements.
   d. Develop and document plot setups.
   e. Perform file/directory maintenance; purge / clean files, and maintain good model health.
   f. Maintain / Update Project Information in design models. This includes regular maintenance, such as compacting the Central file, and addressing warnings in the Model.
   g. Monitor model performance, particularly when design models files become large. If the models sizes exceed typical workstation performance capabilities, the BIM Manager may elect to split content into multiple design models.
   h. Coordinate design model archiving at the end of the project and at important milestones.
   i. Coordinate and arrange for design models to be transmitted to Froedtert Health at the end of construction
   j. Coordinate building models at the end of construction

6. Design Team BIM Manager Model Controls
a. The BIM Manager will be the sole controller of line weights and other drawing standards on the project.

b. The BIM Manager will be the sole controller of Revit worksets and creation of Central File(s).

c. The BIM Manager will be the primary controller of visibility settings for views that are placed on sheets, in order to maintain a visually orderly set of drawings. Team members shall not adjust visibility templates without the BIM Manager’s approval.

d. The BIM Manager will be consulted first in the event of a central file corruption or failure. The BIM Manager shall determine how the file will be restored.

7. Please note that the responsibilities list above may be delegated to other team members. However, it is the Design Team BIM Manager’s job to see that they are done.
1. A Construction Team BIM Manager shall be identified for all new projects. This individual shall be responsible for maintaining the Construction models throughout the construction phase of the project, and for coordinating the Design and Building Model setup at the end of the project.

2. The Construction Team BIM Manager shall be identified on the BIM Management Plan (see also Section 2.1), which shall be submitted to Froedtert.

3. Construction Team BIM Manager(s) shall possess the following:
   a. Proven experience and fluency with the BIM software
   b. Ability to manage a complex set of models
   c. Ability and willingness to troubleshoot model issues, which may include off-hours consultation during critical deadlines
   d. Excellent communication skills

4. Primary Construction Team BIM Manager Responsibilities
   a. Overall responsibility for the Construction BIM model creation and information developed during construction
   b. Act as the main point of contact for the Construction BIM and related issues between the Construction Team, subcontractors, Froedtert, the Design Team, and others as required
   c. Ensure that the Construction Team has necessary hardware and BIM Software properly installed and accessible for project use
   d. Coordinate construction sequencing and scheduling activities, and assure they are integrated with the BIM
   e. Facilitate use of composite trade models in construction coordination/clash detection meetings and provides detection reports. Communicate with the Design Team BIM Manager to resolve clashes.
   f. Coordinate with the Design Team to facilitate design changes in the field have been documented and are updated in the BIM in a timely manner
   g. Coordinate updates of as-constructed conditions into the Design Model deliverables including implementation of SIs, CBs, RFPs, etc.
   h. Ensure that the minimum required LOD is included in the Construction BIM as defined in the BIM Management Plan.

5. Please note that the responsibilities list above may be delegated to other team members. However, it is the Construction Team BIM Manager’s job to see that they are done.

6.
1. Overview
   a. Level of Development (LOD) definitions help the project team understand the appropriate
development of the Revit models as work progresses. Additionally, the LOD standards form a
shared set of expectations with Froedtert Health, Design Consultants, and the CM/GC.
   b. The purpose of the LOD Matrix is to define the design team's expectations for model
progression / development for each major Revit element category at each phase of the
project.

2. LOD definitions were first developed by the AIA and are outlined below.
   a. 100 Level: Overall Massing
      i. Overall building massing indicative of the area, height, volume, location, and
orientation may be modeled in three dimensions.
   b. 200 Level: Generalized systems
      i. Model elements are modeled as generalized systems or assemblies with
approximate, size, shape, location, and orientation. Non-geometric information may
also be attached to model elements.
   c. 300 Level: Specific Assemblies
      i. Model elements are modeled as specific assemblies which are generally accurate in
terms of size, shape, location, and orientation. Non-geometric information may also
be embedded into Model Elements. However, most elements are typically only
specific to the “Basis of Design” where more than one option is specified or they are
specific only to the “indicative” element where final selection has not been made.
This level of development is typically the highest level that a design team documents.
   d. 400 Level: Accurate Assemblies
      i. Model elements are modeled as specific assemblies that are accurate in terms of
size, shape, location, quantity, and orientation with complete fabrication, assembly,
and detailing information. Non-Geometric information may also be attached to
modeled elements. These model elements are typically created by contractors or
subcontractors. This level of development does not typically reside in the Design
Model.
   e. 500 Level: Constructed Assemblies
      i. Modeled elements are modeled as constructed assemblies actual and accurate in
terms of size, shape, location, quantity, and orientation. Non-geometric information
may also be attached to the modeled elements. These model elements are typically
created by the contractors or subcontractors. This level of development does not
typically reside in the Design Model.

3. LOD Matix
   a. An LOD matrix is to be established by the design and construction teams. This Matrix is to
establish required levels of development per Revit Category and by project phase. The LOD
matrix follows the Uniformat system.
Section 2.4
Level of Development (LOD) Requirements

i. A - Structure
ii. B – Shell
iii. C – Interiors
iv. D – Services
v. E – Equipment & Furnishings
vi. Special Construction & Development
vii. Building Sitework
viii. Revit Specific Content

4. An example LOD Matrix is furnished with this document, and may be used by project teams. The LOD Matrix shall be established as early in project design as possible, and shall be shared with Froedtert Health alongside the BIM Management Plan.
| Uniform  | Conceptual | Schematic | Detailed | Contract
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LOD 100</td>
<td>Overall building massing indicative of area, height and volume</td>
<td>Schematic LOD</td>
<td>Detailed LOD</td>
<td>Contract LOD</td>
</tr>
<tr>
<td>LOD 200</td>
<td>Generic geometry modeled, overall approximate quantity, size, location and orientation</td>
<td>Schematic LOD</td>
<td>Detailed LOD</td>
<td>Contract LOD</td>
</tr>
<tr>
<td>LOD 300</td>
<td>All 3D geometry described accurately, quantity, size and orientation</td>
<td>Detailed LOD</td>
<td>Detailed LOD</td>
<td>Detailed LOD</td>
</tr>
</tbody>
</table>

### Substructure

- **A100 Standard Foundations**
  - A1010 Standard Foundations
  - A1012 Standard Foundations
  - A1013 Standard Foundations
- **A200 Special Foundations**
  - A2010 Special Foundations
  - A2012 Special Foundations
  - A2013 Special Foundations
- **A300 Slab on Grade**
  - A3010 Slab on Grade
  - A3012 Slab on Grade
  - A3013 Slab on Grade

### Shell

- **B100 Floor Construction**
  - B1010 Floor Construction
  - B1012 Floor Construction
  - B1013 Floor Construction
- **B200 Roof Construction**
  - B2010 Roof Construction
  - B2012 Roof Construction
  - B2013 Roof Construction
- **B300 Roof Coverings**
  - B3010 Roof Coverings
  - B3012 Roof Coverings
  - B3013 Roof Coverings

### Exterior Enclosure

- **B400 Exterior Walls**
  - B4010 Exterior Walls
  - B4012 Exterior Walls
  - B4013 Exterior Walls
- **B500 Exterior Windows**
  - B5010 Exterior Windows
  - B5012 Exterior Windows
  - B5013 Exterior Windows
- **B600 Exterior Doors**
  - B6010 Exterior Doors
  - B6012 Exterior Doors
  - B6013 Exterior Doors

### Roofing

- **B700 Roof Coverings**
  - B7010 Roof Coverings
  - B7012 Roof Coverings
  - B7013 Roof Coverings
**Unframed**

<table>
<thead>
<tr>
<th>B3010 Base Finish and Soffits</th>
</tr>
</thead>
<tbody>
<tr>
<td>B3020 Base Finishes</td>
</tr>
<tr>
<td>B3030 Base Finish Corners</td>
</tr>
</tbody>
</table>

**Interior Finishes**

<table>
<thead>
<tr>
<th>C1010 Partitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1011 Panel Partitions</td>
</tr>
<tr>
<td>C1012 Demountable Partitions</td>
</tr>
<tr>
<td>C1013 Membrane Partitions</td>
</tr>
<tr>
<td>C1014 Structural Partitions</td>
</tr>
<tr>
<td>C1015 Wall Siding</td>
</tr>
<tr>
<td>C1016 Interiors Windows &amp; Doorways</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C1020 Doors</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1021 Glazed Door Openings</td>
</tr>
<tr>
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1. Purpose and definition
   a. The Froedtert Campus Model has an internal coordinates system for all the elements that compose the model. These coordinates originated from a CAD based collector file. The coordinate system has been arranged on an origin-to-origin basis.

2. Design Models
   a. All Design BIM projects will utilize the internal coordinates system from the Building / Campus model (see also section 4.0) that will be distributed at the project commencement. This will be done as a means to ensure that any new work or renovations are appropriately positioned within the Froedtert owned and maintained Campus Model. At no point in time should the shared coordinates system be modified. A project base point may be used as means for individual project coordination and will not impact the usage of the model after transmission to Froedtert.
   b. Any issues with the coordinates system should be resolved through the Froedtert team.

3. Building Models
   a. Named Locations
      i. All new and existing building models will contain a named location determined by Froedtert. This named location will aid in the assembly of the Campus Models and is the responsibility of the campus/building model managers (see also section 4.1-4.3). Refer to the BIM management plan for collector model manager contact info.
1. Background
   a. BIM workflow requires a highly organized approach to determine whether and how team members will either directly or indirectly access models.
   b. As workflow continues to evolve, it is not uncommon for multiple design organizations, early trade partners, and construction management personnel to either exchange design models at regular intervals or directly access design models during project design.
   c. Model sharing may involve the following parties
      i. Architect of Record
      ii. Engineer of Record
      iii. Interior Designer
      iv. Other Design Consultants
      v. Construction Manager / General Contractor
      vi. Early Trade Involvement Partners (ETIPs)
      vii. Froedtert Health
   d. The Design Team and Construction Team BIM Managers shall jointly develop a model sharing protocol to facilitate design model information exchange and coordination between disciplines. This protocol shall be in place at the outset of new projects to avoid future complications, and shall be documented in the BIM Management Plan. If requested by Froedtert Health, the Design and Construction team shall be prepared to summarize model sharing protocols. At a minimum, the model sharing protocol shall delineate the following:
      i. Parties that will access exchanged or shared models
      ii. If applicable, the means and timing of design model exchanges
      iii. How each party will use the design models
   e. Parties to model sharing, with the exception of Froedtert Health, shall be able to demonstrate that their team has the skill and qualifications necessary to use design BIM models
   f. Sharing of models carries potential legal consequences for all involved. It is expected that team members will collaborate in good faith to define model sharing solutions that support project goals. However, team members shall also involve their respective legal counsels to determine the appropriateness of sharing protocols with respect to individual firm risk management policies.

2. Model Sharing Methods
   a. The project team may elect to share design models in one or more of the following ways. The chosen method should be selected based on workflow needs, technological capabilities, and risk mitigation:
   b. Regularly scheduled file transfers between team members
      i. If this method of sharing is chosen, it is expected that the lead design firm and its consultants will, at a minimum, exchange design models once per week. Additional
special exchanges shall be coordinated so as not to delay the progress of design work.

ii. The project team as a whole shall develop a regular schedule of information exchanges. Some team members may require more frequent file transfers (design consultants) than others (such as the Owner), depending upon the project phase.

When transmitting design models, the sending party shall ensure that associated linked files are also transmitted as necessary so that the models are usable. Linked files may be additional BIM models or CAD links, depending on project circumstances.

c. Shared access to design models via a dedicated project server hosted by the project team

i. This method may be employed to permit the design team and selected construction team members to access models directly. By using a shared server environment, the project team may be able to avoid reliance on scheduled model transfers.

ii. The owner, design and construction team members shall jointly determine how the server equipment will be funded, structured, maintained, and accessed.

iii. Direct access to the design models shall be limited to staff who fully understand how to use the BIM software and who are contractually permitted to access and use the models;

d. Shared access to design models provided by one team member to others

i. This method requires one party, generally the architect of record, to grant access to design models via remote access to its project server. Remote access may be granted via a virtual desktop, cloud workstation, or other technology. It shall be the responsibility of the granting organization to restrict server access as needed.

ii. If this method of model sharing is used, sharing parties shall test the system as early as feasible to ensure productivity needs are achieved. Connection bandwidth and speed can greatly affect the viability of this method, particularly for production tasks that require frequent communications between local and central models.

iii. Direct access to the design models shall be limited to staff who fully understand how to use the BIM software and who are contractually permitted to access and use the models

3. Right of Reliance

a. The concept of Right of Reliance is based upon the principle that, at a specific contractually defined point in time and for specific content, “the Contract Documents and the Design Models will be consistent, to the extent of the information contained in both the Contract Documents and the Design Models. The Owner and Contractor shall not be responsible for conducting a comparison of the Design Model with the Contract Documents for the purposes of determining conflicts or discrepancies in information contained in both.”

b. The above statement means that at such a defined point in time, the Owner and CM are granted the right to rely upon the model as being consistent with the Contract Documents, thereby allowing these parties to utilize the model as a tool for planning and coordinating
construction operations. This right shall only apply to the content that has been defined in writing (i.e. Steel Columns and Beams), and only at the defined point in time.

c. The project team shall determine whether a Right of Reliance provision is appropriate or necessary for a given project, and if so, shall work collectively to define the contractual language that will govern this provision.

d. A Right of Reliance provision shall not alter privity of contract between Froedtert Health and the Architect or Froedtert Health and the GC/CM.
1. Purpose
   a. The intent of clash detection is to flush out any system or building collisions that might take place during installation. In order for clash detection to take place successfully, the project team must utilize Building Information Models. This process will benefit all parties involved through increased planning and better understanding of the installed systems throughout the project. In order for Clash Detection to take place, there must be modeling involvement on behalf of multiple trades or disciplines. At the very least this includes the Mechanical, Plumbing, Electrical, and Fire Protection subcontractors on the project. Their systems can be easily fabricated off site and Clash Detection will aid in making that fabrication possible.

2. Responsibility
   a. The Construction Team BIM Manager will ultimately be responsible for the clash detection process
   b. Examples of contractor trades that may be included in the process are as follows: Mechanical, plumbing, electrical, fire protection, casework, concrete, doors and hardware, drywall and framing, earthwork, elevator, enclosure, landscape, misc metals, pneumatic tube, precast, roofing, shoring, stair, structural steel.
   c. The contractor should facilitate clash detection coordination meetings with all involved subcontractors in attendance
   d. The clash detection or construction model elements shall include dimensionally accurate 3D objects, parametric data, and labels
   e. The model intent is to show all material, equipment, data and services in a true representation of its final location on the project. Whereas specific dimensional location of material, equipment, data and services may not be included in the contract documents, such items shall be included in the construction models.
   f. Deliverables to the design team may include a combination of 2D representations of the 3D models (extracted directly from the 3D models) and information that exists in 2D only. This can be submitted for final location approval.
   g. It is important to maintain a coordination schedule that allows the proper time for systems to be fabricated and shipped to the project before the system installation date. This schedule shall be maintained by the CM/GC and the Construction Phase BIM Manager
   h. After an area (building floor or portions of a floor) have been fully coordinated with all systems, a sign off document should be produced to confirm that coordination is approved by all parties to the process. Once the sign off documented has been signed by all coordination team leads, the next area can be coordinated
1. Design BIM Purpose and Definition
   a. Working Models are used by design professionals to execute the project, facilitate
documentation, and generally produce contract documents. This BIM standard does not
address Working Models, which shall be the purview of design teams, and which are not
required as a deliverable to Froedtert.
   
b. Design Models are versions of the working models that have been cleaned of extraneous
families, views, metadata and other unnecessary content. Design Models shall conform to
the standards set forth in Section 3. Design models are retained by Froedtert to enable future
remodeling of newly built space.
   
c. In most cases, design models will be created for various disciplines and then linked together.
The decision of how many models are required for a given project shall be led by the Design
Team BIM Manager, and documented in the BIM Management Plan. The following disciplines
may be documented in separate models:
   
   i. Architecture and Interiors
   ii. Structural
   iii. Plumbing and Fire Protection
   iv. Electrical
   v. Telecommunications
   vi. Mechanical
   vii. Other TBD

   d. Sections 3.2 thru 3.7 of this document further define requirements relative to the typical
design models listed above.

   e. Design models are to be managed by the Design Team BIM Manager (see Section 2.2) who
ensures that they have been properly cleaned of extraneous unused families, views, and
metadata

   f. Design models are separate and distinct from Building and Campus Models, which are used
to facilitate specific functions required by Froedtert Health. See also Sections 4 and 5.

2. Compatibility
   a. All Design Models shall be 3D and compatible with Autodesk Revit.
   
b. 3D AutoCAD or alternative 3D modelling software may considered compatible and be linked
into a Revit Design Model if approved in writing by Froedtert Health.

3. Updates to the Design Models
   a. Eventually, every campus building shall be represented via a series of Design Models that are
linked into the Building Model.
   
b. The model file structure is set up so that all modeled information resides exclusively in the
Design Models. Thus, updating information should begin at the Design Model level.
c. In the event that a portion of a building is slated for renovation or expansion, the design team involved will, based on careful consideration, either:

i. **Inherit** the current Design Models and use them as a starter file for their working project BIM model; Upon completion, they would replace the original Design Model with an updated version for re-linking into the Building Model. For buildings that have already been fully modeled in BIM (i.e. CFAC), this approach is advisable.

![Diagram showing the process of inheriting and creating new Design Models]

ii. Create a **new** Design Model that coordinates scope of work appropriately with the existing Design Models; Upon completion, linking new Design Models into the Building Model shall result in an accurate representation of the facility. For existing buildings that have not been modeled in BIM, this approach will be necessary. In some cases, this approach may also be advisable for buildings that have already been modeled in BIM, but the project team shall determine the best approach collaboratively.
d. No matter what approach is used to modify or create Design Models, when they are (re)inserted into the Building Model, all linked views shall be reconciled as needed.
1. Final BIM Deliverables (3D)
   a. It is Froedtert Hospital’s intention to use the Design Models for ongoing building management upon occupancy. Information that matures during the construction process is to be captured in the appropriate models on an on-going basis throughout the construction phase.
   b. At project commencement it shall be determined by the project team whether the most current version of BIM software should be utilized. Unless the project team determines a reason to the contrary, the most current version shall be used.
   c. Upon Substantial Completion, BIM files shall be submitted to Froedtert, and shall be cleaned of extraneous “scrap” or “working space”, stories, abandoned designs / design options, object creation and testing places, empty worksets, and other content which may be produced in BIM production.
   d. With the exception of the required views (section 2.b) - all sheets, sheet schedules, erroneous sheet-specific views, drafting views, section views, detail views, and information redundant to the issued drawing set should be removed from the BIM model.
      i. Froedtert shall receive Design Model Deliverables from the Design team. The Design model should include the as-built modeled information and conform to the General Model Requirements as laid out below. A Froedtert BIM template will be provided as a starting point for the information to be generated below. If additional models are required due to size / scale of the project, those separate models shall be transmitted as well as a comprehensive Design model with all models linked together.

2. Requirements for Downstream Froedtert Use
   a. Required Views
      i. The following views shall be created by the design team in the Design Models. These views will be utilized via linked view in both the Design Models and Building Model. The required views are as listed below:
         1. Life Safety
         2. Occupancy Plans
         3. Department Plans
         4. Structural Plans
         5. Fire Protection Plans
         6. HVAC Plans
         7. Medical Gas Plans
         8. Plumbing Plans
         9. Electrical Plans
      ii. The matrix below describes the major elements that must be included in each of the linked views. It is important to note that the Building Model will be limited to these elements so the linked Collector Model does not become too large and unwieldy to work with.
## Section 3.2
### Design Models: Architectural Requirements

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Last Edit: 7/28/2014  © 2014 Froedtert Health
b. Required Worksets
   i. The following worksets are included in the Froedtert starter project and should be
      adhered to through project completion:
      1. Existing and Demolition
      2. Core and Shell
      3. Interiors
      4. Equipment
      5. Life Safety

c. Required Space Naming and Coding
   i. The attributes below for Space Naming and Coding shall be applied to the Froedtert-
      supplied .rfa room tag family. This tag will support the required views generated
      (section 2.a):
      1. Building Name Code
      2. Floor Level
      3. Department Name
      4. Department Cost Center Code
      5. Room Number
      6. Room Name
      7. Room Occupant (FMLH, MCW or other)
      8. Room Area (square feet, which should automatically populate)

   ii. As a result of ongoing changes made by Froedert each space shall be maintained
       through project completion by the Design Team and updated as needed thereafter by
       the Campus Model management team.

d. Fonts for required views
   i. Arial font typeface shall be used.

e. Modeled objects
   i. It is important for all created/imported content to be assigned to the appropriate
      category/subcategory within Revit.

   ii. The following objects must be modeled to dimensional and categorical accuracy:
      1. Exterior Enclosure
      2. Exterior Openings (rough)
      3. Floor/Roof Slabs
      4. Mechanical Shafts
      5. Vertical Circulation Space
      6. Interior Partitions (thickness and height)
      7. Interior Openings (rough)
      8. Ceilings and Soffits (with respect to their distance above the finished floor)
1. Final BIM Deliverables
   a. See also section 3.2, section 1.
   b. Froedtert shall receive the following 3D Deliverables from the Structural Design team:
      i. Design Model
         The Design model should include as-built modeled information and conform to the General Model Requirements as laid out below.

2. Requirements for Downstream Froedtert Use
   a. Required Views
      i. The following views shall be created by the design team in the Design Models. These views will be utilized via linked view in both the Design Models and Building Model. The required views are as listed below:
         1. Framing Plans
         2. Column Schedules
         3. Framing Sections as needed
         4. Unique Details as needed
   b. Required Worksets
      i. The following worksets are included in the Froedtert starter project and shall be maintained through project completion:
         1. Existing
         2. Major Levels and Grids
         3. Minor Levels and Grids
   c. Modeled objects
      i. It is important for all created/imported content to be assigned to the appropriate category/subcategory within Revit.
      ii. The following objects must be modeled to dimensional and categorical accuracy:
         1. All structural steel elements
         2. Structural footings
         3. Structural walls
         4. Structural slabs
1. Final BIM Deliverables
   a. See also section 3.2, section 1...
   b. Froedtert shall receive the following Deliverables as described in Agreement:
      i. Design Model
      The Design model should include the as-built modeled information as provided and
      modeled by the GC / CM and conform to the General Model Requirements as laid out
      below.

2. Requirements for Downstream Froedtert Use
   a. Required Views
      i. The following views shall be created by the design team in the Design Models.
      These views will be utilized via linked view in both the Design Models and Building
      Model. The required views are as listed below:
      1. Plumbing Plans
      2. Medical Gas Plans
      3. Roof Drainage Plans
      4. Fire Protection Plans
      5. Sprinkler/Sprinkler Zone Plans
      6. Schematic Riser Diagrams
      7. Equipment and Fixture Schedules

   b. Required Worksets
      i. The following worksets are included in the Froedtert starter project and should be
      adhered to through project completion:
      1. Existing
      2. Domestic Service
      3. Sanitary
      4. Vent
      5. Storm
      6. Fire Protection
      7. Medical Gas

   c. Modeled objects
      i. It is important for all created/imported content to be assigned to the appropriate
      category/subcategory within Revit.
ii. The following objects must be modeled:
   1. Major Equipment (Pumps, Heat Exchangers, Water Heaters, Expansion Tanks, etc.)
   2. Plumbing Fixtures
   3. Sprinklers
   4. Piping and vents greater than 4” in diameter
   5. Valves

iii. Nomenclature
   1. Major Equipment shall be tagged on all plan and sections views and be referenced on a schedule
   2. Plumbing Fixtures shall be tagged on all plan and sections views and be referenced on a schedule
   3. Piping shall be tagged to indicate system name and size
1. Final BIM Deliverables
   a. See section 3.2, section 1...
   b. Froedtert shall receive the following Deliverables as described by Agreement
      i. Design Model
         The Design model should include the as-built modeled information provided by the GC / CM and conform to the General Model Requirements as laid out below.

2. Requirements for Downstream Froedtert Use
   a. Required Views
      i. The following views shall be created by the design team in the Design Models. These views will be utilized via linked view in both the Design Models and Building Model. The required views are as listed below:
         1. Lighting Plans
         2. Power Plans
         3. Systems Plans (Fire Alarm)
         4. Schematic Riser Diagrams
   b. Required Worksets
      i. The following worksets are included in the Froedtert starter project and should be maintained through project completion:
         1. Existing
         2. Power
         3. Lighting
         4. Systems
   c. Modeled objects
      i. It is important for all created/imported content to be assigned to the appropriate category/subcategory within Revit.
      ii. The following objects must be modeled:
         1. Light Fixtures
         2. Electrical Panels
         3. Major Pieces of Equipment (Generators, Transformers, Switchgear, etc)
         4. Cable Tray
         5. Feeders
      iii. Nomenclature
         1. Major Equipment shall be tagged on all plan and sections views and reference a schedule
2. Electrical Panels shall be tagged on all plan and sections views and reference a schedule

3. Light Fixtures shall be tagged on all plan and sections views and reference a schedule
1. Final BIM Deliverables
   a. See section 3.2, section 1...
   b. Froedtert shall receive the following Deliverables as described in Agreement
      i. Design Model
         The Design model should include the as-built modeled information provided by the GC / CM and conform to the General Model Requirements as laid out below.

2. Requirements for Downstream Froedtert Use
   a. Required Views
      i. The following views shall be created by the design team in the Design Models. These views will be utilized via linked view in both the Design Models and Building Model. The required views are as listed below:
         1. Telecom Plans
         2. Security Plans (if designed by the design team)
         3. Audio/Visual Plans (if designed by the design team)
         4. Nurse Call Plans (if required)
         5. Schematic Riser Diagrams
         6. Equipment Schedules
      ii. Plan views may be combined based on clarity and scale of views
   b. Required Worksets
      i. The following worksets are included in the Froedtert starter project and should be adhered to through project completion:
         1. Telecommunications
         2. Security (if applicable)
         3. Audio/Visual (if applicable)
         4. Nurse Call (Paging)
         5. Wireless
         6. Major Levels and Grids
   c. Modeled objects
      i. It is important for all created/imported content to be assigned to the appropriate category/subcategory within Revit.
      ii. The following objects must be modeled to categorical accuracy:
         1. Major Pieces of Equipment (Monitors, Speakers, Security Access Devices, Cameras, Server Racks, etc)
      iii. Nomenclature
1. Major Equipment shall be tagged on all plan and sections views and reference a schedule or specification.
1. Final BIM Deliverables
   a. See section 3.2, section 1...
   b. Froedtert shall receive the following Deliverables as described in Agreement
      i. Design Model
         The Design model should include the as-built modeled information provided by the GC / CM and conform to the General Model Requirements as laid out below.

2. Requirements for Downstream Froedtert Use
   a. Required Views
      i. The following views shall be created by the design team in the Design Models. These views will be utilized via linked view in both the Design Models and Building Model. The required views are as listed below:
         1. Ductwork Plans
         2. Piping Plans
         3. Schematic Flow Diagrams
         4. Schematic Control Diagrams
         5. Control Points List
         6. Sequences of Operation
         7. Equipment Schedules
   b. Required Worksets
      i. The following worksets are included in the Froedtert starter project and should be maintained through project completion:
         1. Existing Ductwork
         2. Existing Piping
         3. Existing Shared Equipment
         4. Ductwork
            a. All ductwork
            b. All Airside Equipment
               i. Terminal Boxes
               ii. Fans
            c. All Airside Terminals
               i. Diffusers
               ii. Grilles
               iii. Transfer Grilles
            d. Associated Airside Controls (if shown)
i. CO₂ Sensors
ii. Thermostats controlling Terminal Boxes

5. Piping
   e. All Piping
      i. Hydronic
      ii. Fuel
      iii. Condenser
      iv. Vents
   f. All piping related equipment
      i. Pumps
      ii. Control Valves
   g. Piping Service Components
      i. Isolation Valves
   h. Associated Controls (if shown)
      i. Thermostats
      ii. Flow Meters

6. Shared Equipment
   i. All equipment with both airside and piping connections
      i. Air Handling Units
      ii. Fan Coil Units
      iii. Reheat Boxes
      iv. Chilled Beams

7. Major Levels and Grids

8. Linked Models

   c. Modeled objects
      i. It is important for all created/imported content to be assigned to the appropriate
category/subcategory within Revit.
      ii. The following objects must be modeled to dimensional and categorical accuracy:
         1. Major Pieces of Equipment (Air Handling Units, Heat Exchangers, Chillers,
Boilers, Central Plant Equipment, etc)
         2. Zone Level Equipment (Terminal Boxes, Pumps, Fans, Fin Tube, etc)
         3. Diffusers, Grilles, etc
         4. Ductwork
5. Piping greater than 4” in diameter

iii. The following items may be modelled schematically:
   1. Piping less than or equal to 4” in diameter
   2. Small Distribution Equipment (Control Valves)
   3. Control Point Locations (Thermostats, Duct Pressure Sensors, etc)

iv. Nomenclature
   1. Major Equipment shall be tagged on all plan and sections views and reference a schedule
   2. Distribution Equipment shall be tagged on all plan and sections views and reference a schedule
   3. Ductwork shall be tagged to indicate system name and size
   4. Piping shall be tagged to indicate system name and size
1. Building Model Definition
   a. A Building Model is created and/or modified at the end of a project. This essentially collects a required set of Design Models into one single Building Model. Each campus building shall have only one Building Model (i.e. West Clinics, CFAC, North Tower, etc), and therefore this model must be refined when renovations are completed.

2. Generated Views
   i. The following views will be linked into the Building Model using the corresponding view templates generated in the Design Model:
      1. Life Safety
      2. Occupancy Plans
      3. Department Plans
      4. Fire Protection One-lines
      5. HVAC
      6. Medical Gas One-lines
      7. Plumbing Plans
      8. Electrical Plans

3. Required Worksets
   a. The worksets required for the building model will mirror the file-link structure of the linked Design Models. Each Design Model shall occupy a separate workset of the same name.

4. Required Views
   a. The required views created in each Design Model shall be linked onto sheets for quick access from within the Building Model. The views are as listed below:
      i. Life Safety
      ii. Occupancy Plans
      iii. Department Plans
      iv. Structural Plans
      v. Fire Protection Plans
      vi. HVAC Plans
      vii. Medical Gas Plans
      viii. Plumbing Plans
      ix. Electrical Plans
b. The matrix below describes the major elements that must be visible in each of the required views. It is important that the Building Model is limited to these elements so the linked Collector Model does not become too large and unwieldy to work with.
### Building Models: Purpose and Definition

#### Section 4.1

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5. Updates to the Building Model (post as-built)
   a. Each building model is intended to be an updated BIM representation of the campus’ condition. This requires each model in the hierarchy to be updated as needed when facilities are renovated or expanded.
   b. The file structure is set up so that all modeled information resides exclusively in the Design Models. Thus, updating information should begin at this level.
   c. In the event that a portion of a building is slated for renovation or expansion, the design team involved will, based on careful consideration, either:
      i. Inherit the current Design Models and use them as a starter file for their working project BIM model; Upon completion, they would replace the original Design Model with an updated version for re-linking into the Building Model. For buildings that have already been fully modeled in BIM (i.e. CFAC), this approach is advisable.
i. Create a **new** Design Model that coordinates scope of work appropriately with the existing Design Models; Upon completion, linking new Design Models into the Building Model shall result in an accurate representation of the facility. For existing buildings that have not been modeled in BIM, this approach will be necessary. In some cases, this approach may also be advisable for buildings that have already been modeled in BIM, but the project team shall determine the best approach collaboratively.
d. The Design Models (re)inserted into the Building Model should have all linked views reconciled as needed.
1. Working Model Purpose and Definition:
   a. The campus as-built drawing information currently exists primarily in 2D AutoCad drawing format. Going forward, the intent is to utilize BIM to capture additional facilities data and have a 3D as-built model that will become part of an overall campus wide BIM. The Building / Campus BIM will be updated on a project by project basis as areas of the campus are renovated.
   b. To achieve this goal, two types of collector models (i.e. models that link together other models) will be used (illustrated in the diagram below). Requirements for these models can be found in the following sections. These models will include only the pertinent information specific to regularly requested output from Froedtert.

2. File Storage
   a. Contact Froedert for access to the files shown above.

3. Collector Model Manager
   a. The collector model manager is responsible for assembly of all transmitted design models (from all disciplines) into the collector model environment. Any minor alterations to the transmitted design model will be made by this team. This includes but is not limited to life safety, room codes, and asset tags.
1. The **Campus Model** is managed by Froedtert or a consultant to Froedtert. This model contains links to each Building Model, and therefore allows for collected views of the entire campus by level. Formerly known as a Collector File, the Campus Model is simply a device to facilitate campus master drawing views which exhibit the following:
   a. Occupancy Plans
   b. Life Safety Plans
   c. Department/Cost Center Plans
   d. Generated Views

2. Required Worksets
   a. The worksets required for the building model will be as follows:
      i. Architectural
         1. Existing
         2. Core and Shell
         3. Interiors
         4. Major Levels and Grids
         5. Life Safety
      ii. Structural
      iii. Mechanical
      iv. Electrical
      v. Plumbing

3. Changes and updates to the Campus Model (post as-built)
   a. See also section 4.1 – 5.
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Requirements for implementing, maintaining, and updating the project schedule:
      a. Schedule Coordination & Timing
      b. Master Project Schedule
      c. Phase Schedules
      d. Look-Ahead Schedules

1.2 RELATED SECTIONS

A. Reference 01 31 13 – Project Administration Requirements
B. Reference 01 36 00 – Medical Equipment Coordination
C. Reference 01 37 00 – Coordination of Work by Owner

PART 2 PRODUCTS

A. Not used.

PART 3 EXECUTION

3.1 SCHEDULE COORDINATION & TIMING

A. Contractor shall utilize a comprehensive project schedule to plan, coordinate, and manage all project activities. Contractor and subcontractors shall complete their work in accordance with the CPM schedule and/or current job progress.

B. Contractor may use any scheduling software or program available to them. At a minimum, the following schedules must be developed, updated, and distributed throughout the course of the project:
   1. Initial Baseline Project Schedule (Master Project Schedule)
   2. Phase Schedules (project dependent)
   3. Look-ahead schedules (if timing and duration promote use)

C. Project Milestones:
   1. Mobilize: To be confirmed with Owner
   2. Start Construction: To be confirmed with Owner
   3. Substantial Completion: To be confirmed with Owner
   4. Final Completion: To be confirmed with Owner

D. Contractor shall assist subcontractors and/or Owner in the expediting of their material and equipment deliveries without assuming responsibility for said deliveries. Upon request, Contractor shall furnish copies of their equipment and material purchase orders, including scheduled shipping and receiving dates, to Owner’s designated representative.

3.2 MASTER PROJECT SCHEDULE

A. Upon award, Contractor shall prepare and distribute a master project schedule. Prior to publication, the Master Project Schedule shall be reviewed with Owner and Architect to obtain concurrence. If it becomes apparent from the monthly updated schedule that any activity completion date may not be met, Contractor shall take some or all of the following actions at no additional cost to Owner:
1. Increase construction manpower in such quantities that will substantially eliminate the backlog of work and put the project back on schedule.
2. Increase the number of working hours per shift, shifts per working day, working days per week, or the amount of construction equipment, or any combination of the above, which will substantially eliminate the backlog of work and put the project back on schedule.
3. Reschedule activities to achieve maximum practical concurrence of activities to put the project back on schedule.

B. If Contractor fails to take any of the above actions within forty-eight (48) hours after receiving written notice, Owner shall take action to attempt to put the project back on schedule, and deduct the cost of such actions from the compensation which is or will become due the Contractor.

C. At a minimum, the master project schedule must include Owner and Architect activities in addition to the Contractor’s construction activities. Such activities include, but are not limited to:
   1. Notice to Proceed with Design
   2. Design Durations (ex. SDs, DDs, and CDs)
   3. Estimate Book Dates
   4. Bid Packages (if applicable).
   5. Plan Review & Approval by Authorities Having Jurisdiction (AHJs)
   6. Construction Permit Received
   7. Subcontractor Solicitation, Bid, and Award Activities
   8. Owner Contracting Activities and Milestones (NTP, Awards, GMP, etc.)
   9. Long-lead Material Procurement
   10. Construction Activities, Major Phase Elements
   11. Startup, Testing, and Commissioning Activities
   12. Owner Relocation and Move-out/in Activities
   13. Medical Equipment Installation and Training Activities
   14. Patient Live
   15. Project Closeout, Inspection, and Turnover Activities

D. The master project schedule must be updated at regular intervals as defined by the project team, and distributed with the monthly report to the Owner.

3.3 PHASE SCHEDULES

A. Contractor shall prepare and distribute various phase schedules as required to comply with the master project schedule and assist with completion of the work activities.

B. Phase schedules may be required to identify any of the following portions of the work:
   1. Location-specific (i.e. floor, wing, room, area, etc.)
   2. Scope of work (i.e. demolition, structure, enclosure, finishes, etc.)
   3. Type of work (i.e. drywall, flooring, paint, etc.)

C. Phase schedule distribution, timing, and frequency shall be discussed with Contractor and Owner for appropriateness, level of detail, and applicability.

3.4 LOOK-AHEAD SCHEDULES.

A. Contractor shall prepare and distribute various look-ahead schedules as required to comply with the master project schedule and assist with completion of the work activities.

END OF SECTION
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Requirements for implementing, maintaining, and managing submittals throughout the project:
      a. Submittal Coordination & Timing
      b. Electronic Format & Submission Procedures
      c. Hardcopy Format & Submission Procedures

1.2 RELATED SECTIONS

A. Reference 01 31 13 – Project Administration Requirements

PART 2 PRODUCTS

A. Not used.

PART 3 EXECUTION

3.1 SUBMITTAL COORDINATION & TIMING

A. Contractor shall prepare a list of proposed project submittals at the beginning of the project and submit to Architect and Owner for review, comment, and approval. This proposed submittal log shall contain all required Architect’s submittals, along with facility specific submittals that may be required by Owner.

B. Contractor may make suggestions to Architect and Owner for submittals that may not be required, and document same upon approval and discussion.

C. Contractor shall prepare a look-ahead submittals submission schedule and publish to Architect on a regular basis as determined between Owner, Contractor, and Architect, depending on project scope, timing, and complexity.

D. Contractor shall coordinate submission of all submittals with Architect directly, unless the submittal requires the approval, comments, and coordination of Owner, Owner’s vendors, or Owner’s suppliers. As such, Contractor is expected to coordinate the review, approval, and distribution of all project submittals to parties that require information contained in the submittal.

E. All submittals must be transmitted under cover, letter, or equal indicating:
   1. Project Name and Number
   2. Name and address of Contractor or subcontractor
   3. Contact information and phone number of person preparing submittal
   4. CSI Section or unique submittal tracking number
   5. Date of submittal (or version)

F. For submittals that contain multiple variations of products for a specific submission, Contractor shall indicate which specific product/item is being used for the project.

G. Contractor shall review, in detail, all subcontractor submittals for general conformance with the contract documents and upon approval, forward to Architect / Engineer and/or Owner. Pass-through and rubber-stamping of submittals by Contractor will not be tolerated.
H. Submittals shall be routed through Contractor, to Architect, and back again. Each entity must review the submittal. Submittals sent out of sequence or without the appropriate reviews will be rejected.

I. Corrections, modifications, and resubmittals (e.g. of shop drawings) will not be considered extra work. A submittal is not considered reviewed unless it bears the stamp and signature of the Architect.

J. Owner and Architect reserve the right to reject any work, materials, or equipment fabricated or installed without the appropriate submittals.

K. Wherever possible, shop drawings and product data shall be submitted at the same time. Partial lists may not be considered.

L. Submittals, if appropriate, shall show layout, location, details, attachment means, abutment conditions, joint conditions, installation, schedules, setting and manufacturer’s literature and technical data of the parts of work specified. Make shop drawings accurately to scale to show pertinent features of the item and connection to adjacent or adjoining work.

M. Prior to submittal for review, Contractor shall use means necessary to coordinate materials, including following procedures:
   1. Determine and verify the field dimensions and conditions, materials, catalog numbers and similar data. Indicate deviations from the contract documents, if any, on the submittal and coordinate with Architect.
   2. Coordinate work as required with trades involved. Submit copies to other trades as appropriate whose work may be affected.

3.2 ELECTRONIC FORMAT & SUBMISSION PROCEDURES

A. Contractor shall prepare, submit, transmit, and review all submittals in electronic format. Files are to be submitted in Adobe Acrobat file format (.pdf) or compatible format. Note, all project documentation must be submitted electronically at the completion of the project consistent with Section 01 77 00 – Owner’s Project Closeout Requirements and Section 01 78 00 – Closeout Submittals.

B. Items that can and should be submitted in electronic format include, but are not limited to:
   1. Shop Drawings.
   2. Product Data
   3. Manufacturer’s Instructions
   4. Schedules
   5. Certifications
   6. Warranties, Guarantees, etc.
   7. Other information as appropriate

C. If required by Owner, Contractor shall implement, maintain, and update a service for submission, review, and approval of project submittals (ex. Submittal Exchange, Newforma, Buzzsaw, etc.). If Contractor already has an electronic review process or service in place, confirm with Owner’s designated representative that this is acceptable for use on this project. Costs for incorporation of this technology transfer application/service shall be the responsibility of Contractor.

D. Contractor shall review and apply submittals with an electronic stamp certifying the information contained in the submittal complies with the contract documents including verification of manufacturer, product, dimensions, and coordination of information with other portions of the work.

3.3 HARDCOPY FORMAT & SUBMISSION PROCESS

A. If electronic submission is not possible, Contractor shall prepare, submit, transmit, and review all submittals in hardcopy format

B. Items that can and should be submitted in hardcopy format include, but are not limited to:
1. Color Samples
2. Color Charts
3. Physical Material Samples
4. Mock-Ups
5. Other information as appropriate

C. Samples. Samples shall consist of physical examples furnished by Contractor in sufficient size and quantity to illustrate materials, equipment, or workmanship and to establish standards for which the work is to be judged.

D. Mockups. To establish the acceptable level of quality, Contractor shall be responsible for producing various sample construction items and mockups as required for the following items:
   1. Exposed Concrete (including finish)
   2. Architectural Concrete (cast-in-place)
   3. Precast Concrete
   4. Ceramic Tile
   5. Seamless Floors
   6. Painted Walls and Ceilings
   7. Vinyl Fabric Wallcoverings
   8. Architectural Woodwork
   9. Other items as appropriate where variation in quality may be of concern (like doors)

E. When possible, Contractor shall produce mockups as part of the final construction of the project.

F. Contractor shall coordinate with Architect and Owner for means for transmission of hardcopy submittals.

END OF SECTION
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes facility specific information such as:
   1. Departmental Contact Information
   2. Facility Emergency Codes
   3. Fire Emergency (Code Red)

B. Section also Includes:
   1. Contractor’s Hospital Handbook / Training
   2. Identification of Contractors
   3. Security, Keys, and Access to Special Areas
   4. Welding, Torching, and Soldering Work (Hot Work Permitting)
   5. Fire and Smoke Enclosures
   6. Elevator Use
   7. Off-Hours and Off-Shift Work
   8. Loading Dock Use
   9. Material Delivery & Construction Logistics
  10. Cellular Phones and Other Transmitting Devices
  11. Pre-Existing Conditions & Damage
  12. Ceiling Protection and Ceiling Work
  13. Access Panels
  14. Storage of Materials

1.2 DEPARTMENTAL CONTACT INFORMATION

A. Hospital Emergency Number 414-805-2828 (52828 from house phone).
   Use this number to report any medical, fire, or security emergency at Froedtert Hospital.

B. Safety Manager 414-805-7755

C. Infection Control Coordinators 414-805-3608

D. Security Department 414-805-7070

E. Plant Operations Department 414-805-2640

F. Project Manager: Plant Operations 414-805-9045

G. Project Manager: Froedtert Health 414-805-2781

1.3 DEFINITIONS

A. “Occupied Space”. Any area within the confines of a building owned or controlled by Froedtert Health. Also includes new building construction that has an open passage way to the existing hospital.

PART 2 EXISTING FACILITY CODES

2.1 FACILITY EMERGENCY CODES

A. Froedtert has developed a series of codes to alert hospital staff to emergency events. These codes are announced over the public address system (PA) proceeded by an alert tone. These codes are contained the “code card” which is issued along with the ID card. Where the alert tone is used, or a code announcement is heard, Contractor shall listen closely to the information given. A list of existing facility codes are as follows:
1. Code Red = Fire
2. Code 4 = Medical Emergency
3. Code 12 = Dangerous Situation
4. Code 33 = Bomb Threat
5. Code 1000 = Emergency Evacuation
6. Code Purple = Infant Abduction
7. Code Yellow = Mass Casualty Event
   Level 1 = Advisory
   Level 2 = Alert
   Level 3 = Assistance
   Level 4 = Activation
8. Code Grey = Weather Watch
9. Code Black = Weather Warning
11. Code White = Emergency Comm Center Relocation
12. Incident Command = Activation of Incident Command
13. All Clear = Resume Normal Activities

Note: In all instances, Contractor shall shutdown activities and wait for direction(s) by Hospital Staff.

2.2 FIRE EMERGENCIES (CODE RED)
A. If a Fire is discovered:
   R Remove. Remove anyone from immediate danger.
   A Alarm. Pull the nearest fire alarm and call 52828.
   C Contain. Close all doors in the area; clear corridors.
   E Evacuate. Relocate beyond the next set of fire doors.

Note: In all instances, Contractor shall shutdown activities and wait for direction(s) by Hospital Staff.

PART 3 EXECUTION

3.1 CONTRACTOR’S HOSPITAL HANDBOOK / TRAINING
A. Contractor shall review the “Contractors Hospital Handbook” prior to working on property owned or controlled by Owner. Copies will be given to Contractor by Owner’s designated representative at the beginning of the project.

B. Contractor’s personnel must attend one session of the Contractor Orientation Program at the first offering after they start work at the hospital. Information as to the dates, times, and locations of these safety programs is available from the Plant Operations Department (805-2640).

3.2 IDENTIFICATION OF CONTRACTORS
A. Contractor’s personnel are required to wear a Froedtert ID badge when working in occupied spaces. All IDs must be clearly visible and must be presented immediately to any Security Officer requesting it. IDs remain the property of Froedtert Hospital and must be returned the Security Department when the individual has completed the term of their work at the hospital.

B. Contractor shall obtain IDs from the Security Department (1st Floor West Clinics), Monday – Friday from 7:30AM – 4:30 PM. A $5.00 refundable deposit is required. Failure to obtain or display an ID may result in the individual being directed to leave hospital property. Reference 01 35 13A ID Badge Request Form.

3.3 SECURITY, KEYS, AND ACCESS TO SPECIAL AREAS
A. Security. Contractor is responsible for the security of all tools, materials, and equipment used as part of the project. Contractor shall secure doors to the construction site at the end of every shift or at that end of every work day.
B. Construction Cores. Contractor shall obtain specific Owner-issued construction cores for doors used during the project activities from the Plant Operations department. Review of the specific doors and construction cores shall be coordinated by Contractor at the beginning of the project.

C. Pad Locks. If padlocks are to be used on doors within the project site, Contractor shall obtain Owner-issued pad locks from the Plant Operations Department.

D. Keys. Contractor shall be issued keys as necessary for access to the work and storage areas. Contractor will be held responsible for their keys, and return as part of the project closeout submittal. Contractor shall prepare and maintain a record or log of those construction personnel that have requested keys for the project. Upon completion of the project, record of the keys issued shall be submitted to Owner’s designated project representative along with all keys.
   1. Should re-keying be required due to Contractor’s lost, stolen, or misplaced keys, the cost thereof will be billed to Contractor.
   2. Utilize the key request form provided by Plant Operations for building specific keys.
   3. Reference Exhibit 01 35 13B – Key Request Form.

E. Access. Contractor shall contact Owner’s designated representative for approval to access areas of the facility. Necessary access will be coordinated with individual departments by Owner on behalf of Contractor.
   1. Contractors should arrange with Owner their accessibility needs for the project. Keys, card access, etc. will be facilitated by Plan Operations Department.
   2. Access to mechanical equipment areas is restricted to Plant Operations, Biomedical Engineering, Information Technology, and Security Officers.
      a. Single or Limited Basis. Contractor shall obtain permission from the head of Plant Operations, Biomedical Engineering, and Information Technology Departments.
      b. Regular Basis & Desire Keys. Contractor shall obtain permission from the head of Plant Operations, Biomedical Engineering, and Information Technology Departments.
   3. Department(s) will determine the appropriateness of the request and complete the required documentation for issuance of keys or access control card.
   4. Department granting permission will educate the non-hospital staff members to the security and safety requirements.

F. Notification. Owner shall be made aware of all contractors working in the facility. Contractor shall keep a daily log of individuals working on the project that shall be made available to Owner at their request.

3.4 WELDING, TORCHING, AND SOLDERING (HOT WORK PERMITTING)

A. Contractor shall obtain a “Hot Work Permit” prior to any cutting, welding, torching, soldering, or other work that uses and open flame or causes sparks or smoke. Permits are available from the Plant Operations Department.

B. Contractor shall fill out permit completely, prominently display at the work area, and follow guidelines set forth in the Plant Operations.

C. Upon completion of the hot work, Part A of the permit must be returned to Plant Operations to close out the permit.

3.5 FIRE AND SMOKE ENCLOSURES

A. Contractor acknowledges smoke and firewalls are located throughout the building. Smoke walls have been designed and identified with a one-hour fire rating. They are continuous from outside wall to outside wall and floor slab below to floor slab above.
   1. Smoke doors are on automatic door closures installed wherever a smoke envelope passes through a corridor or doorway. Firewalls have a two-hour rating.
   2. The doors located in a firewall have a positive latching device attached.
B. Contractor shall not disrupt the integrity of a rated partition or assembly. All work on smoke partitions, fire partitions, smoke doors and fire doors must maintain the integrity of the particular unit or assembly. All breeches must be patched.
   1. Conduit, raceways, air handling ducts or other items that may pass through the partition must be installed to maintain the protection feature of the wall.

C. Contractor shall inspect the integrity of existing fire and smoke enclosures within the construction zone. This includes existing fire and smoke enclosures that constitute the walls to identify the project limits. Contractor shall be expected to document any existing deficiencies and discuss the correction of said deficiencies with Owner. It is expected that while Contractor is working in the area of the deficiency, it be corrected by Contractor.

D. There are numerous fire and smoke doors through the facility. Most of these doors are maintained in an open position by an electronically supervised fire alarm.
   1. This system will release and close doors whenever and alarm has been initiated. Smoke and fire doors are not to be wedged, blocked, or held open in any other way.

E. Penetrations through smoke and fire walls MUST be sealed with an approved, tested, fire-rated material immediately after the penetrations are made. In the even penetrations are not sealed immediately, Contractor will have 24 hours to fill the penetration. If the penetration is not sealed by Contractor, hospital Plant Operations Department will seal the penetration and deduct the labor and materials cost from Contractor’s application for payment. Repeat offenses will be considered when awarding future work to Contractor. Unless specified elsewhere in the project documents, Contractor shall use all listed Hilti products and assemblies when sealing penetrations through rated partitions.

F. Contractor shall abide by the current facility Life Safety Plans showing fire and smoke wall rating locations. Copies of these plans are available via the Plant Operations Department.

G. Should Contractor be required to breach any fire or smoke enclosure, Contractor shall identify the planned breach and follow the requirements of the Interim Life Safety (ILSM) plan.

3.6 ELEVATOR USE FOR CONSTRUCTION SITE ACCESS

A. Upon award, Contractor shall work with Owner’s designated representative to prepare and elevator use plan in order establish and identify elevators in the facility that are available for use for construction activities. Unauthorized use of elevators other than those in the Material Delivery and Construction Logistics (MDCL) Plan is prohibited.

B. Contractor personnel shall vacate elevators if a patient or medical transport is waiting on a landing and requires use of a car.

C. Transportation of labor, materials, and debris is restricted to elevators designated. Contractor shall provide protection of elevators designated. This includes floors, walls, and ceilings as applicable to the project requirements.

3.7 OFF-HOURS AND OFF-SHIFT WORK

A. Contractor acknowledges that the hospital is an existing occupied facility, and disruptions to Owner’s ongoing operations will not be tolerated. As such, Contractor shall reasonably infer and include that some construction activity must occur during off-hour or off-shift.

B. Off-hours and off-shift work is any work that must occur outside the normal working hours of 7:30 AM – 3:00 PM, Monday – Friday.

C. All off-hour or off-shift work must be cleared by Owner’s designated representative and the Security Office. Contractor shall ensure that all off-hour and off-shift work is properly supervised and coordinated to minimize disruption.
3.8 LOADING DOCK USE
A. Contractor shall coordinate all use of hospital loading dock with Owner’s designated representative and loading dock personnel. Identification of loading docks for construction use shall be included in the Material Delivery and Construction Logistics Plan.

3.9 MATERIAL DELIVERY AND CONSTRUCTION LOGISTICS
A. Contractor shall prepare and submit, including narratives and visuals/graphics, a written Material Delivery and Construction Logistics (MDCL) Plan. The MDCL Plan shall include all elevators, construction personnel travel routes, loading docks, and delivery coordination points for the project. The MDCL Plan shall be reviewed and approved by Owner’s designated representative prior to construction activities commencement.
B. Contractor shall identify routes to avoid areas housing sensitive occupants and visitors.

3.10 CELLULAR PHONES AND OTHER TRANSMITTING DEVICES
A. Contractor shall be allowed to use personal communication devices in any area of the hospital except those posted to the contrary or any closer than three (3) feet from any electronic medical device or electronic diagnostic equipment / laboratory medical equipment.
B. Two-way radio communication devices must maintain an distance of ten (10) feet from medical electronic equipment.

3.11 PRE-EXISTING CONDITIONS AND DAMAGE
A. Upon written request by Contractor, representatives of the Owner will be available, prior to commencement of the work, to survey the work areas for pre-existing damage.
   1. Any damage found by this survey will be recorded and will be Owner’s responsibility to repair.
B. Damage to hospital property or equipment caused by Contractor must be reported to Owner’s designated representative on the same day as the occurrence. It is the Owner’s expectation that Contractor make good any damages that may have resulted from work performed by Contractor. Any repairs made to areas damaged by Contractor may be deducted from Contractor’s application for payment if remedied or corrected by Owner’s designated representative.

3.12 CEILING PROTECTION & CEILING WORK
A. Contractor shall provide ceiling protection if a surface below a certain space a lay-in ceiling. If working above people down below becomes unavoidable, Contractor shall provide temporary work surfaces to provide a safe working platform and protect the ceiling and spaces below from falling debris, objects, and materials.
   1. Contractor shall take all necessary precautions to protect the people and spaces below from injury due to Contractor’s operations while working in the ceiling.
   2. Contractor shall replace all ceiling tile on a daily basis, unless further measures are approved by Owner’s designated representative.
B. Contractor shall review any work above the ceiling or that involves removal of ceiling tiles with the Owner’s designated representative. Ceiling tiles removed to allow for work above the ceiling must be replaced immediately upon completion of the work. No ceiling tiles are to be left open at the end of the day.
C. Reference Section 01 56 15 – Airborne Contaminants Control for further information and requirements for ceiling protection and ceiling work.
3.13 ACCESS PANELS

A. Access panels must be kept locked. Whenever Contractor is performing work in one of these panels, caution should be used to prevent accidental entry by patients, visitors, or hospital staff members.

B. Contractor shall close all access openings and latch/lock when unattended.

3.14 STORAGE OF MATERIALS

A. Contractor shall store materials only in areas designated and approved by Owner’s designated representative. Contractor shall identify material storage areas on the Material Distribution and Construction Logistics (MDCL) Plan. Owner supplied or Owner-direct material storage shall be included in the MDCL Plan.

B. Plant Operations may have limited availability for on-site storage of material. However, in general, Contractor shall assume that all material storage shall be within the project limits. Please coordinate any potential locations with Plant Operations prior to bringing materials on-site.

END OF SECTION
Froedtert Hospital

REQUEST FOR ID BADGE

APPLYING FOR:  ____ ID / ACCESS CARD  ____ ID CARD ONLY  ____ ACCESS CHANGE

PRINT ALL INFORMATION  Cell # __________________________

Name: __________________________________________  PH/Ext __________________________

Dept. / Unit: ______________________________________  Start Date: ______________________

Title: ____________________________________________  Employee #: ______________________

Employed By: □ FROEDTERT  □ MCW  □ VOLUNTEER
  □ STUDENT  □ OTHER ________________________

Status: □ SFT  □ SPT  □ OPT  □ TEMP  □ FLOAT

Shift: □ FIRST  □ SECOND  □ THIRD  □ ROT

Vehicle Info- 1) Make: ____________________________  2) Make: ____________________________

Model: ____________________________  Model: ____________________________

Plate: ____________________________  Plate: ____________________________

State: ____________________________  State: ____________________________

I understand that I am required to pay a $5 (non-Refundable) fee before I receive my
ID/access card. I further understand that I must return the card to Security in person when
no longer working at Froedtert. I also understand that if I lose or damage this card, I am
required to replace this card and pay an additional $20.00 (non-refundable) before a
replacement card will be issued. I further understand that parking in areas other than my
assigned location may result in the issuance of a parking ticket.

________________________________________  _________________________

Signature  Date

FOR OFFICE USE ONLY

Parking assigned to: □ West Structure  □ West Surface  □ Physician

□ East Structure  □ East Surface  □ State Fair

Card Number: ____________________________  Payment Amount:__________  Type:__________

Access Group should mirror what staff member_______________________________

Manager Signature ________________________________
KEY REQUEST FORM

The Dept. Manager must approve each key request. The staff person who will receive the key, will be responsible for picking up and signing for the key(s). Return completed key request form to the Security Badging Office for processing. Allow 1-2 weeks for completion. Fill out one Key Request Form per person. Additional forms do not need to be filled out for multiple key(s) for the same person.

REQUIRED INFORMATION

<table>
<thead>
<tr>
<th>New:</th>
<th>Replacement:</th>
<th>Door #:</th>
</tr>
</thead>
</table>

Requestor Information

Name (First and Last):  
Title:  
Employee Number:  
Manager’s Name:  
Employee #:  
Middle Initial:  
Company:  
Phone Number:  
Manager’s Title: 

Key Information

Type of Key:  
- Building Master  
- Area Master  
- Individual Door  
- File Cabinet  

Key Location(s):  
- Lab Bldg.  
- Pavilion Bldg.  
- E. Clinic  
- W. Clinic  
- N. Tower  
- Hospital  
- Cancer Cntr  
- CFAC  
- Blue Mound Campus Hospital  
- Medical Ofc Bldg.  

APPROVED BY:

Printed Name:  
Printed Title:  
Signature:  
Date:  

KEY RECIPIENT AGREEMENT

By receiving these key/keys, I agree:

A. Not to give or loan the key to others, and to safeguard and store the key securely;
B. To use the key for authorized purposes only;
C. Acknowledge that any key issued by Froedtert and is the sole private property of Froedtert;
D. To return any such key upon request by Froedtert or Security;
E. Not to make any attempts to copy, alter, duplicate or reproduce any Froedtert key;
F. If I lose the key(s) I could be charged a $25 replacement fee per key/lock change to all doors using that key #;
G. To report lost, stolen, or missing keys immediately to your Department Leadership and to Security

By signing below, I agree to and understand the statements above.

Signature:  
Date: 

FOR SECURITY USE ONLY

<table>
<thead>
<tr>
<th>KEY ISSUE</th>
<th>KEY RETURN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>Date:</td>
</tr>
<tr>
<td>Key(s) Issued:</td>
<td>Returned by (Name):</td>
</tr>
<tr>
<td>Issued by (Name):</td>
<td>Key Not Returned: _N/A _Lost _Stolen _Broken</td>
</tr>
<tr>
<td>Issued by (Title):</td>
<td>Explanation:</td>
</tr>
<tr>
<td></td>
<td>Received by (Name):</td>
</tr>
</tbody>
</table>

Notes:
SECTION 01 35 23
SAFETY REQUIREMENTS FOR CONTRACTORS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Requirements for implementing, maintaining, and managing a site specific safety program through the duration of the project including:
      a. Site Specific Safety Program
      b. On-Site Safety Professionals
      c. Return to Work / Injury Case Management Plan
      d. Silica Protection Policy
      e. Substance Abuse Screening
      f. Safety Training
      g. Safety Audits
      h. Housekeeping
      i. Use of Equipment

1.2 RELATED SECTIONS

A. Reference 01 31 13 – Project Administration Requirements

PART 2 PRODUCTS

A. Not used.

PART 3 EXECUTION

3.1 SITE-SPECIFIC SAFETY PROGRAM

A. Contractor shall implement and maintain a project specific safety program for the duration of the project. Contents of the Site Specific Safety Program include, but are not limited to:
   1. Safety Documentation – written policies, procedures, instructions, and programs for use during the project.
   2. Safety Auditing – Daily safety audit of the project site focused on identifying hazards and elimination of safety risks. Copies of daily safety audits shall be made available to Owner upon request.

B. At a minimum, Contractor is required to institute procedures, policies, and programs to facilitate the following with regards to project safety:
   1. Written site-specific safety program before the start of work.
   2. Written job hazard analysis (“JHA”) for each portion of the work.
   3. Hazard Communication (HAZCOM) program for the Project, the requirements for which are Section 01 35 43 – Environmental Procedures.
   4. Daily written pre-task plans for each item of work, or more frequently as conditions at the Project change or require
   5. Post-accident investigations for any accidents that occur during completion of the Work and investigations of near-miss incidents related to the Work.
      a. An accident is any incident that results in any injury to any worker or any property damage caused by actions performed during completion of the Work.
      b. A near-miss is any incident that has all the attributes of an accident but, by mere chance, injury to a worker or property damage was avoided.
      c. Investigations shall be documented, addressed, communicated, and closed.
6. **Personal Protective Equipment (PPE).** All workers are required to wear eye protection, long pants, a sturdy working boot and a hard hat at all times while at the Project. Additional PPE may be required when working on campus grounds (high-visibility vests) or as work circumstances change or require.

7. **Contractor shall implement requirements for positive fall restraint and fall protection for all fall hazards over six feet.** Contractor acknowledges the requirement for positive fall restraint for its personnel in aerial lifts.

C. Contractor shall document the site specific safety plan and provide a copy to Owner for review, comment, and approval prior to starting work.

3.2 **ON-SITE SAFETY PROFESSIONALS**

A. Contractor shall provide on-site safety professionals at the project. Safety professionals can consist of company safety representatives, members of the project team,

B. Contractor must have a project-specific safety professional on site part-time when the workforce is below 50 craft workers and full-time when the workforce reaches or exceeds 50 workers.

C. Contractor shall require that subcontractor safety personnel make routine and periodic visits as required by the progress of work. Additionally, Contractor shall require that subcontractor on-site safety professionals are also required on a proportional basis if the number of individual subcontractor craft workers reaches or exceeds 50 craft workers.

3.3 **RETURN TO WORK/INJURY CASE MANAGEMENT PLAN**

A. Contractor shall implement and maintain a written site-specific return to work/injury case management plan which shall detail goals and policies on returning employees to work following an injury. Contractor’s policy may include offering light duty or transitional work following an injury (if such work or duty is possible given the nature of the injury). Owner may object to the plan if, in its reasonable opinion, the plan does not establish reasonable actions or goals on returning employees to work or light duty following an injury. Submission of the plan to Owner by Contractor shall not be deemed to be agreement or assent by Owner to any portion or part of the plan.

3.4 **SILICA PROTECTION POLICY**

A. Contractor shall implement a silica protection plan for the Work which shall meet or exceed all laws and regulations (including applicable OSHA regulations) related to the protection of its employees, workers, or existing patients, staff, and visitors against exposure to silica levels in excess of levels permitted by laws and regulations (including applicable OSHA regulations).

B. Contractor is expected to implement control measures during silica producing activities to mitigate and eliminate silica exposure hazards.

3.5 **SUBSTANCE ABUSE SCREENING**

A. **Definitions.** In this article:

1. **Drug** means: A controlled substance, as defined in Schedules I through V of Section 202 of the Controlled Substances Act, 21 U.S.C. § 812, including cocaine, opiates, marijuana, amphetamines, phencyclidine (PCP), barbiturates, benzodiazepines, propoxyphene, methadone and methaqualone.

2. **Intoxicating substance** means: Drug(s) or alcohol or any substance, the use of which, impairs work behavior or performance of work obligations at the Project in a manner to be unsafe.

3. **Under the influence of alcohol or an intoxicating substance** means: (1) the presence of alcohol in the individual’s system that equals or exceeds a blood alcohol content of .04 percent; (2) the presence of any drug in the individual’s system; or (3) the presence of an intoxicating substance in the individual’s system.
4. **Accident** means: An incident at the Project that involves: 1) personal injury which necessitates treatment by a medical professional or that is reasonably expected to result in lost work time; or 2) damage to property at the Project.

5. **Reasonably significant near miss** means: An incident that has all the attributes of an accident but, by mere chance, significant injury or death did not occur or significant property damage was avoided.

6. **Reasonable cause** means: A basis for forming a belief based on specific facts and rational inferences drawn from those facts that lead a Subcontractor supervisor or manager, or a Mortenson employee, to reasonably suspect that a Subcontractor employee is under the influence of drugs, alcohol or an intoxicating substance while at the Project or while performing the Work. Such specific facts or rational inferences may be drawn from an employee’s behavior, performance, appearance, speech, or bodily odors while at the Project or while performing the Work.

7. **Drug and alcohol-free workplace.** In order to achieve a drug- and alcohol-free workplace, Subcontractor’s employees shall not perform the Work or be present at the Project-site while under the influence of drugs, alcohol or an intoxicating substance. Subcontractor’s employees shall not bring to the Project any drugs or alcohol.

8. **Pre-Placement at Project.** By assigning employees to work at the Project, Subcontractor represents that it has conducted substance abuse screening of such employees to screen for the presence of drugs or alcohol.

9. **Post-Accident Testing.** Subcontractor shall immediately (or as soon as reasonably practicable) perform a drug and alcohol screen on all of its employees who caused or contributed to an accident or a reasonably significant near-miss at the Project.

10. **Reasonable Suspicion Testing.** Subcontractor shall perform drug and alcohol screening on its employees upon reasonable cause.

    B. Contractor shall not permit any worker or employee that tests positive following any of the above screening procedures to perform any portion of the Work or be present at the Project at any time through final completion of the Project.

    C. If the Owner institutes a Project specific drug and alcohol screening plan, Owner shall inform Contractor of the project specific screening plan and Contractor agrees to follow such project specific screening plan.

### 3.6 SAFETY TRAINING

A. Contractor shall require each worker at the Project or completing the Work attend mandatory first-day, first-hour orientation. Contractor shall document all attendees and provide written guidelines for the project.

B. Contractor shall conduct daily safety meetings or daily toolbox safety talks at the Project for workers at the Project to discuss safely performing any specific items of Work anticipated during the day of the meeting and reminding employees to perform all Work in a safe manner.

### 3.7 SAFETY AUDITS

A. Contractor shall conduct daily safety inspections and audits to determine if the Work is being performed in a safe manner and document, in writing, the results of such inspections and audits.

B. Reference 01 35 23 Exhibit A – Site Safety Audit Form.
3.8 HOUSEKEEPING

A. Contractor shall create and submit to Owner’s Designated Representative a housekeeping management plan that addresses adequate and sufficient daily clean-up, material storage and electrical cord management.

3.9 USE OF EQUIPMENT

A. Contractor shall permit only those of its employees qualified by training or experience to operate equipment and machinery. Contractor shall ensure each of its affected employees are trained in the use of construction equipment in the manner required by applicable law and regulation.

END OF SECTION
Site Safety Audit

Date: _______________________________  Project Location: _______________________________

Project Number: ______________________  Superintendent: _____________________________

Mark an “X” before each item that has been checked. Write an explanation in the Hazard Description below of items that needed attention.

Circle items that need attention.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Hazard Description</th>
<th>Action Taken</th>
<th>Date Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Industrial Hygiene</td>
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<tr>
<td>2.</td>
<td>Right-to-Know</td>
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<tr>
<td>3.</td>
<td>Confined Space</td>
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<td>4.</td>
<td>Demolition/Explosives</td>
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<td>5.</td>
<td>Electrical</td>
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<td>6.</td>
<td>Excav./Trench/Shoring</td>
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<td>7.</td>
<td>Fire Protection (Sprinkler System)</td>
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<td>8.</td>
<td>Hoisting &amp; Rigging</td>
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<td>9.</td>
<td>Lockout/Tagout</td>
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<tr>
<td>10.</td>
<td>Equipment Inspection</td>
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<tr>
<td>11.</td>
<td>Housekeeping (Wet walk off mats changed daily)</td>
<td></td>
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<tr>
<td>12.</td>
<td>Rebar</td>
<td></td>
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<tr>
<td>13.</td>
<td>First Aid</td>
<td></td>
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<tr>
<td>15.</td>
<td>Temporary Heat</td>
<td></td>
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<tr>
<td>16.</td>
<td>Sanitary Facilities</td>
<td></td>
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<tr>
<td>17.</td>
<td>Security</td>
<td></td>
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<tr>
<td>18.</td>
<td>Signs/Posters</td>
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<tr>
<td>19.</td>
<td>Tools</td>
<td></td>
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<tr>
<td>20.</td>
<td>Traffic (Fire egress)</td>
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<tr>
<td>21.</td>
<td>Smoke head covers On Off</td>
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<td>22.</td>
<td>Fire Extinguisher check</td>
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<tr>
<td>23.</td>
<td>Other</td>
<td></td>
<td></td>
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</tbody>
</table>

Prepared by: ___________________________  Subcontractor Audit: ___________________________

Contractor Internal Audit: ___________________________  Subcontractor: ___________________________

Date: _____________________________
PART 1 GENERAL

1.1 SUMMARY
A. Section Includes:
   1. Infection Control Risk Assessments (ICRA)

1.2 REFERENCES
A. See Graphic.

PART 2 PRODUCTS
Not Used

PART 3 EXECUTION

3.1 PRECONSTRUCTION RISK ASSESSMENT (PCRA)
A. Owner shall fill out the Preconstruction Risk Assessment (PCRA) prior to starting construction. In some instances, Contractor may be responsible for completing or assisting in the completion of the PCRA. Owner will route to the appropriate department for signatures.

B. See Section 01 35 33 Exhibit A for Preconstruction Risk Assessment (PCRA) form. Visuals and graphics/plans should be included with the PCRA submittal.

3.2 INFECTION CONTROL RISK ASSESSMENT (ICRA)
A. Contractor shall be responsible for filling out the Infection Control Risk Assessment (ICRA) prior to starting construction. The ICRA should be sent to Owner’s designated representative for review and approval. Owner will route to the appropriate department for signatures.

B. The ICRA should be an update to the PCRA, and tailored to a specific phase or portion of the work as appropriate. For multiple phases of a project, Contractor shall fill out multiple ICRAs and submit to Owner’s designated representative for review and approval prior to construction commencement of that phase.

C. See Section 01 35 33 Exhibit B for Infection Control Risk Assessment (ICRA) policy. A Microsoft Word copy of the ICRA form is in 01 35 33 Exhibit C. Contractor shall be responsible for completion of this form for every phase of construction and submit to Owner’s designated representative. Visuals and graphics/plans should be included with the ICRA submittal.

3.3 INFECTION CONTROL PROCEDURES & DUST CONTROL
A. Reference Section 01 56 15 – Airborne Contaminants Control for infection control procedures, temporary barrier and partition construction, and associated forms.

END OF SECTION
# Preconstruction Risk Assessment (PCRA)

**Project:** __________________________  **Date:** __________________________

<table>
<thead>
<tr>
<th>Item Assessed</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have potential sources of odor been identified?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Action:</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Can all odors be contained within the construction area?</td>
<td></td>
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<tr>
<td><strong>Action:</strong></td>
<td></td>
<td></td>
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<tr>
<td>3. Has the contractor provided MSDS’s for hazardous materials that will be used on site?</td>
<td></td>
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<tr>
<td><strong>Action:</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4. Has the construction area been inspected for asbestos?</td>
<td></td>
<td></td>
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<tr>
<td><strong>Action:</strong></td>
<td></td>
<td></td>
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<tr>
<td>5. Has an asbestos abatement plan been incorporated into the construction project?</td>
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<tr>
<td><strong>Action:</strong></td>
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<tr>
<td>6. Has a process been put into place to ensure contractors use only non-asbestos materials?</td>
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<tr>
<td><strong>Action:</strong></td>
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<tr>
<td>7. Has the construction area been inspected for lead?</td>
<td></td>
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<tr>
<td><strong>Action:</strong></td>
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<td></td>
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<tr>
<td>8. Has a lead abatement plan been incorporated into the construction project?</td>
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<tr>
<td><strong>Action:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. If new lead shielding or other lead construction materials will be installed, have special precautions been implemented to contain lead?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

01 35 33A - Risk Assessment_PCRA  Page 1 of 4
10. Has the construction area been inspected for mold?  
Action:

11. Has a mold abatement plan been incorporated into the construction project? 
Action:

12. Has the construction area been inspected for mercury?  
Action:

13. If excavation will occur, has the area been evaluated for potential hazardous materials in soils? 
Action:

14. Has a soil abatement/remediation plan been incorporated into the construction project? 
Action:

### ENVIRONMENTAL QUALITY

<table>
<thead>
<tr>
<th>Item Assessed</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have potential sources of noise been identified?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Action:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. Will noise be contained within the construction area?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Action:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3. Will noise mitigation controls be used during construction?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Action:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4. Can or will work be done during non-patient care hours?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*01 35 33A - Risk Assessment_PCRA*  
Page 2 of 4
<table>
<thead>
<tr>
<th>Item Assessed</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have potential sources of vibration been identified?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Action:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. Can vibration be contained within the construction area?</td>
<td></td>
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<tr>
<td>Action:</td>
<td></td>
<td></td>
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<tr>
<td>3. Have patient care areas adjacent to the construction been evaluated for medical equipment that may be sensitive to vibration?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Action:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4. Will vibration mitigation controls be used during construction?</td>
<td></td>
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<tr>
<td>Action:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Can or will work be done during non-patient care hours?</td>
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<td></td>
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<tr>
<td>Action:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>6. If patient care areas will be affected by vibration, have they been notified?</td>
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<tr>
<td>Action:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### EMERGENCY PROCEDURES

<table>
<thead>
<tr>
<th>Item Assessed</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have construction personnel been trained on the facility’s emergency management policy?</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Action:**

### PREPROJECT APPROVALS

- □ Blueprints and/or project plan reviewed with project manager..........................
  
  Date: ___________________  Signature: ___________________

- □ Project review and approval obtained from Infection Control Coordinator designee...........
  
  Date: ___________________  Signature: ___________________

- □ Department manager or designee notified of any project specific Infection Control issues............
  
  Date: ___________________  Signature: ___________________

**COMMENTS**

________________________________________________________________________

________________________________________________________________________
Name: Prevention of Infections Related to Hospital Construction, Renovation and Maintenance

Last Review Date: 12/19/2020
Next Review Date: 12/19/2023

Description: Froedtert Health is committed to the safety of its patients, staff and visitors. This policy has been developed to ensure that Infection Prevention standards are maintained during maintenance, construction and renovation projects.

Keywords: Infection Prevention, ICRA, Risk Assessment, Risk Matrix, Construction, Facilities

Policy Number: CPM.0277, CP.04.XXX, XXXXX

Purpose:

- To contain airborne contaminants such as dust and airborne fungi resulting from construction, renovation and maintenance projects.
- To mitigate the incursion of water-borne pathogens resulting from new construction, renovation, or maintenance of facility plumbing and water systems.
- To define the process for infection control input in pre-planning and throughout various types of construction activities.
- To comply with Joint Commission and CMS requirements for hospital construction risk assessment (see references listed below).

Policy:

A. All planned maintenance, renovation and construction activities, including new stand-alone building construction and old building demolition within the confines of currently up-and-running buildings, will be assessed for potential impact on the environment of care.

B. Response measures to unplanned situations in which the environment of care has been breached will be in accordance with the procedures set forth below.

C. Any breach in the environment of care or planned construction activity must be communicated to the Enterprise Facility Services Director as soon as identified.

D. See Appendix A – Infection Control Risk Assessment Matrix and Work Permit for definitions of Construction Activity Types and Infection Control Risk Groups. The infection control measures taken will be defined by Class I, II, III, or IV based on the Construction Activity Type and the Infection Control Risk Group.

E. Teams convened for planned renovations or new buildings, including stand-alone buildings, will include an Infection Prevention and Control representative starting in the initial design stage, to collaborate in meeting the performance requirements enumerated in section F below.

F. Performance Requirements:

1. All Contractors are responsible for training and orienting their on-site staff to the details and requirements enumerated in the Infection Control Risk Assessment and agree to enforce those requirements for the duration of the project.

2. During the planning phase of new departments or services, Infection Control will evaluate department specific and overall design detail as it relates to infection control issues such as:

   a. Traffic patterns;
   b. Air handling systems;
   c. Handwashing facilities (sinks are required in patient care rooms, nursing stations, procedure rooms and medication dispensing areas);
   d. Criteria for environmental services;
   e. Water management;
   f. Storage of clean equipment and supplies;
   g. Storage of dirty equipment and disposal of regular and biohazardous waste;
   h. Use of wallpaper;
   i. Adequacy and placement of PPE stations;
j. Installation of appropriate, infection preventing fixtures, build-ins, and placement of those items within the design space according to hospital-design best practices, building codes, and infection prevention measures.

k. Phasing in of patient care areas while other adjacent areas remain under construction.

3. Depending on the size/scope of the project meetings will be held to agree on barriers, traffic flow, temporary location of supplies, patient linens, etc. Members to include:
   a. Department manager of space where project is taking place;
   b. Environmental Services;
   c. Architect;
   d. Project manager;
   e. Facility Services representation;
   f. Infection Control/Infection Control Practitioner.

4. During maintenance, renovation or construction, activities causing disturbance of existing space, or creating dust/debris, must be conducted in tight enclosures cutting off any flow of particles into patient areas. Removal of debris will be in tightly covered containers. Water leakage affecting drywall, ceiling tiles or carpeting that cannot be dried within 48 hours will require remediation of the affected building materials.

5. When barriers are required, they will be constructed enclosing the construction area prior to the start of the project and will be included in the bid process. Walk-off mats at the entrance to the construction area will be kept clean and changed daily or as necessary to prevent accumulation of dust. Any dust/debris tracked outside the barrier will be removed immediately.

6. HEPA-equipped air filtration machines will provide air flow into construction areas and shall be connected to normal power to run continuously. Negative pressure to the construction area will be monitored and logged regularly by the contractor, and reviewed periodically by Infection Control upon rounding the job site. Existing ventilation ducts within the construction area will be capped off to be dust-tight and withstand airflow. Logging daily maintenance of the construction site can be done utilizing Appendix C - Daily Infection Control Checklist for Use During Construction and Renovation.

7. During the project, the Contractor will ensure that construction staff have a designated space for food and beverage consumption within the construction site (where allowable), and that neither food nor beverages are consumed in non-designated areas. Sealable capped bottles containing only water will be allowed throughout the space so long as they are contained upon a work cart.

8. Any HVAC duct, HVAC pipe, plumbing, or medical gas pipe that is stored within the construction site, and has not been installed, shall be sealed or capped on both ends and stored off of the ground to mitigate the risk of dust, dirt, or pest infiltration. These items will only be unsealed or uncapped immediately before they are installed into a ventilation or plumbing circuit.

9. Any HVAC duct vent that has been installed must be sealed off until the air handling system is fully operational.

10. When access panels are opened for extended work above ceilings in occupied areas, a control cube or polyethylene enclosure around the ladder, sealing off the opening floor to ceiling, will be used.

11. Any ceiling access panel opened for investigation beyond sealed areas will be replaced immediately to avoid patient exposure and no more than one tile can be open at any one time and may not be left unattended.

12. Removal of construction barriers and ceiling protection will be done carefully and during a time of minimal traffic. All surfaces will be HEPA-vacuumed and cleaned to be free of dust per validation. All vacuuming outside areas not under negative pressure will be done with a certified HEPA-filtered vacuum. Cleaning requirements are enumerated in Appendix D – Specifications for Construction and Terminal Cleaning.

G. Quality Control:

1. Contractors are responsible for following Appendix B - Infection Prevention Guidelines for Major Construction Activities in High and Highest Risk Areas.
2. Particle and biological counts may be monitored in vicinity of construction work as needed as determined by Infection Control based upon the risk categories outlined in the Infection Control Risk Assessment. Whenever safe levels are exceeded, the contractor will be notified to correct conditions immediately.
   a. For all projects requiring counts, baseline tests need to be taken and sent to Infection Control prior to the start of construction work.
   b. Particulate testing results before, during, and after the project’s duration will be disseminated to Enterprise Facility Services, the Contractor, and Infection Prevention & Control. Infection Prevention & Control will save the particulate counts for periodic historical review.
   c. Final counts will take place following final terminal cleaning of the project area. The settling time of the room after terminal cleaning, but before the air quality testing is performed, will be determined by Enterprise Facility Services, and Infection Prevention & Control during the ICRA process.

3. Infection Prevention and Control must be notified of any water seepage or biological growth identification or of any unplanned circumstances. Refer to Appendix F - Water, Moisture, and Mold Remediation

4. Moisture content monitoring will be done for any suspected water seepage to drywall, ceiling tiles or carpet and/or to indicate that drying has occurred within the 48-hour time frame.

5. Construction site rounding shall be performed on projects lasting longer than one month meeting job classification levels III and IV. Monitoring of the construction site will be done weekly by the Contractor and the Director of Enterprise Facility Services, or Infection Control or their designees. Appendix G – Infection Control Tracer for Construction Projects

6. Contractors are responsible for maintaining equipment and replacement of HEPA and other filters in accordance with manufacturer’s recommendations as well as documenting when replacements occur.

7. In long term projects where the plumbing system is scheduled for extended downtime:
   a. Water flushing is required due to extended downtime of the plumbing system, or installation of a new plumbing system. The plumbing system will not be pressurized until the last reasonable time to do so during construction. Once the system is pressurized, routine weekly water flushing of the system must be maintained by the Contractor in coordination with the Enterprise Facility Services representative of the facility up until the space is live with patients.
   b. Enterprise Facility Services, along with Infection Prevention, will consult with the contractor on a routine schedule for water flushing and quality assurance testing that ensures that our plumbing system is maintaining its water quality and allows enough time to address any deficiencies found in water testing so as not to delay the opening of a space for patient care.
   c. The above requirements will be outlined in step seven of Appendix A during the Infection Control Risk Assessment.
   d. Water management of construction projects should meet the standards outlined in the Froedtert Health front-end specifications pertaining to water quality.

8. All work shall be stopped on the project whenever a hazardous infection prevention/safety deficiency exists.
   a. ICRA Non-Compliance: Upon inspection of a construction site by Infection Prevention and Control, if an aspect of the ICRA or hospital construction policy is not being followed, the contractor and the Director of Enterprise Facility Services will be notified and responsible for rectifying the non-compliance issue within a reasonable time frame. Infection Prevention will utilize Appendix E – Corrective Action Plan to outline a Corrective Action Plan to remediate the issue of ICRA non-compliance.
      1. If the issues have not been addressed within a reasonable time frame, Infection Prevention and Control has the authority to halt the project until appropriate
actions have been taken to regain compliance of appropriate infection control measures referred to within the completed ICRA. An event report will be generated and submitted to the appropriate Quality Department leadership and administrative leadership will be notified in regards to the event.

2. Any violations of the ICRA or other Infection Prevention and Control policies may affect the contractor’s status as a responsible contractor for bidding of future work.

b. All correspondence and corrective actions taken in a non-compliant event will be attached to the ICRA for documentation purposes.

H. Infection Prevention Risk Matrix and Work Permit (Appendix A):

1. The Infection Control Risk Matrix shall be filled out and submitted to Infection Control for review for any projects performed within the facility above and beyond unobtrusive routine maintenance that fall under Class I through IV. This includes the construction of new stand-alone buildings.

2. All projects requiring an ICRA originating from Hospital or Clinic departments other than Enterprise Facility Services (i.e. Environmental Services, Information Technologies, etc.) must forward the ICRA to Enterprise Facility Services for review.

3. The ICRA Work Permit shall be sent to Infection Control for all Class III and Class IV activities. (Refer to the shaded area on the Infection Control Risk Matrix of Appendix A)

4. When required, an Infection Control permit must be obtained before beginning any demolition or construction work. During an emergent event, notify Infection Control as soon as possible of the event.

5. In an emergent event (water damage, fire, etc) requiring demolition/renovation occurring after-hours or on the weekend, please call the Infection Prevention emergency pager to alert the on-call Infection Control representative.

6. All permits require the signature of the Director of Enterprise Facility Services (or designee), Infection Control and the contractor responsible for the work.

7. A permit for major construction/renovation will be displayed at the entrance to the work area, as well as all containment walls facing the patient care areas, during the entire construction period.

8. Copies of all permits, along with attachments, will be retained for accreditation survey purposes in the ICRA binder within the Facilities office as well as the Infection Prevention and Control department.

9. Throughout the duration of a project, if any of the terms of the originally agreed upon risk assessment must be changed, the ICRA can be amended with the necessary changes. Resubmit Appendix A to the Infection Prevention and Facilities departments with the new terms and the work permit will be re-approved, signed, and posted.

I. Barriers:

1. Infection Prevention and Control recommends using a hard-wall barrier (drywall, EdgeGuard, etc.) wherever possible to help maintain the negative pressurization of the space as well as limit the wear and tear on the barrier through the duration of the project. Exceptions will be approved on a case-by-case basis during the risk assessment.

2. A closed door with masking tape applied over the frame and the door is acceptable for projects which can be contained.

3. Construction, demolition or reconstruction not capable of containment within a single room must have barriers erected depending on the type and extent of the project. The type of barrier will be identified as part of the permit process and would typically be:
   a. A Fire-rated airtight plastic barrier that extends from the floor through the ceiling to the deck. Seams must be sealed with duct tape to prevent dust and debris from escaping. Exceptions to this will be approved on a case-by-case basis during the risk assessment.
b. Drywall barriers erected with joints covered or sealed to prevent dust and debris from escaping. Barriers exposed to patient care or high risk areas will be painted to prevent drywall dust from being dispersed.

4. Infection Control and the Director of Enterprise Facility Services (or their representative) will approve of the barrier type and anteroom requirement during the risk assessment process.

5. All penetrations in existing barriers must be sealed airtight.

6. Existing outlet and light switch covers should be protected with tape or a sealed covering to mitigate dust exposure when applicable.

7. Wall and window cavities should be vacuumed out before they are sealed closed, and insulation installed in-wall should be covered with plastic if not being enclosed with drywall right away.

8. An Anteroom will be required for all Class III and IV (unless waived by Infection Prevention & Control during the risk assessment process) to allow workers to remove protective clothing or vacuum off existing clothing prior to exiting. The anteroom will be sized to accommodate the vast majority of materials, equipment, and trash going into and out of the site without opening both doors at the same time.

9. Barriers must be established at elevator shafts or stairways within the field of construction.

10. There must be an overlapping flap minimum two feet wide at polyethylene enclosures for personnel access.

11. All barriers must be designed to create a controlled negative pressure environment on the construction side, in relation to the non-construction side. A physical device must be installed to show that the pressure relationship is maintained throughout the duration of the construction project.

12. All barrier entrances and exits must have a hand sanitizer dispenser provided for construction staff within the construction site to ensure appropriate hand hygiene compliance when exiting into the patient-care environment.

13. All barrier entrances and exits must have tacky/sticky walk-off mats to mitigate dust migration from the construction site and be changed either upon completion of work shift or whenever the mat is no longer tacky enough to mitigate dust, whichever happens first.

14. Carpet or hard flooring outside the containment must be vacuumed or mopped either upon completion of work shift or whenever the flooring surface becomes soiled with dust/dirt, whichever comes first.

J. Project Completion:

1. The Contractor will:
   a. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction and ensure that the floor is clean following the removal. (Refer to Appendix D to define guidelines for construction vs terminal cleaning)
   b. Ensure that construction waste is either bagged or transported in covered carts. Treat barriers as debris.
   c. Remove all blocks and seals from ductwork/air vents.
   d. Coordinate terminal cleaning by Environmental Services. Environmental Services or an EVS approved cleaning contractor shall provide a final thorough cleaning of all projects.

2. Enterprise Facility Services shall review the work area before construction barriers are removed.
   a. Enterprise Facility Services shall work with contractor to coordinate the time frame when blocked and sealed ductwork/air vents are reopened.
   b. Enterprise Facility Services will discuss the need and coordinate changing air handling filters and cleaning of air vents.
   c. Following terminal cleaning, a third party air quality contractor will be hired to perform a final air-quality particulate measurement if required by the risk assessment.

3. Infection Prevention and Control will:
   a. Determine if a portable HEPA filtration unit (when required) will continue to run after project completion and for what duration as outlined in the ICRA.
b. Inspect all Class III or IV projects after terminal cleaning.

Related Policies:
Interim Life Safety Measures

References:
6. Hospital Policy Manual:
   a. #87101-000, Interim Life Safety Measures During Construction

Distribution:
Froedtert Hospital
Froedtert Menomonee Falls
Froedtert West Bend
Community Physicians

Content Details URL:
http://fhpolicy.s1.fchome.com/d.aspx?id=29f3e8cC8L01

Appendix A: Infection Control Risk Assessment Matrix and Work Permit
Appendix B: Infection Control Guidelines for Major Construction Activities in High and Highest Risk Areas
Appendix C: Daily Infection Control Checklist for Use During Construction and Renovation
Appendix D: Specifications for Construction and Terminal Cleaning
Appendix E: Corrective Action Plan
Appendix F: Water, Moisture, and Mold Remediation
Appendix G: Infection Control Tracer for Construction Projects
Appendix A
Infection Prevention Program
Froedtert Community Physicians

Infection Control Risk Assessment Matrix

Infection Prevention Project #: _____________  Date: _____________

Step One: Please submit a brief description of the project as planned along with an area floor map showing where the affected areas will be. Please include details about terminal cleaning, room settling time, air quality testing, etc.
**Step Two:** Indicate the Construction Project Activity **TYPE:**

<table>
<thead>
<tr>
<th>TYPE A</th>
<th>Inspection and non-invasive activities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Includes, but is not limited to:</td>
</tr>
<tr>
<td></td>
<td>• Opening of a single ceiling tile for visual inspection or tile replacement.</td>
</tr>
<tr>
<td></td>
<td>• Painting (but not sanding)</td>
</tr>
<tr>
<td></td>
<td>• Wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPE B</th>
<th>Small scale, short duration activities which create minimal dust</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Includes, but is not limited to:</td>
</tr>
<tr>
<td></td>
<td>• Opening of no more than one ceiling tile per 10 tiles</td>
</tr>
<tr>
<td></td>
<td>• Installation of telephone and computer cabling</td>
</tr>
<tr>
<td></td>
<td>• Access to mechanical chase or shaft spaces</td>
</tr>
<tr>
<td></td>
<td>• Cutting of walls or ceiling where dust migration can be controlled</td>
</tr>
<tr>
<td></td>
<td>• Minor renovation of existing space</td>
</tr>
<tr>
<td></td>
<td>• Wet sanding of walls</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPE C</th>
<th>Work that generates a moderate to high level of dust</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Includes, but is not limited to:</td>
</tr>
<tr>
<td></td>
<td>• Dry sanding of walls</td>
</tr>
<tr>
<td></td>
<td>• Cutting of walls, removal of drywall or building finish components where work is limited to one room or suite (including removal of floor coverings, ceiling tiles, and casework)</td>
</tr>
<tr>
<td></td>
<td>• Wall demolition or new wall construction</td>
</tr>
<tr>
<td></td>
<td>• Minor duct work, plumbing work, or electrical work above ceilings (not including system demolition or installation)</td>
</tr>
<tr>
<td></td>
<td>• Moderate renovation of existing space</td>
</tr>
<tr>
<td></td>
<td>• Major cabling pulling activities, multiple rooms/lines where multiple access points are needed</td>
</tr>
<tr>
<td></td>
<td>• Any activity which requires construction of a containment barrier that does not qualify as Type D</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type D</th>
<th>Major demolition and major construction projects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Includes, but is not limited to:</td>
</tr>
<tr>
<td></td>
<td>• Activities which require the closure of a unit/wing or relocation of an entire patient area</td>
</tr>
<tr>
<td></td>
<td>• Demolition, removal, or installation of a complete cabling, HVAC, plumbing, medical gas, or electrical system</td>
</tr>
<tr>
<td></td>
<td>• Demolition of major fixed building components, assemblies, fit-out elements, or structural elements</td>
</tr>
<tr>
<td></td>
<td>• New construction of a free-standing patient care building (as determined by the Primary ICRA team)</td>
</tr>
<tr>
<td></td>
<td>• Outdoor construction of new structures located in close proximity (as determined by the Primary ICRA team) to existing patient care facility</td>
</tr>
<tr>
<td></td>
<td>• Excavation activities within close proximity (as determined by the Primary ICRA team) of hospital building</td>
</tr>
</tbody>
</table>
**Step Three:**
Indicate the **RISK GROUP** for the job location: ___________________________

(If more than one risk level is identified, select the higher risk level)***

<table>
<thead>
<tr>
<th>Low Risk</th>
<th>Medium Risk</th>
<th>High Risk</th>
<th>Highest Risk</th>
</tr>
</thead>
</table>
| • Mechanical spaces  
• Areas not directly adjacent to patient care areas  
• Office areas not attached to or adjoining patient care areas or areas used for patient interviews, exams, or evaluations  
• Public corridors and spaces not on or directly attached to patient units or treatment locations  
• Clinical Laboratory: Non-specimen areas | • Cardiac Rehab  
• Echocardiography  
• Kitchen/Cafeteria spaces  
• Outpatient Rehab  
• Physical Therapy  
• Patient care areas not listed under “High” or “Highest”  
• Soiled Utility rooms | • Cancer Clinic/Infusion Areas  
• Clean Utility rooms  
• Clinical Laboratories: Specimen handling areas  
• Emergency Department  
• Urgent Care  
• ENT Clinic  
• GI Lab  
• High Level Disinfection areas (dirty/clean rooms)  
• Lab Collection Areas  
• Nuclear Medicine  
• Orthopedics  
• Pharmacy  
• Pulmonary Clinic  
• Radiology: CT, MRI, NI, Ultrasound  
• Procedural Rooms (including exam rooms where procedures are performed) | • Pharmacy (compounding spaces)  
• Surgical spaces (OR) |

***Risk classifications of any areas not listed above will be left up to the discretion of the Infection Prevention and Control department based upon the clinical risks of exposure of construction contaminants on the affected patient populations as well as disruption to patient care.***
**Step Four:**
Use the ICRA Classification Grid to determine the **ICRA CLASSIFICATION LEVEL** for mitigating interventions.

Match the Construction Project Activity **TYPE** and the **RISK GROUP** to identify the associated ICRA **CLASSIFICATION LEVEL**: ________________

<table>
<thead>
<tr>
<th>Project Activity</th>
<th>TYPE A</th>
<th>TYPE B</th>
<th>TYPE C</th>
<th>TYPE D</th>
</tr>
</thead>
<tbody>
<tr>
<td>RISK GROUP ↓</td>
<td>ICRA Classification Level ↓</td>
<td>ICRA Classification Level ↓</td>
<td>ICRA Classification Level ↓</td>
<td>ICRA Classification Level ↓</td>
</tr>
<tr>
<td>Low Risk</td>
<td>I</td>
<td>II</td>
<td>II</td>
<td>III or IV</td>
</tr>
<tr>
<td>Medium Risk</td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
</tr>
<tr>
<td>High Risk</td>
<td>I</td>
<td>III</td>
<td>III or IV</td>
<td>IV</td>
</tr>
<tr>
<td>Highest Risk</td>
<td>III</td>
<td>III or IV</td>
<td>III or IV</td>
<td>IV</td>
</tr>
</tbody>
</table>

**Step Five:** Identify the areas surrounding the project area and the **RISK GROUP** for that location.

<table>
<thead>
<tr>
<th>Unit Below</th>
<th>Unit Above</th>
<th>Lateral</th>
<th>Lateral</th>
<th>Behind</th>
<th>Front</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
</tr>
</tbody>
</table>

**Step Six:** Water Incursion: Indicate potential risk of water damage outside construction zone:

**Step Seven:** If necessary, please describe the process for flushing new or existing plumbing fixtures and any associated water quality testing that may be indicated:
<table>
<thead>
<tr>
<th>Classification Level</th>
<th>Interventions</th>
</tr>
</thead>
</table>
| **LEVEL I**          | 1. Execute work by using methods to minimize dust generation from construction activities.  
2. Immediately replace any ceiling tile displaced for visual inspection.  
3. All policies & procedures for renovation/construction/maintenance will be followed.  
4. Contractor is educated before the start of the project about the importance of adhering to dust mitigating engineering controls and work practices.  
5. When complete immediately clean up any dirt or debris. |
| **LEVEL II**         | 1. Provide active means to prevent air-borne dust from dispersing into atmosphere, which may include the use of a Control Cube or anteroom.  
2. Water mist work surfaces to control dust while cutting.  
3. Seal unused doors with masking tape.  
4. Block off and seal air supply vents. If possible, reduce air supply to the room by adjusting VAVs or CAVs.  
5. Doors and windows within the work zone to remain closed at all times except during ingress/egress.  
6. Place adhesive mat at entrance and exit of work area as necessary.  
7. Cover transport receptacles or carts and clean wheels prior to leaving containment.  
8. Contain construction waste before transport in tightly covered containers.  
10. Wet mop and/or vacuum with HEPA filtered vacuum at end of job or end of work shift. Area to be free of dust and or debris. |
| **LEVEL III**        | 1. Isolate HVAC system in area where work is being done to prevent contamination of duct system. Maintain until barrier is removed at completion of project.  
2. Designate entry and exit traffic pattern, unauthorized personnel are not permitted to enter work zone, traffic control signs placed.  
3. Complete all critical barriers or implement control cube method before construction begins. Will stay in place until IP&C or PM authorizes removal.  
4. Maintain negative pressure within work site and utilize HEPA equipped negative air machines. Both will be maintained until project & terminal cleaning are completed and IP&C authorizes removal.  
5. Air pressure differential between the construction and hospital-occupied areas to be monitored & documented at least once per shift during active work.  
6. Adhesive mats placed at all entrances & exits of work area.  
7. The contractor will maintain the construction zone in a clean manner.  
8. The area will be HEPA-vacuumed or damp mopped daily or more often as necessary to minimize dust.  
9. Daily cleanup of debris, material and waste shall be completed.  
10. Adhesive mats monitored & changed on a regular basis so that they remain effective.  
11. Any dust or construction debris tracked outside of the work area will be promptly cleaned.  
12. Terminal cleaning will be performed following protocol outlined in Appendix B of the ICRA policy.  
13. The construction cleaning will be inspected by the Owner prior to the authorization for the barrier removal.  
14. Air samples may be performed following IP&C/Safety protocol.  
15. Barriers will be removed carefully to minimize spreading of construction dust and debris. The areas surrounding the containment will be cleaned following removal of critical barriers. |
| **LEVEL IV**         | 1. Seal all holes, pipes and conduits penetrations in work area.  
2. Construct anteroom for staging of equipment & donning of coveralls.  
3. Workers will wear coveralls in work area. Upon completion of major dust generating activities, coverall requirement is removed.  
4. Coveralls are removed in work zone before entering anteroom.  
5. Any residual dust left on workers shall be removed by using a HEPA-filtered vacuum.  
6. Shoe covers will be worn by workers and removed in work area.  
7. All renovation, construction, maintenance & tool carts leaving area must be covered & the wheels wiped down with a bleach solution.  
8. Environmental Services (EVS) or a contract cleaner will vacuum or damp mop the area outside the work zone and adjacent areas. |
Infection Control Risk Assessment WORK PERMIT

<table>
<thead>
<tr>
<th>RISK level (circle one)</th>
<th>Low Risk Area</th>
<th>Medium Risk Area</th>
<th>High Risk Area</th>
<th>Highest Risk Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Activity Project TYPE</td>
<td>TYPE A</td>
<td>TYPE B</td>
<td>TYPE C</td>
<td>TYPE D</td>
</tr>
<tr>
<td>Project Activity</td>
<td>TYPE A</td>
<td>TYPE B</td>
<td>TYPE C</td>
<td>TYPE D</td>
</tr>
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<td>RISK GROUP</td>
<td>ICRA Classification Level</td>
<td>ICRA Classification Level</td>
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<tr>
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<td>III or IV</td>
<td>III or IV</td>
<td>IV</td>
</tr>
<tr>
<td>Classification Level for mitigating interventions (circle the applicable level)</td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>III or IV</td>
</tr>
</tbody>
</table>

Note: Infection Prevention approval and an ICRA Work Permit will be required for Level III or Level IV projects.

Signatures for Project Approval

FH Project Manager: _________________________________ Date: 
Contractor Representative: _________________________ Date: 
Infection Prevention: ______________________________ Date: 

Appendix A
Infection Prevention Program
Froedtert Menomonee Falls Hospital

Infection Control Risk Assessment Matrix

Infection Prevention Project #: _____________ Date: _____________

**Step One:** Please submit a brief description of the project as planned along with an area floor map showing where the affected areas will be. Please include details about terminal cleaning, room settling time, air quality testing, etc.
**Step Two:** Indicate the Construction Project Activity **TYPE:** ______________________

<table>
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<th>TYPE A</th>
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<tbody>
<tr>
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<td>• Painting (but not sanding)</td>
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<td></td>
<td>• Wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPE B</th>
<th>Small scale, short duration activities which create minimal dust</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Includes, but is not limited to:</td>
</tr>
<tr>
<td></td>
<td>• Opening of no more than one ceiling tile per 10 tiles</td>
</tr>
<tr>
<td></td>
<td>• Installation of telephone and computer cabling</td>
</tr>
<tr>
<td></td>
<td>• Access to mechanical chase or shaft spaces</td>
</tr>
<tr>
<td></td>
<td>• Cutting of walls or ceiling where dust migration can be controlled</td>
</tr>
<tr>
<td></td>
<td>• Minor renovation of existing space</td>
</tr>
<tr>
<td></td>
<td>• Wet sanding of walls</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPE C</th>
<th>Work that generates a moderate to high level of dust</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Includes, but is not limited to:</td>
</tr>
<tr>
<td></td>
<td>• Dry sanding of walls</td>
</tr>
<tr>
<td></td>
<td>• Cutting of walls, removal of drywall or building finish components where work is limited to one room or suite (including removal of floor coverings, ceiling tiles, and casework)</td>
</tr>
<tr>
<td></td>
<td>• Wall demolition or new wall construction</td>
</tr>
<tr>
<td></td>
<td>• Minor duct work, plumbing work, or electrical work above ceilings (not including system demolition or installation)</td>
</tr>
<tr>
<td></td>
<td>• Moderate renovation of existing space</td>
</tr>
<tr>
<td></td>
<td>• Major cabling pulling activities, multiple rooms/lines where multiple access points are needed</td>
</tr>
<tr>
<td></td>
<td>• Any activity which requires construction of a containment barrier that does not qualify as Type D</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type D</th>
<th>Major demolition and major construction projects</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Includes, but is not limited to:</td>
</tr>
<tr>
<td></td>
<td>• Activities which require the closure of a unit/wing or relocation of an entire patient area</td>
</tr>
<tr>
<td></td>
<td>• Demolition, removal, or installation of a complete cabling, HVAC, plumbing, medical gas, or electrical system</td>
</tr>
<tr>
<td></td>
<td>• Demolition of major fixed building components, assemblies, fit-out elements, or structural elements</td>
</tr>
<tr>
<td></td>
<td>• New construction of a free-standing patient care building (as determined by the Primary ICRA team)</td>
</tr>
<tr>
<td></td>
<td>• Outdoor construction of new structures located in close proximity (as determined by the Primary ICRA team) to existing patient care facility</td>
</tr>
<tr>
<td></td>
<td>• Excavation activities within close proximity (as determined by the Primary ICRA team) of hospital building</td>
</tr>
</tbody>
</table>
**Step Three:**
Indicate the RISK GROUP for the job location: ___________________________

(If more than one risk level is identified, select the higher risk level)***

<table>
<thead>
<tr>
<th>Low Risk</th>
<th>Medium Risk</th>
<th>High Risk</th>
<th>Highest Risk</th>
</tr>
</thead>
</table>
| • Mechanical spaces  
• Areas not directly adjacent to patient care areas  
• Office areas not attached to or adjoining patient care areas, used for patient interviews, exams, or evaluations, not adjacent to high or highest risk areas  
• Public corridors and spaces not on or directly attached to patient units or treatment locations | • Admissions  
• Behavioral Health  
• Cardiac Diagnostic  
• Cardiac Rehab  
• Food Service and Cafeteria  
• Laboratory  
• Outpatient Rehab  
• Physical Therapy  
• Patient Care areas not listed under high or highest (such as ambulatory care areas)  
• Physical Therapy  
• Preadmission  
• Soiled utility rooms not on patient units  
• Respiratory Therapy | • Birth Center  
• Breast Center/Clinic  
• Cancer Care  
• Clean Utility rooms  
• Decontamination  
• Dialysis  
• Distribution/Dispatch  
• Emergency Department  
• HTS/ASU  
• Inpatient Units  
• Lab Collection Areas  
• Linen room  
• Nursery/Special Care Nursery  
• Pharmacy (excluding compounding rooms)  
• Radiology, CT, MRI, NI, Ultrasound, Nuclear medicine  
• Rehab Unit  
Wound care, Infusion/OP | • Endo/Bronch  
• Cath lab  
• ICU  
• Interventional Radiology  
• OR/Cysto/PACU/Anesthesia  
• OR Birth Center  
• Pharmacy: Compounding Rooms  
• Sterile Processing, packaging, storage |

***Risk classifications of any areas not listed above will be left up to the discretion of the Infection Prevention and Control department based upon the clinical risks of exposure of construction contaminants on the affected patient populations as well as disruption to patient care.***
**Step Four:**
Use the ICRA Classification Grid to determine the **ICRA CLASSIFICATION LEVEL** for mitigating interventions.
Match the Construction Project Activity **TYPE** and the **RISK GROUP** to identify the associated ICRA **CLASSIFICATION LEVEL**:

```
<table>
<thead>
<tr>
<th>Project Activity →</th>
<th>TYPE A</th>
<th>TYPE B</th>
<th>TYPE C</th>
<th>TYPE D</th>
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</thead>
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<td>ICRA Classification Level ↓</td>
<td>ICRA Classification Level ↓</td>
<td>ICRA Classification Level ↓</td>
<td>ICRA Classification Level ↓</td>
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<tr>
<td>High Risk</td>
<td>I</td>
<td>III</td>
<td>III or IV</td>
<td>IV</td>
</tr>
<tr>
<td>Highest Risk</td>
<td>III</td>
<td>III or IV</td>
<td>III or IV</td>
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```

**Step Five:** Identify the areas surrounding the project area and the **RISK GROUP** for that location.

```
<table>
<thead>
<tr>
<th>Unit Below</th>
<th>Unit Above</th>
<th>Lateral</th>
<th>Lateral</th>
<th>Behind</th>
<th>Front</th>
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</thead>
<tbody>
<tr>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
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</tbody>
</table>
```

**Step Six:** Water Incursion: Indicate potential risk of water damage outside construction zone:

**Step Seven:** If necessary, please describe the process for flushing new or existing plumbing fixtures and any associated water quality testing that may be indicated:
# Infection Prevention Interventions for corresponding Classification Levels

| LEVEL I | 1. Execute work by using methods to minimize dust generation from construction activities.  
2. Immediately replace any ceiling tile displaced for visual inspection.  
3. All policies & procedures for renovation/construction/maintenance will be followed.  
4. Contractor is educated before the start of the project about the importance of adhering to dust mitigating engineering controls and work practices.  
5. When complete immediately clean up any dirt or debris. |
|---|---|
| LEVEL II | 1. Provide active means to prevent air-borne dust from dispersing into atmosphere, which may include the use of a Control Cube or anteroom.  
2. Water mist work surfaces to control dust while cutting.  
3. Seal unused doors with masking tape.  
4. Block off and seal air supply vents. If possible, reduce air supply to the room by adjusting VAVs or CAVs.  
5. Doors and windows within the work zone to remain closed at all times except during ingress/egress.  
6. Place adhesive mat at entrance and exit of work area as necessary.  
7. Cover transport receptacles or carts and clean wheels prior to leaving containment.  
8. Contain construction waste before transport in tightly covered containers.  
10. Wet mop and/or vacuum with HEPA filtered vacuum at end of job or end of work shift. Area to be free of dust and or debris. |
| LEVEL III | 1. Isolate HVAC system in area where work is being done to prevent contamination of duct system. Maintain until barrier is removed at completion of project.  
2. Designate entry and exit traffic pattern, unauthorized personnel are not permitted to enter work zone, traffic control signs placed.  
3. Complete all critical barriers or implement control cube method before construction begins. Will stay in place until IP&C or PM authorizes removal.  
4. Maintain negative pressure within work site and utilize HEPA equipped negative air machines. Both will be maintained until project & terminal cleaning are completed and IP&C authorizes removal.  
5. Air pressure differential between the construction and hospital-occupied areas to be monitored & documented at least once per shift during active work.  
6. Adhesive mats placed at all entrances & exits of work area.  
7. The contractor will maintain the construction zone in a clean manner.  
8. The area will be HEPA-vacuumed or damp mopped daily or more often as necessary to minimize dust.  
9. Daily cleanup of debris, material and waste shall be completed.  
10. Adhesive mats monitored & changed on a regular basis so that they remain effective.  
11. Any dust or construction debris tracked outside of the work area will be promptly cleaned.  
12. Terminal cleaning will be performed following protocol outlined in Appendix B of the ICRA policy.  
13. The construction cleaning will be inspected by the Owner prior to the authorization for the barrier removal.  
14. Air samples may be performed following IP&C/Safety protocol.  
15. Barriers will be removed carefully to minimize spreading of construction dust and debris. The areas surrounding the containment will be cleaned following removal of critical barriers. |
| LEVEL IV | 1. Seal all holes, pipes and conduits penetrations in work area.  
2. Construct anteroom for staging of equipment & donning of coveralls.  
3. Workers will wear coveralls in work area. Upon completion of major dust generating activities, coverall requirement is removed.  
4. Coveralls are removed in work zone before entering anteroom.  
5. Any residual dust left on workers shall be removed by using a HEPA-filtered vacuum.  
6. Shoe covers will be worn by workers and removed in work area.  
7. All renovation, construction, maintenance & tool carts leaving area must be covered & the wheels wiped down with a bleach solution.  
8. Environmental Services (EVS) or a contract cleaner will vacuum or damp mop the area outside the work zone and adjacent areas. |
## Infection Control Risk Assessment WORK PERMIT

<table>
<thead>
<tr>
<th>Date:</th>
<th>Permit #:</th>
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<tbody>
<tr>
<td>Prepared by:</td>
<td>Phone #:</td>
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<tr>
<td>Project # and Location:</td>
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<td>Estimated Duration:</td>
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<tr>
<td>Project Manager and Phone #:</td>
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<tr>
<td>Contractor performing work:</td>
<td>Permit Expiration Date:</td>
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<td>Contractor Supervisor &amp; Cell phone #:</td>
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</tr>
<tr>
<td>Clinical Department Manager &amp; Phone #:</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>RISK level (circle one)</th>
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<th>High Risk Area</th>
<th>Highest Risk Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Activity</td>
<td>TYPE A</td>
<td>TYPE B</td>
<td>TYPE C</td>
<td>TYPE D</td>
</tr>
<tr>
<td>Project TYPE</td>
<td>TYPE A</td>
<td>TYPE B</td>
<td>TYPE C</td>
<td>TYPE D</td>
</tr>
<tr>
<td>Project Activity</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RISK GROUP</th>
<th>ICRA Classification Level</th>
<th>ICRA Classification Level</th>
<th>ICRA Classification Level</th>
<th>ICRA Classification Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Risk</td>
<td>I</td>
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<td>II</td>
<td>III or IV</td>
</tr>
<tr>
<td>Medium Risk</td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
</tr>
<tr>
<td>High Risk</td>
<td>I</td>
<td>III</td>
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<tr>
<td>Highest Risk</td>
<td>III</td>
<td>III or IV</td>
<td>III or IV</td>
<td>IV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Classification Level for mitigating interventions (circle the applicable level)</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>III or IV</th>
<th>IV</th>
</tr>
</thead>
</table>

**Note**: Infection Prevention approval and an ICRA Work Permit will be required for Level III or Level IV projects.

### Signatures for Project Approval

FH Project Manager: ____________________________ Date: ____________________________

Contractor Representative: ______________________ Date: ____________________________

Infection Prevention: __________________________ Date: ____________________________
Appendix A
Infection Prevention Program
Froedtert Hospital

Infection Control Risk Assessment Matrix

Infection Prevention Project #: _____________ Date: _____________

**Step One:** Please submit a brief description of the project as planned along with an area floor map showing where the affected areas will be. Please include details about terminal cleaning, room settling time, air quality testing, etc.
**Step Two:** Indicate the Construction Project Activity **TYPE:** ________________

<table>
<thead>
<tr>
<th>TYPE</th>
<th>Description</th>
<th>Includes, but is not limited to:</th>
</tr>
</thead>
</table>
| TYPE A | Inspection and non-invasive activities | • Opening of a single ceiling tile for visual inspection or tile replacement.  
• Painting (but not sanding)  
• Wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection |
| TYPE B | Small scale, short duration activities which create minimal dust | • Opening of no more than one ceiling tile per 10 tiles  
• Installation of telephone and computer cabling  
• Access to mechanical chase or shaft spaces  
• Cutting of walls or ceiling where dust migration can be controlled  
• Minor renovation of existing space  
• Wet sanding of walls |
| TYPE C | Work that generates a moderate to high level of dust | • Dry sanding of walls  
• Cutting of walls, removal of drywall or building finish components where work is limited to one room or suite (including removal of floor coverings, ceiling tiles, and casework)  
• Wall demolition or new wall construction  
• Minor duct work, plumbing work, or electrical work above ceilings (not including system demolition or installation)  
• Moderate renovation of existing space  
• Major cabling pulling activities, multiple rooms/lines where multiple access points are needed  
• Any activity which requires construction of a containment barrier that does not qualify as Type D |
| Type D | Major demolition and major construction projects | • Activities which require the closure of a unit/wing or relocation of an entire patient area  
• Demolition, removal, or installation of a complete cabling, HVAC, plumbing, medical gas, or electrical system  
• Demolition of major fixed building components, assemblies, fit-out elements, or structural elements  
• New construction of a free-standing patient care building (as determined by the Primary ICRA team)  
• Outdoor construction of new structures located in close proximity (as determined by the Primary ICRA team) to existing patient care facility  
• Excavation activities within close proximity (as determined by the Primary ICRA team) of hospital building |
Step Three:
Indicate the **RISK GROUP** for the job location: ___________________________  

(If more than one risk level is identified, select the higher risk level)***

<table>
<thead>
<tr>
<th>Low Risk</th>
<th>Medium Risk</th>
<th>High Risk</th>
<th>Highest Risk</th>
</tr>
</thead>
</table>
| - Mechanical spaces  
- Areas not directly adjacent to patient care areas  
- Office areas not attached to or adjoining patient care areas or areas used for patient interviews, exams, or evaluations  
- Public corridors and spaces not on or directly attached to patient units or treatment locations  
- Clinical Laboratory: Non-specimen areas | - Admissions  
- Cardiac Rehab  
- Echocardiography  
- GI Clinic  
- Main Kitchen/Cafeteria  
- Neurophysiology  
- Orthotics/Prosthetics  
- Outpatient Rehab  
- Physical Therapy  
- Preadmissions  
- Patient care areas not listed under “High” or “Highest”  
- Soiled Utility rooms (not behind red-line)  
- Urology/Cystology Exam Rooms  
- Units: 2NT, 4PV, 4SE, 4SW, 5NE, 5NW, 5SE, 5SW, 7NT, 8NT, 9NT, 10CFAC, 11CFAC | - Apheresis Lab  
- Autopsy Suite/Morgue  
- Breast Center/Clinic  
- Bronchoscopy Lab  
- Cancer Center  
- Clean Utility rooms (not behind red-line)  
- Clinical Laboratories: Specimen handling areas, including Blood Bank, Histology, Microbiology  
- Dialysis  
- Distribution  
- Emergency Department  
- ENT Clinic  
- Eye Institute (excluding OR)  
- GI Lab  
- High Level Disinfection areas (dirty/clean rooms)  
- Infusion Clinics  
- Lab Collection Areas  
- Newborn Nursery  
- Nuclear Medicine  
- Orthopedics  
- Outpatient Surgery  
- Post-Anesthesia Care unit (PACU)  
- Pharmacy (excluding compounding rooms)  
- Post-partum care  
- Procedural Arrival & Recovery (PAR)  
- Pulmonary Clinic  
- Non-IPP Radiology: CT, MRI, NJ, Ultrasound  
- Urology/Cystology Procedural Rooms  
- Units: 3WEST, 4NW, 4NE, 12CFAC, L&D at CHW: 6EL/EN, 7EN/EP, 8EL/EN | - All red-lined spaces: Imaging, ORs, SPD (sterile processing, packaging, storage), Utility/Equipment rooms, Sterile Cores, Control Rooms  
- Eye Institute Operating Rooms and adjoining suites  
- ICUs: CVICU, MICU, NICU, SICU, TICU, 7CFAC, 8CFAC, 9CFAC  
- Labor & Delivery Operating Rooms  
- Non-IPP Sterile Processing areas  
- Pharmacy: Compounding Rooms |

***Risk classifications of any areas not listed above will be left up to the discretion of the Infection Prevention and Control department based upon the clinical risks of exposure of construction contaminants on the affected patient populations as well as disruption to patient care.***
**Step Four:**
Use the ICRA Classification Grid to determine the **ICRA CLASSIFICATION LEVEL** for mitigating interventions.

Match the Construction Project Activity **TYPE** and the **RISK GROUP** to identify the associated ICRA **CLASSIFICATION LEVEL**: _________________

<table>
<thead>
<tr>
<th>Project Activity</th>
<th>TYPE A</th>
<th>TYPE B</th>
<th>TYPE C</th>
<th>TYPE D</th>
</tr>
</thead>
<tbody>
<tr>
<td>RISK GROUP</td>
<td>ICRA Classification Level</td>
<td>ICRA Classification Level</td>
<td>ICRA Classification Level</td>
<td>ICRA Classification Level</td>
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<tr>
<td>Low Risk</td>
<td>I</td>
<td>II</td>
<td>II</td>
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<td>II</td>
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<td>IV</td>
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</table>

**Step Five:** Identify the areas surrounding the project area and the **RISK GROUP** for that location.

<table>
<thead>
<tr>
<th>Unit Below</th>
<th>Unit Above</th>
<th>Lateral</th>
<th>Lateral</th>
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<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
</tr>
</tbody>
</table>

**Step Six:** Water Incursion: Indicate potential risk of water damage outside construction zone:

**Step Seven:** If necessary, please describe the process for flushing new or existing plumbing fixtures and any associated water quality testing that may be indicated:
| Classification Level | 1. Execute work by using methods to minimize dust generation from construction activities.  
2. Immediately replace any ceiling tile displaced for visual inspection.  
3. All policies & procedures for renovation/construction/maintenance will be followed.  
4. Contractor is educated before the start of the project about the importance of adhering to dust mitigating engineering controls and work practices.  
5. When complete immediately clean up any dirt or debris.  
6. Place adhesive mat at entrance and exit of work area as necessary.  
7. Cover transport receptacles or carts and clean wheels prior to leaving containment.  
8. Contain construction waste before transport in tightly covered containers.  
10. Wet mop and/or vacuum with HEPA filtered vacuum at end of job or end of work shift. Area to be free of dust and or debris. | Level I |
| 1. Provide active means to prevent air-borne dust from dispersing into atmosphere, which may include the use of a Control Cube or anteroom.  
2. Water mist work surfaces to control dust while cutting.  
3. Seal unused doors with masking tape.  
4. Block off and seal air supply vents. If possible, reduce air supply to the room by adjusting VAVs or CAVs.  
5. Doors and windows within the work zone to remain closed at all times except during ingress/egress.  
6. Place adhesive mat at entrance and exit of work area as necessary.  
7. Cover transport receptacles or carts and clean wheels prior to leaving containment.  
8. Contain construction waste before transport in tightly covered containers.  
10. Wet mop and/or vacuum with HEPA filtered vacuum at end of job or end of work shift. Area to be free of dust and or debris.  
11. Adhesive mats placed at all entrances & exits of work area. | Level II |
| 1. Isolate HVAC system in area where work is being done to prevent contamination of duct system. Maintain until barrier is removed at completion of project.  
2. Designate entry and exit traffic pattern, unauthorized personnel are not permitted to enter work zone, traffic control signs placed.  
3. Complete all critical barriers or implement control cube method before construction begins. Will stay in place until IP&C or PM authorizes removal.  
4. Maintain negative pressure within work site and utilize HEPA equipped negative air machines. Both will be maintained until project & terminal cleaning are completed and IP&C authorizes removal.  
5. Air pressure differential between the construction and hospital-occupied areas to be monitored & documented at least once per shift during active work.  
6. Adhesive mats placed at all entrances & exits of work area.  
7. The contractor will maintain the construction zone in a clean manner.  
8. The area will be HEPA-vacuumed or damp mopped daily or more often as necessary to minimize dust.  
9. Daily cleanup of debris, material and waste shall be completed.  
10. Adhesive mats monitored & changed on a regular basis so that they remain effective.  
11. Any dust or construction debris tracked outside of the work area will be promptly cleaned.  
12. Terminal cleaning will be performed following protocol outlined in Appendix B of the ICRA policy.  
13. The construction cleaning will be inspected by the Owner prior to the authorization for the barrier removal.  
14. Air samples may be performed following IP&C/Safety protocol.  
15. Barriers will be removed carefully to minimize spreading of construction dust and debris. The areas surrounding the containment will be cleaned following removal of critical barriers. | Level III |
| 1. Seal all holes, pipes and conduits penetrations in work area.  
2. Construct anteroom for staging of equipment & donning of coveralls.  
3. Workers will wear coveralls in work area. Upon completion of major dust generating activities, coverall requirement is removed.  
4. Coveralls are removed in work zone before entering anteroom.  
5. Any residual dust left on workers shall be removed by using a HEPA-filtered vacuum.  
6. Shoe covers will be worn by workers and removed in work area.  
7. All renovation, construction, maintenance & tool carts leaving area must be covered & the wheels wiped down with a bleach solution.  
8. Environmental Services (EVS) or a contract cleaner will vacuum or damp mop the area outside the work zone and adjacent areas. | Level IV |
Infection Control Risk Assessment WORK PERMIT

<table>
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<th>Date:</th>
<th>Permit #:</th>
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<tbody>
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</tr>
<tr>
<td>Project #:</td>
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<td>Estimated Duration:</td>
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<td>Contractor performing work:</td>
<td>Permit Expiration Date:</td>
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<td>Contractor Supervisor &amp; Cell phone #:</td>
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<td>Clinical Department Manager &amp; Phone #:</td>
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<table>
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<tr>
<th>RISK level (circle one)</th>
<th>Low Risk Area</th>
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<td>TYPE B</td>
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<tr>
<td>High Risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highest Risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RISK GROUP</th>
<th>ICRA Classification Level</th>
<th>ICRA Classification Level</th>
<th>ICRA Classification Level</th>
<th>ICRA Classification Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Risk</td>
<td>I</td>
<td>II</td>
<td>II</td>
<td>III or IV</td>
</tr>
<tr>
<td>Medium Risk</td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
</tr>
<tr>
<td>High Risk</td>
<td>I</td>
<td>III</td>
<td>III or IV</td>
<td>IV</td>
</tr>
<tr>
<td>Highest Risk</td>
<td>III</td>
<td>III or IV</td>
<td>III or IV</td>
<td>IV</td>
</tr>
</tbody>
</table>

Classification Level for mitigating interventions (circle the applicable level) | I | II | III | III or IV | IV |

Note: Infection Prevention approval and an ICRA Work Permit will be required for Level III or Level IV projects.

Signatures for Project Approval

FH Project Manager: _________________________________ Date: 
Contractor Representative: _________________________ Date: 
Infection Prevention: ______________________________ Date: 

Appendix A Continued
Infection Prevention Program
Froedtert Hospital
Appendix A
Infection Prevention Program
Froedtert West Bend Hospital

Infection Control Risk Assessment Matrix

Infection Prevention Project #: _____________ Date: _____________

**Step One:** Please submit a brief description of the project as planned along with an area floor map showing where the affected areas will be. Please include details about terminal cleaning, room settling time, air quality testing, etc.
**Step Two:** Indicate the Construction Project Activity **TYPE:** ______________________

<table>
<thead>
<tr>
<th><strong>TYPE A</strong></th>
<th><strong>Inspection and non-invasive activities</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Includes</strong>, but is not limited to:</td>
<td></td>
</tr>
<tr>
<td>• Opening of a single ceiling tile for visual inspection or tile replacement.</td>
<td></td>
</tr>
<tr>
<td>• Painting (but not sanding)</td>
<td></td>
</tr>
<tr>
<td>• Wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>TYPE B</strong></th>
<th><strong>Small scale, short duration activities which create minimal dust</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Includes</strong>, but is not limited to:</td>
<td></td>
</tr>
<tr>
<td>• Opening of no more than one ceiling tile per 10 tiles</td>
<td></td>
</tr>
<tr>
<td>• Installation of telephone and computer cabling</td>
<td></td>
</tr>
<tr>
<td>• Access to mechanical chase or shaft spaces</td>
<td></td>
</tr>
<tr>
<td>• Cutting of walls or ceiling where dust migration can be controlled</td>
<td></td>
</tr>
<tr>
<td>• Minor renovation of existing space</td>
<td></td>
</tr>
<tr>
<td>• Wet sanding of walls</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>TYPE C</strong></th>
<th><strong>Work that generates a moderate to high level of dust</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Includes</strong>, but is not limited to:</td>
<td></td>
</tr>
<tr>
<td>• Dry sanding of walls</td>
<td></td>
</tr>
<tr>
<td>• Cutting of walls, removal of drywall or building finish components where work is limited to one room or suite (including removal of floor coverings, ceiling tiles, and casework)</td>
<td></td>
</tr>
<tr>
<td>• Wall demolition or new wall construction</td>
<td></td>
</tr>
<tr>
<td>• Minor duct work, plumbing work, or electrical work above ceilings (not including system demolition or installation)</td>
<td></td>
</tr>
<tr>
<td>• Moderate renovation of existing space</td>
<td></td>
</tr>
<tr>
<td>• Major cabling pulling activities, multiple rooms/lines where multiple access points are needed</td>
<td></td>
</tr>
<tr>
<td>• Any activity which requires construction of a containment barrier that does not qualify as Type D</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Type D</strong></th>
<th><strong>Major demolition and major construction projects</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Includes</strong>, but is not limited to:</td>
<td></td>
</tr>
<tr>
<td>• Activities which require the closure of a unit/wing or relocation of an entire patient area</td>
<td></td>
</tr>
<tr>
<td>• Demolition, removal, or installation of a complete cabling, HVAC, plumbing, medical gas, or electrical system</td>
<td></td>
</tr>
<tr>
<td>• Demolition of major fixed building components, assemblies, fit-out elements, or structural elements</td>
<td></td>
</tr>
<tr>
<td>• New construction of a free-standing patient care building (as determined by the Primary ICRA team)</td>
<td></td>
</tr>
<tr>
<td>• Outdoor construction of new structures located in close proximity (as determined by the Primary ICRA team) to existing patient care facility</td>
<td></td>
</tr>
<tr>
<td>• Excavation activities within close proximity (as determined by the Primary ICRA team) of hospital building</td>
<td></td>
</tr>
</tbody>
</table>
Step Three:
Indicate the RISK GROUP for the job location: ___________________________

(If more than one risk level is identified, select the higher risk level)***

<table>
<thead>
<tr>
<th>Low Risk</th>
<th>Medium Risk</th>
<th>High Risk</th>
<th>Highest Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Mechanical spaces</td>
<td>• Admissions</td>
<td>• Birth Center</td>
<td>• Endo/Bronch</td>
</tr>
<tr>
<td>• Areas not directly adjacent to patient care areas</td>
<td>• Behavioral Health</td>
<td>• Breast</td>
<td>• Cath lab</td>
</tr>
<tr>
<td>• Office areas not attached to or adjoining patient care areas, used</td>
<td>• Cardiac Diagnostic</td>
<td>• Center/Clinic</td>
<td>• ICU</td>
</tr>
<tr>
<td>for patient interviews, exams, or evaluations, not adjacent to high</td>
<td>• Cardiac Rehab</td>
<td>• Cancer Care</td>
<td>• Interventional Radiology</td>
</tr>
<tr>
<td>or highest risk areas</td>
<td>• Food Service and Cafeteria</td>
<td>• Clean Utility rooms</td>
<td>• OR/Cysto/PACU/Anesthesia</td>
</tr>
<tr>
<td>• Public corridors and spaces not on or directly attached to patient</td>
<td>• Laboratory</td>
<td>• Decontamination</td>
<td>• OR Birth Center</td>
</tr>
<tr>
<td>units or treatment locations</td>
<td>• Outpatient Rehab</td>
<td>• Dialysis</td>
<td>• Pharmacy: Compounding Rooms</td>
</tr>
<tr>
<td></td>
<td>• Physical Therapy</td>
<td>• Distribution/Dispatch</td>
<td>• Sterile Processing, packaging, storage</td>
</tr>
<tr>
<td></td>
<td>• Patient Care areas not listed under high or</td>
<td>• Emergency Department</td>
<td></td>
</tr>
<tr>
<td></td>
<td>highest (such as ambulatory care areas)</td>
<td>• HTS/ASU</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Physical Therapy</td>
<td>• Inpatient Units</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Preadmission</td>
<td>• Lab Collection Areas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Soiled utility rooms not on patient units</td>
<td>• Linen room</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Respiratory Therapy</td>
<td>• Nursery/Special Care Nursery</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pharmacy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(excluding compounding rooms)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Radiology, CT, MRI, NI, Ultrasound, Nuclear</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>medicine</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rehab Unit</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Wound care, Infusion/OP</td>
<td></td>
</tr>
</tbody>
</table>

***Risk classifications of any areas not listed above will be left up to the discretion of the Infection Prevention and Control department based upon the clinical risks of exposure of construction contaminants on the affected patient populations as well as disruption to patient care.***
**Step Four:**
Use the ICRA Classification Grid to determine the ICRA CLASSIFICATION LEVEL for mitigating interventions.

Match the Construction Project Activity **TYPE** and the **RISK GROUP** to identify the associated ICRA CLASSIFICATION LEVEL: _________________

<table>
<thead>
<tr>
<th>Project Activity</th>
<th>TYPE A</th>
<th>TYPE B</th>
<th>TYPE C</th>
<th>TYPE D</th>
</tr>
</thead>
<tbody>
<tr>
<td>RISK GROUP</td>
<td>↓ ICRA Classification Level</td>
<td>↓ ICRA Classification Level</td>
<td>↓ ICRA Classification Level</td>
<td>↓ ICRA Classification Level</td>
</tr>
<tr>
<td>Low Risk</td>
<td>I</td>
<td>II</td>
<td>II</td>
<td>III or IV</td>
</tr>
<tr>
<td>Medium Risk</td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
</tr>
<tr>
<td>High Risk</td>
<td>I</td>
<td>III</td>
<td>III or IV</td>
<td>IV</td>
</tr>
<tr>
<td>Highest Risk</td>
<td>III</td>
<td>III or IV</td>
<td>III or IV</td>
<td>IV</td>
</tr>
</tbody>
</table>

**Step Five:** Identify the areas surrounding the project area and the **RISK GROUP** for that location.

<table>
<thead>
<tr>
<th>Unit Below</th>
<th>Unit Above</th>
<th>Lateral</th>
<th>Lateral</th>
<th>Behind</th>
<th>Front</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
<td>Risk Group</td>
</tr>
</tbody>
</table>

**Step Six:** Water Incursion: Indicate potential risk of water damage outside construction zone:

**Step Seven:** If necessary, please describe the process for flushing new or existing plumbing fixtures and any associated water quality testing that may be indicated:
| LEVEL I | 1. Execute work by using methods to minimize dust generation from construction activities.  
2. Immediately replace any ceiling tile displaced for visual inspection.  
3. All policies & procedures for renovation/construction/maintenance will be followed.  
4. Contractor is educated before the start of the project about the importance of adhering to dust mitigating engineering controls and work practices.  
5. When complete immediately clean up any dirt or debris. |

| LEVEL II | 1. Provide active means to prevent air-borne dust from dispersing into atmosphere, which may include the use of a Control Cube or anteroom.  
2. Water mist work surfaces to control dust while cutting.  
3. Seal unused doors with masking tape.  
4. Block off and seal air supply vents. If possible, reduce air supply to the room by adjusting VAVs or CAVs.  
5. Doors and windows within the work zone to remain closed at all times except during ingress/egress.  
6. Place adhesive mat at entrance and exit of work area as necessary.  
7. Cover transport receptacles or carts and clean wheels prior to leaving containment.  
8. Contain construction waste before transport in tightly covered containers.  
10. Wet mop and/or vacuum with HEPA filtered vacuum at end of job or end of work shift. Area to be free of dust and or debris. |

| LEVEL III | 1. Isolate HVAC system in area where work is being done to prevent contamination of duct system. Maintain until barrier is removed at completion of project.  
2. Designate entry and exit traffic pattern, unauthorized personnel are not permitted to enter work zone, traffic control signs placed.  
3. Complete all critical barriers or implement control cube method before construction begins. Will stay in place until IP&C or PM authorizes removal.  
4. Maintain negative pressure within work site and utilize HEPA equipped negative air machines. Both will be maintained until project & terminal cleaning are completed and IP&C authorizes removal.  
5. Air pressure differential between the construction and hospital-occupied areas to be monitored & documented at least once per shift during active work.  
6. Adhesive mats placed at all entrances & exits of work area.  
7. The contractor will maintain the construction zone in a clean manner.  
8. The area will be HEPA-vacuumed or damp mopped daily or more often as necessary to minimize dust.  
9. Daily cleanup of debris, material and waste shall be completed.  
10. Adhesive mats monitored & changed on a regular basis so that they remain effective.  
11. Any dust or construction debris tracked outside of the work area will be promptly cleaned.  
12. Terminal cleaning will be performed following protocol outlined in Appendix B of the ICRA policy.  
13. The construction cleaning will be inspected by the Owner prior to the authorization for the barrier removal.  
14. Air samples may be performed following IP&C/Safety protocol.  
15. Barriers will be removed carefully to minimize spreading of construction dust and debris. The areas surrounding the containment will be cleaned following removal of critical barriers. |

| LEVEL IV | 1. Seal all holes, pipes and conduits penetrations in work area.  
2. Construct anteroom for staging of equipment & donning of coveralls.  
3. Workers will wear coveralls in work area. Upon completion of major dust generating activities, coverall requirement is removed.  
4. Coveralls are removed in work zone before entering anteroom.  
5. Any residual dust left on workers shall be removed by using a HEPA-filtered vacuum.  
6. Shoe covers will be worn by workers and removed in work area.  
7. All renovation, construction, maintenance & tool carts leaving area must be covered & the wheels wiped down with a bleach solution.  
8. Environmental Services (EVS) or a contract cleaner will vacuum or damp mop the area outside the work zone and adjacent areas. |
# Infection Control Risk Assessment WORK PERMIT

<table>
<thead>
<tr>
<th>Date:</th>
<th>Permit #:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared by:</td>
<td>Phone #:</td>
</tr>
<tr>
<td>Project # and Location:</td>
<td></td>
</tr>
<tr>
<td>Project Start Date:</td>
<td>Estimated Duration:</td>
</tr>
<tr>
<td>Project Manager and Phone #:</td>
<td></td>
</tr>
<tr>
<td>Contractor performing work:</td>
<td>Permit Expiration Date:</td>
</tr>
<tr>
<td>Contractor Supervisor &amp; Cell phone #:</td>
<td></td>
</tr>
<tr>
<td>Clinical Department Manager &amp; Phone #:</td>
<td></td>
</tr>
</tbody>
</table>

## RISK level (circle one)
- Low Risk Area
- Medium Risk Area
- High Risk Area
- Highest Risk Area

<table>
<thead>
<tr>
<th>Construction Activity Project TYPE</th>
<th>TYPE A</th>
<th>TYPE B</th>
<th>TYPE C</th>
<th>TYPE D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Activity →</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RISK GROUP</td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>III or IV</td>
</tr>
<tr>
<td>Low Risk</td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>III or IV</td>
</tr>
<tr>
<td>Medium Risk</td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
</tr>
<tr>
<td>High Risk</td>
<td>I</td>
<td>III</td>
<td>III or IV</td>
<td>IV</td>
</tr>
<tr>
<td>Highest Risk</td>
<td>III</td>
<td>III or IV</td>
<td>III or IV</td>
<td>IV</td>
</tr>
</tbody>
</table>

## Classification Level for mitigating interventions (circle the applicable level)

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>III or IV</th>
<th>IV</th>
</tr>
</thead>
</table>

**Note:** Infection Prevention approval and an ICRA Work Permit will be required for Level III or Level IV projects.

## Signatures for Project Approval

FH Project Manager: _________________________________ Date: 

Contractor Representative: _________________________ Date: 

Infection Prevention: ______________________________ Date: 

---

**Appendix A Continued**

Infection Prevention Program  
Froedtert West Bend Hospital
INFECTION CONTROL GUIDELINES FOR MAJOR CONSTRUCTION ACTIVITIES IN HIGH AND HIGHEST RISK AREAS

SPECIFICATIONS:

A. The project site must be completely contained with construction barriers extending from floor, beyond the suspended ceiling, to the underside of the floor above ("the deck"). That area should be vacuumed prior to beginning construction. All penetrations into the construction area must be sealed, windows closed, and HVAC ducts capped. The construction areas should be enclosed using hard plastic partition or drywall barriers. Exception: Barriers may go to the ceiling if the ceiling integrity will remain intact.

B. Construction barrier entrances must have gasketed doors with self-closing latching hardware and appropriate walk-off mats both inside and outside of the construction area. Materials, tools and equipment should be covered with plastic or a clean cloth and transported into and out of the hospital on construction designated elevators and egress routes. Construction personnel visibly contaminated with debris or dust shall either don clean coveralls or clean off clothing using a HEPA-filtered vacuum prior to exiting the construction area and entering a hospital-occupied area.

C. Class III and IV projects, which are more likely to occur in High and Highest risk areas, require an anteroom. Exceptions can be made with the approval of the Infection Prevention & Control and Enterprise Facility Services departments during the Infection Control Risk Assessment process.

D. Negative pressure must be maintained within the project site at all times by the use of air fan units vented directly to the outside or fitted with high-efficiency particulate air (HEPA) filters if outside venting is not possible. Contractor is required to monitor pressure differential between the construction area and surrounding areas using a digital monitoring device. Monitor the pressure differential between the construction containment and the adjacent occupied areas on a continuous basis. Multiple differential pressure monitoring devices may be required to monitor and document negative pressure. Verify with IP&C and/or the PM how many monitoring devices will be required. Setup the manometer to alarm if the pressure differential is below 0.005 inches water column for more than one minute. Notify IP&C and the PM if negative pressure has been lost for more than one minute in order to assess whether patients are at risk.

E. Debris removal from the construction site must be completed following a predetermined route at times when patients are in their rooms with their doors closed. Debris should be transported in clean containers with tight-fitting lids. Waste is not to be transported through patient / staff areas without the approval of the project manager and the affected department director or manager.

F. Construction activities required in patient-occupied areas outside of the barricade must be contained and require a mini-enclosure around the work area (control cube or Non-combustible plastic enclosure).

G. Any dust tracked outside of the barrier must be removed immediately. Cleaning in patient occupied areas shall be performed using HEPA-filtered vacuum cleaners. Thorough cleaning will be done at the end of each workday and at the end of the project.
H. All air-handling ducts should be shut down or covered during all demolition activities. Baseline air quality sampling will be done from different locations when little or no activity exists prior to construction. Air quality sampling will be done monthly until breaking through walls and weekly thereafter. Records of air quality sampling will be kept pursuant to the details outlined in the ICRA policy.

I. Weekly walk through monitoring of the construction area will be done by the Director of Enterprise Facility Services and/or Infection Control or their designees when the project meets the requirements for weekly walk through.
### Daily Infection Control Checklist for Use During Construction and Renovation

**Location/Area of Construction:**

<table>
<thead>
<tr>
<th>Project Start Date:</th>
<th>Estimated Project Duration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor:</td>
<td>Phone:</td>
</tr>
<tr>
<td>FH Project Manager:</td>
<td>Phone:</td>
</tr>
<tr>
<td>Infection Control Coordinator:</td>
<td>Phone:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week Of</th>
<th>Required Elements</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
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</tr>
<tr>
<td><strong>Barriers</strong></td>
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<td>Tight Seals</td>
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<td>No Air Escaping</td>
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<td>Doors Closed</td>
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<td></td>
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<tr>
<td>Wet Mats/Stick Mats</td>
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</tr>
<tr>
<td>No Visible Dirt/Dust on Floors</td>
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<td></td>
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<tr>
<td><strong>Air</strong></td>
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<tr>
<td>Negative Exhaust Fans</td>
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<td>HEPA Filtration</td>
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</tr>
<tr>
<td><strong>Traffic Patterns</strong></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Divert Pedestrian Traffic</td>
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<tr>
<td><strong>Debris</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Covered for Disposal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaned Adjacent Areas Daily &amp; As Needed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td><strong>Contractor Designee</strong></td>
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</table>
APPENDIX D
Infection Prevention Program
Froedtert Health

Specifications for Construction and Terminal Cleaning

A. Responsibilities:
   a. The Contractor:
      i. Arrange for construction cleaning to be performed before the containment barrier is removed as well as during the removal of the barrier and any post-barrier removal cleaning required.
      ii. Once construction cleaning has been completed and barrier removed, arrange for the facility’s Environmental Services department (EVS), or a hospital approved third party professional cleaning company, to perform terminal cleaning.
         1. if utilizing a professional Cleaning Company (CC) they must be able to demonstrate competence and experience cleaning in an institutional environment.
         2. Preferably a CC that is hired would have experience cleaning in a healthcare setting.
      iii. The contractor shall not perform terminal cleaning themselves in any situation. Terminal cleaning shall be performed by the facility’s EVS or an EVS approved CC.
   b. Environmental Services (EVS) or CC:
      i. Perform terminal cleaning as coordinated by the Contractor.
      ii. Notify the Contractor of completion of the terminal cleaning.

B. Cleaning Requirements: Provide a Two Step Clean:
   1. CONSTRUCTION Cleaning – Pre-barrier Removal:
      a. Clean inside the project area with the barrier in position. First, HEPA vacuuming of all horizontal and vertical surfaces, including the barrier and the inside of the metal studs and track. Second, completely clean the inside of the barrier – all dust, dirt, debris, and grime must be cleaned from all surfaces located within the project area, including from electrical outlet and switch covers.
      b. Clean the covers that are isolating the HVAC system.
      c. Clean the outside of the negative air machine and its exhaust duct.
      d. Clean all flooring and apply floor finishes as prescribed by the manufacturer of the product and/or HMC EHS department.
**2. TERMINAL Cleaning – Post-barrier Removal:**

a. Coordinate terminal cleaning by Environmental Services (EVS). EVS or an EVS approved cleaning contractor shall provide a final thorough cleaning of all Class III and IV projects.

b. All surfaces including walls, lights, trim, cove base etc. must be cleaned of dust, grime, etc. using a general cleaning agent. Cleaning solutions must be changed frequently so that the solution does not leave a film when it dries (due to an over burden of dust and dirt in the solution).

c. Clean and finish all flooring using manufacturer and HMC recommended products.

**C. Specific Cleaning Expectations:** When complete, all surfaces should have a “white glove” finish.

1. Clean all ceiling, lights, and ceiling diffusers and grills
2. Clean all walls, from top to bottom, including vents, trim, recessed spaces and other detail in walls, and built-in cabinets.
3. Clean the blinds and windows.
4. Clean the inside all cabinets and drawers.
5. Clean all horizontal surfaces (equipment, TV, computers, phones, furniture, desks, countertops, lodges, sills, hand or guard rails, door jambs, handles, crevices, etc.).
7. Clean bathroom in sequence going from toilet, to shower/tub, to sink, to floor.
8. Clean shower/tub using friction to remove all visible stains, grime, rust, and soap scum.

**D. Cleaning Products:**

1. All cleaning products are to be the same as used by Froedtert Health’s Environmental Health Services Department. Products must also be of the same product type as specified by the original equipment manufacturer.
2. Contact the EVS Department for a current list of approved products.

**E. Carpet Cleaning Equipment:**

1. Carpet shampooing equipment must be steam or hot water extraction type.
2. Vacuums must be equipped with brushes and HEPA filters.

F. The appropriate timing of air-testing will be determined by The Enterprise Facility Services and Infection Prevention departments during the project pre-planning phase of the Infection Control Risk Assessment.
Corrective Action Plan

Infection Prevention Project Title and Number:

Date of noted ICRA Non-compliance:

Specific details of Non-compliance noted:

Contractor Responsible:

Project Manager Responsible:

Date Contractor and Project Manager Notified:

Action Plan:

Due Date:
This action plan has been agreed upon by the Contractor, assigned Froedtert Health Project Manager, and the Infection Prevention and Control Department. If the issues of non-compliance outlined above are not rectified within the agreed upon timeframe, the Infection Prevention and Control department reserves the right to halt all work on the project in question if patient care and safety is deemed to be at risk. Per Froedtert Health policy, if the contractor continues being in violation of the ICRA work permit, the Administrative leadership of the property in question will be notified by the Infection Prevention and Control department of said deficiencies and their bidding of future projects may be revoked.

Signatures:

FH Project Manager: ___________________________ Date: _____________

Contractor Representative: _____________________ Date: _____________

Infection Prevention: __________________________ Date: _____________

Corrective Action Plan completed and project deemed safe to continue by _______________________, of the Infection Prevention and Control department, on ________________..
Appendix F
Infection Prevention Program
Froedtert Health

Water, Moisture, and Mold Remediation

I. Overview
   • Introduction
   • Policy

A. Introduction
   The presence of excessive moisture in buildings has been linked with occupant illnesses and
deterioration of building material. When mold spores land on wet or damp areas they may
begin to grow. Excess moisture on almost all indoor materials leads to growth of microbes, such
as mold, fungi and bacteria. Generally, mold will grow on materials where excessive moisture
accumulates and remain undiscovered and/or uncorrected. As the mold grows, it digests the
substrate and gradually destroys it. Even if mold cannot be seen, its presence may be noticed as
a moldy or earthy smell. Controlling the moisture in the building can help minimize mold
growth.

Currently, there are no federal standards (e.g., OSHA, NIOSH, EPA) for airborne concentrations
of mold spores. However, epidemiological studies suggest that the occupants of damp or moldy
buildings are at increased risk of respiratory symptoms, respiratory infections and exacerbation
of asthma. Strategies for mold prevention and remediation are based on best practices as
determined in the field. These strategies are utilized at Froedtert Health and apply to health
care and non-health care facilities.

This document outlines and describes the best and most current guidance for response to water
intrusion and mold contamination.

B. Approach to Water & Mold Remediation

This appendix outlines methods to prevent mold growth, the conditions under which mold and
moisture remediation must be performed and the responsibilities of the affected parties. The
goal is to reduce or eliminate excess moisture in less than 48 hours as a means to prevent mold
growth.

This appendix applies to Froedtert Hospital staff, as well as hired contractors, participating in
moisture remediation at any Froedtert Health facility.
II. General

A. Responsibilities

(1) The Enterprise Facility Services department will:
   (a) Identify and fix the source(s) of water leak(s) or intrusion.
   (b) Ensure that the appropriate containment barriers are used given the remediation project’s scope and ICRA.
   (c) Perform or arrange for contract services for water removal and restorative drying of affected structure.
   (d) Notify Infection Prevention of water intrusion when discovered via an FYI page to the Infection Prevention & Control emergency on-call pager.
   (e) Shall notify Infection Prevention immediately when an area of suspected mold growth is discovered.

(2) Contractor will:
   (a) Evaluate and document the extent of damage (e.g. water or mold) in the structure, systems and building contents using appropriate monitoring and detection equipment.
   (b) Designate a Project Leader, representing the Contractor, to work with the Enterprise Facility Services department, and Infection Prevention during the entire project.
   (c) Provide with the Enterprise Facility Services department, and Infection Prevention representative a written action plan, included in the Infection Control Risk Assessment (ICRA). Depending on the response activity, the action plan will include a timeline and goals for drying and the implementation of mold remediation techniques.
   (d) Will record and document all activities and services performed in response to the problem. For water restoration records would include complete moisture readings. Records and documents will be provided to Enterprise Facility Services department, and Infection Prevention representatives.
   (e) Complete the project in a manner which complies with all government regulations and NIH policies and procedures.

(3) Upon Request, Infection Prevention & Control will:
   (a) Conduct a walk-through of the areas impacted by water intrusion and perform an assessment.
   (b) Provide technical assistance and recommendations to facility managers and project officers for drying and moisture remediation.
   (c) Evaluate areas suspected to be contaminated by mold growth and provide recommendations to facility managers and project officers for remediation.
   (d) Assist in identifying the underlying causes of water intrusion and mold growth and develop the appropriate response(s) to prevent recurrence.
   (e) Assess conditions for occupancy after water restoration or mold remediation activities.
III. Guidance for Moisture Infiltration

- Initial Response
- First 48 hours
- After 48 Hours

A. Initial Response
Building occupants should follow the following steps if water infiltration is discovered in a Froedtert Hospital facility:

(1) Notify the Enterprise Facility Services as well as Infection Prevention & Control departments to report water infiltration.

(2) Contact Infection Prevention to request an evaluation of the affected area. The building occupant is responsible for implementing the Infection Prevention recommendations as enumerated in the Infection Control Risk Assessment. Depending on the recommendations, other services may be required.

B. Guidance for Remediating Moisture in the First 48 hours
In the event of water infiltration into building areas, remediation within 24 to 48 hours is critical in prevention of mold growth.

(1) Identify the source of the moisture: Following the discovery of water infiltration into building spaces, the first step is to identify whether the moisture source is clean or polluted water.

(a) If the water infiltrating the building originates from a sanitary water source (no chemical or biological pollutants or sewage), the sooner repair, clean up and drying are accomplished, the likelihood of preventing mold growth is increased.

(b) If mold growth is found or if the water is polluted, contact Infection Prevention and review the information in Moisture Infiltration after 48 Hours.

Note: Potable, de-ionized, reverse osmosis, and distilled water are considered unpolluted, unless they have come in contact with a pollution source. All others are considered polluted. However, clean water may not remain clean as it contacts other surfaces or materials.

(2) Halt further moisture infiltration: The next step is to halt further moisture intrusion by repairing the water leak. Conduct an inventory of the water damaged areas, building materials, and furnishings, paying special attention to identifying wet carpet under cabinets, furniture, and furnishings. If you can’t determine the start time of the water infiltration, it should be handled as if it has existed for more than 48 hours (see section titled “Guidance on Moisture Infiltration after 48 hours”).

(3) Determine whether materials are “dry”: Using the appropriate detection equipment to evaluate materials in the impacted area for excess moisture (see section titled “Response Equipment”).
Specific instructions: Following are guidelines for preventing mold growth on specific water-damage materials.

(a) **Ceiling tiles**: Discard and replace.

(b) **Carpet and Backing**: Remove all furniture/cabinets sitting on wet carpet. Remove water with an extraction vacuum; reduce ambient humidity levels with dehumidifiers; and accelerate drying by using fans.

(c) **Cellulose Insulation**: Discard and replace.

(d) **Fiberglass Insulation**: Discard and replace.

(e) **Electrical**: Consider all wet wiring, light fixtures, and electrical outlets to be shock hazards. Turn power off in the affected area until these hazards have been checked by a building inspector or electrician. All wet electrical circuit breakers, GFI’s, and fuses need to be replaced. All wet electric motors, light fixtures, and so on must be opened, cleaned, and air-dried by a qualified person and visually inspected for moisture before they are placed back into service.

(f) **Books and Papers**: Non-valuable materials should be discarded. Photocopy valuable/important items and discard originals. For items with high monetary or sentimental value, consult with a restoration/water damage specialist.

(g) **Concrete or Cinder Block Surfaces**: Remove water with a water extraction vacuum and accelerate drying with de-humidifiers, fans, and/or heaters.

(h) **Flooring (Linoleum, Ceramic Tile, and Vinyl)**: Vacuum or damp wipe with water and mild detergent and allow them to dry. Check under flooring to make sure it is dry.

(i) **Non-Porous, Hard Surfaces (Plastics, Metals)**: Vacuum or damp wipe with water and mild detergent.

(j) **Upholstered Furniture**: Remove water with an extraction vacuum. Accelerate drying with de-humidifiers, fans, and/or heaters. Drying furniture may be difficult to complete within 48 hours. If the furniture is valuable, consult a restoration/water damage specialist.

(k) **Wallboard (Drywall and Gypsum Board)**: May be dried in place if there is no water stain and/or obvious swelling and the seams are intact. Remove base molding to inspect the wallboard.

(l) **Wood Surfaces**: Remove moisture immediately and use de-humidifiers, gentle heat, and fans for drying. Use caution when applying heat to hardwood floors. Treated or finished wood surfaces may be cleaned with mild detergent and clean water and allowed to dry. Wet paneling should be pried away from the wall for drying.

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C. **Guidance on Moisture Infiltration After 48 hours**

When water infiltration has remained uncorrected or building materials are not “dry” after 48 hours, mold growth may have begun. There may be visible evidence of growth or a moldy, damp smell. In these cases, the situation is now one of potential mold remediation. The guidance provided here is for information purposes only and is not a substitute for Infection Prevention expertise.
Remediation efforts are more intensive than prevention, and they must be designed to protect the health of building occupants and remediation personnel. Recommendations for cleanup or remediation by Infection Prevention will depend on the extent of the damage, the types of materials affected, and the presence/type of mold growth. Infection Prevention will make recommendations on whether current occupants should be relocated; on the containment/cleanup methods to be used (including whether remediation can be done by in-house personnel or if professional contractors are required); and on the types of personal protective equipment required by Froedtert Hospital personnel.

Air handling units (AHUs) servicing the affected area(s) should not be shut down unless gross, visible mold growth has been identified and a containment area cannot be established. Having the AHU running helps the drying process and control humidity in the area.

If water infiltration necessitates the replacement of any portion of a gypsum shaft or partition assembly, or any interior wall, ceiling or floor finishes, the Enterprise Facility Services manager will coordinate the repairs/replacement through the Contractor hired to perform remediation of the event.

- **Carpet:** The impacted carpet should be discarded and replaced.
- **Ceiling tiles:** Discard and replace (Note: If the tiles are glued onto the ceiling or wall, call determine whether the material(s) contain asbestos).
- **Porous/absorbent items:** Regardless of the original source of water damage (e.g., flooding versus water leaks from point-of-use fixtures or roofs), remove wet, absorbent items and replace with new materials as soon as the underlying structure is declared by the facility engineer to be thoroughly dry.
- **Wallboard:** If the wallboard cannot be dried within 48 hours, measure twelve (12) inches above the water mark/damage and remove and discard wallboard below that point. Remove and discard damp insulation, and ventilate the wall cavity. In some cases it may be difficult to tell if the wallboard has been sufficiently dried. A moisture meter can be used to check for moisture. To use a moisture meter, check the affected area and compare the reading to a control reading in a non-affected area (see section titled “Response Equipment”).
- **Fireproofing:** Covering steel/metal building supports or other building materials. The remediation of wet fireproofing must be discussed during the Infection Control Risk Assessment process. Fireproofing typically requires more than 48 hours of drying time due to the depth of material installed and the temperature of the building materials it is connected to. Based upon initial inspection of the material, it should both be removed immediately and replaced, or an attempt made to dry as best as possible and subsequently using an anti-fungal spray added to the surface, as agreed upon in the ICRA.
- **Mechanical Rooms:** Mechanical room leaks, standing water, consistent relative humidity levels above 60%, and condensation problems should be fixed as they are detected. If
standing water is found in areas that have concrete or tile floors and there is no apparent visible mold, the DOHS does not need to be contacted.

- **Contaminated Water:** Contact the DOHS immediately if the water infiltrating a building area is polluted. Following repairs to prevent any further infiltration, any contaminated ceiling tiles, carpet, upholstered furniture, paper products, or similar materials must be disposed of in sealed containers by personnel wearing appropriate personal protective equipment (protective clothing, gloves, boots, and, at a minimum, a N-95 type respirator). The entire area must be disinfected.

  **Note:** Potable, de-ionized, reverse osmosis, and distilled water are considered unpolluted unless they have come in contact with a pollution source. All others are considered polluted. However, clean water may not remain clean once it contacts other surfaces or materials.

IV  **Response Equipment**

- Moisture Monitoring and Evaluation Equipment
- Restorative Drying Equipment

A. **Moisture Monitoring and Evaluation Equipment**

The following is a list of equipment that can be employed to evaluate high moisture levels and facilitate drying of affected areas.

1. **Moisture Meters:** A moisture meter may be useful in the following situations:
   a. When a stain has been found on wallboard and a decision is needed as to whether the stain can be cleaned or further action is required.
   b. Sometimes it is difficult to determine when wallboard has been completely dried. In these cases, use a moisture meter to check drywall in the affected area and compare the reading to a non-affected area. Readings should be the same.
   c. Table 1 references acceptable moisture levels for select building materials provided by William Yobe & Associates & U.S. Forest Products (USDA).
   d. Any material not meeting the requirements enumerated below after 48 hours should be removed and replaced to prevent the growth of mold and mildew in the future.

<table>
<thead>
<tr>
<th>Material/Component</th>
<th>Moisture %</th>
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<tbody>
<tr>
<td>Baseboard</td>
<td>7 to 10</td>
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<tr>
<td>Gypsum Wallboard</td>
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Table 1 - Acceptable moisture levels for select building materials
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<tr>
<th>Hardwood Flooring</th>
<th>7 to 10</th>
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<tbody>
<tr>
<td>Framing Lumber</td>
<td>15 to 19</td>
</tr>
<tr>
<td>Wood Furnishings (interior)</td>
<td>7 to 12</td>
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</tbody>
</table>


(2) **Infrared Camera**: A thermal camera may be useful in the following situation:
   (a) Infrared cameras are used to detect surface temperature. An infrared camera produces a thermal image of a material that can provide rapid identification of potentially moist areas by indicating temperature differences at the surface of materials. In these cases, use a thermal camera to check drywall in an affected area and compare the reading to the surroundings to detect thermal disparities attributed to moisture. This method may be used in conjunction with a moisture meter.

(3) **Borescope**: A borescope may be useful in the following situations:
   (a) To inspect behind walls for pockets of water or mold.
   (a) To inspect inside ducts, behind motors and compressors of HVAC systems.

B. **Restorative Equipment**

(1) **Wet Vacuum**: Wet vacuums are vacuum cleaners designed to collect water. They can be used to remove water from floors, carpets, and hard surfaces where water has accumulated. They should not be used to vacuum porous materials, such as gypsum board. They should be used only when materials are still wet -- wet vacuums may spread spores if sufficient liquid is not present. The tanks, hoses, and attachments of these vacuums should be thoroughly cleaned and dried after use since mold and mold spores may stick to the surfaces.

(2) **Dehumidifiers**: Dehumidifiers are devices designed to remove water vapor from the air. They can be used to lower humidity levels in affected areas to aid in drying. The number of dehumidifiers is dependent on the type of dehumidifier being used, the size of the affected area, and the type of building material affected.

(3) **Airmovers**: Airmovers are designed at a low center of gravity to force air along floor and wall surfaces, while axial fans are designed to force a large volume of air across a large area. Residential box fans, circular fans, etc. should not be used for structural drying in affected areas due to possible electrical shock hazards.

(4) **HEPA Vacuum**: HEPA (High-Efficiency Particulate Air) vacuums are recommended for final cleanup of remediation areas after materials have been thoroughly dried and contaminated materials removed. HEPA vacuums are also recommended for cleanup of dust that may have settled on surfaces outside the remediation area. Care must be taken to assure that the filter is properly seated in the vacuum so that all the air must pass through the filter. When changing the vacuum filter, Staff should wear PPE to
prevent exposure to the mold that has been captured. The filter and contents of the HEPA vacuum must be disposed of in well-sealed plastic bags.

V Mold Remediation

- Microbial “Mold Remediation” Policy
- Containments
- Prevention Strategy

A. Microbial “Mold Remediation” Policy
The NIH follows the 2008 Institute of Inspection Cleaning and Restoration Certification S520 standard and Reference Guide for Professional Mold Remediation. Prior to and during activities that disturb mold, engineering controls and work practices shall be implemented to prevent mold contamination from spreading to other clean areas. Remediation efforts should be coordinated with the DOHS at 301-496-3353.

1. **Determine the size of the impacted area**: Assess the size of the moisture problem before planning the remediation work (see Table 2). Remediation should not proceed until the source of the water intrusion has been fixed, or the problem may reoccur. Remediation techniques may vary greatly depending on the size and complexity of the job, and may require revision if circumstances change or new facts are discovered.

2. **Biocides**: The goal of mold remediation is to remove the mold and prevent human exposure and damage to building materials. Physically removing mold contamination is the primary means of remediation. Even after mold is rendered non-viable, the remaining mold fragments are still allergenic, and some are potentially harmful. The use of biocides is not routinely recommended during remediation. However, there may be some instances when the use of a biocide may be justified, such as when immune compromised individuals are present. Biocides are toxic to humans as well as molds. If biocides are used, occupants must first be evacuated from the area and applied with adequate ventilation. Remediation personnel must wear appropriate personal protective equipment. Since some biocides are registered pesticides with the EPA. As such these may only be applied by licensed applicators.

3. **Mold Sampling**: In most cases, sampling for mold is unnecessary even if there are visible signs of mold or moldy, musty odors. In some specific instances such as where litigation is involved or the source of the mold is unclear then sampling may be part of the site evaluation. Air sampling may be necessary if an individual(s) has been diagnosed with a disease that is or may be associated with mold exposure (e.g., Aspergillosis) and the occupational health physician/medical practitioner desires to confirm the causative agent. Sampling for mold should only be done after a sampling strategy has been developed. Since no OSHA or other occupational exposure levels have been set for mold, sampling cannot be used to check a building’s compliance with existing standards.

4. **Air Particulate Testing**: Testing the air quality of the remediated space is necessary to determine whether the remediation project and post-project cleaning returned the effected space to normal air quality conditions based upon historical baseline air-quality testing results.

5. **Post Remediation Verification**: Remediated structures, systems, and contents can be considered clean (by post remediation evaluation) when contamination or non-restorable contaminated materials and debris have been removed, and surfaces are visibly free of dust. Also, remediated areas should be free of odors.
B. **Containment:**
   a. Containment of the affected area will be erected and maintained using the parameters outlined in the Infection Control Risk Assessment covering a reasonable area surrounding the damaged building materials.
   b. The removal of containment materials upon completion of the remediation project will include the cleaning of barriers before removal.

C. **Prevention Strategies**
   - Fix leaks immediately;
   - Clean and dry wet or damp spots immediately;
   - Remove mold-contaminated materials;
   - Regularly inspect and maintain heating, ventilating, and air conditioning (HVAC) systems;
   - Routinely inspect and clean HVAC drip pans; check proper flow and that drain is unobstructed;
   - Maintain low indoor humidity, ideally 30-60%;
   - Vent moisture-generating equipment to the outside, where possible;
   - Increase surface temperature or reducing the humidity to prevent condensation that results when surface temperature is below dew point temperature. Surface temperature can be increased with insulation or by increasing air circulation. Humidity can be reduced by repairing leaks, increasing ventilation (if outside air is cold and dry), or by dehumidifying (if outdoor air is warm and humid).
   - Keep gutters, downspouts, and storm drains in working order and free of debris and ensure that they drain water away from the foundation.
   - Provide adequate drainage and slope the ground away from building foundations so they do not stay wet.
   - Regardless of the original source of water damage (e.g., flooding versus water leaks from point-of-use fixtures or roofs), remove wet, absorbent structural items (e.g., carpeting, wallboard, and wallpaper) and cloth furnishings if they cannot be easily and thoroughly cleaned and dried within 48 hours; replace with new materials as soon as the underlying structure is declared by the facility manager to be thoroughly dry.

VI **Building Re-occupancy**
   - Upon completion of water and/or mold remediation, the affected areas will be surveyed using the Infection Control Risk Assessment (ICRA) parameters and assessed for completeness by the parties who signed off on the ICRA.

VII **References**


Site: 7718 Froedtert Memorial Lutheran Hospital, Inc  
Program: Hospital

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<td>3</td>
<td>Are construction staff wearing appropriate hospital-approved identification badges?</td>
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<td>Is there a daily infection control checklist on-site (or available electronically upon request) and up to date?</td>
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### Containment

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</tbody>
</table>
# Infection Control Tracer for Construction Projects

**Site:** 7718 Froedtert Memorial Lutheran Hospital, Inc  
**Program:** Hospital

## Questions (* = Required)

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<tbody>
<tr>
<td>6</td>
<td>Is containment continuous from floor to ceiling up to the deck (where necessary)?</td>
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<tr>
<td></td>
<td>N/A</td>
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<td></td>
<td>Compliant? ☐ Yes ☐ No</td>
<td>Num: _____ Den: _____</td>
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<td>Notes:</td>
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<tr>
<td>7</td>
<td>Are seams of containment sealed along the floor, ceilings, walls, and doorway?</td>
<td></td>
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<tr>
<td></td>
<td>N/A</td>
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<td></td>
<td>Compliant? ☐ Yes ☐ No</td>
<td>Num: _____ Den: _____</td>
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<td>Notes:</td>
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<tr>
<td>8</td>
<td>Are hand hygiene stations available near the exit/entrance for contractor use?</td>
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<tr>
<td></td>
<td>N/A</td>
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<td>Compliant? ☐ Yes ☐ No</td>
<td>Num: _____ Den: _____</td>
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<td>Notes:</td>
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<td>9</td>
<td>Is the entrance/exit to the project site locked and inaccessible to patients, visitors, and hospital-staff (applicable to hard-wall and edge guard containment)?</td>
<td></td>
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<tr>
<td></td>
<td>N/A</td>
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<td></td>
<td>Compliant? ☐ Yes ☐ No</td>
<td>Num: _____ Den: _____</td>
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### Questions (* = Required)

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<th>Den:</th>
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<tbody>
<tr>
<td>10</td>
<td>Are tacky walk-off mats present and changed routinely?</td>
<td>Yes/No</td>
<td></td>
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<tr>
<td>11</td>
<td>Are the floors around the outside of the containment clean and well kempt?</td>
<td>Yes/No</td>
<td></td>
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<tr>
<td>12</td>
<td>Does the containment allow for free and unobstructed egress of hospital equipment and personnel traffic around it?</td>
<td>Yes/No</td>
<td></td>
<td></td>
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<tr>
<td>13</td>
<td>Is the project space negatively pressured compared to the space on the outside of the project?</td>
<td>Yes/No</td>
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### Notes:

**Pressurization**

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<th>Compliant?</th>
<th>Num:</th>
<th>Den:</th>
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<tbody>
<tr>
<td>13</td>
<td>Is the project space negatively pressured compared to the space on the outside of the project?</td>
<td>Yes/No</td>
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© 2020 Joint Commission Resources
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<tr>
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<th>Questions (* = Required)</th>
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<tbody>
<tr>
<td>14</td>
<td>Is there an operational pressure monitor in plain site within the entrance/exit to the job site?</td>
<td></td>
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<tr>
<td></td>
<td>☐ N/A</td>
<td>Compliant?  ○ Yes  ○ No</td>
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<tr>
<td></td>
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<td>Notes:</td>
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<tr>
<td>15</td>
<td>Can the contractor provide documentation of air pressure monitoring history upon request?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>☐ N/A</td>
<td>Compliant?  ○ Yes  ○ No</td>
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<td>Notes:</td>
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<tr>
<td>16</td>
<td>If there is an anteroom present, is it clean and sealed?</td>
<td></td>
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<tr>
<td></td>
<td>☐ N/A</td>
<td>Compliant?  ○ Yes  ○ No</td>
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<td></td>
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<td>Notes:</td>
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<tr>
<td>17</td>
<td>Are HEPA filtration units present throughout the project site?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>☐ N/A</td>
<td>Compliant?  ○ Yes  ○ No</td>
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<td>Notes:</td>
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### Questions (* = Required)

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<th>Num: _____</th>
<th>Den: _____</th>
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</thead>
<tbody>
<tr>
<td>18 Can the contractor provide documentation of HEPA filtration unit maintenance history upon request?</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 Is the flooring surface dry and free of water and mold?</td>
<td>N/A</td>
<td></td>
<td></td>
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<tr>
<td>20 If new flooring has been laid down, is it covered and protected from construction traffic?</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 Is welded vinyl/sheet flooring intact and free from splits, cuts, or gouges?</td>
<td>N/A</td>
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</tbody>
</table>

### Flooring

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<tr>
<th>Question</th>
<th>Compliant?</th>
<th>Num: _____</th>
<th>Den: _____</th>
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<tbody>
<tr>
<td>19 Is the flooring surface dry and free of water and mold?</td>
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### Notes:

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### Questions (* = Required)

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<tbody>
<tr>
<td>22</td>
<td>Does carpeting installed have impermeable backing and welded seams (where necessary)?</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Compliant? ○ Yes ○ No</td>
<td>Num: _____</td>
<td>Den: _____</td>
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<td></td>
<td>Notes:</td>
<td></td>
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<tr>
<td>23</td>
<td>Is carpet appropriately vacuumed and clean?</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Compliant? ○ Yes ○ No</td>
<td>Num: _____</td>
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### Walls

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<tbody>
<tr>
<td>24</td>
<td>Are open wall cavities vacuumed and clean from dust/debris?</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Compliant? ○ Yes ○ No</td>
<td>Num: _____</td>
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<td>Notes:</td>
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<tbody>
<tr>
<td>25</td>
<td>Are installed electrical boxes, medical gas outlets, and dialysis boxes dusted and cleaned before being sealed?</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td></td>
<td>Compliant? ○ Yes ○ No</td>
<td>Num: _____</td>
<td>Den: _____</td>
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<td>Notes:</td>
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### Questions (* = Required)

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<tbody>
<tr>
<td>26</td>
<td>Is all drywall intact, continuous, and free from damage?</td>
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<tr>
<td>N/A</td>
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<tr>
<td>Compliant? ☐ Yes ☐ No</td>
<td>Num: _____</td>
<td>Den: _____</td>
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<td>Notes:</td>
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| 27 | Is painted/finished drywall, as well as outlets and switches, dust free? |   |   |
| N/A |   |   |   |   |
| Compliant? ☐ Yes ☐ No | Num: _____ | Den: _____ |
| Notes: |   |   |

| 28 | Are all wall elements free of moisture, water, and mold? |   |   |
| N/A |   |   |   |   |
| Compliant? ☐ Yes ☐ No | Num: _____ | Den: _____ |
| Notes: |   |   |

### Ceilings & Above Ceiling Spaces

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<tbody>
<tr>
<td>29</td>
<td>Are areas above ceiling dry?</td>
<td></td>
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<tr>
<td>N/A</td>
<td></td>
<td></td>
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<tr>
<td>Compliant? ☐ Yes ☐ No</td>
<td>Num: _____</td>
<td>Den: _____</td>
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<th>Yes</th>
<th>No</th>
<th>Num:</th>
<th>Den:</th>
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</thead>
<tbody>
<tr>
<td>Are ceiling tiles, once installed, dust-free and showing no signs of moisture damage?</td>
<td>☐</td>
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<tr>
<td>Compliant?</td>
<td>Yes</td>
<td>No</td>
<td>Num:</td>
<td>Den:</td>
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<td>Notes:</td>
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### Roofing (if part of the project)

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<thead>
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<th>Question</th>
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<th>Yes</th>
<th>No</th>
<th>Num:</th>
<th>Den:</th>
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</thead>
<tbody>
<tr>
<td>Upon inspection, is the roof surface appropriately sealed and impervious to water incursion?</td>
<td>☐</td>
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<tr>
<td>Compliant?</td>
<td>Yes</td>
<td>No</td>
<td>Num:</td>
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<td>Notes:</td>
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<tr>
<th>Question</th>
<th>Compliant?</th>
<th>Yes</th>
<th>No</th>
<th>Num:</th>
<th>Den:</th>
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<tbody>
<tr>
<td>Are all roof penetrations appropriately sealed to mitigate water incursion around the penetration?</td>
<td>☐</td>
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<tr>
<td>Compliant?</td>
<td>Yes</td>
<td>No</td>
<td>Num:</td>
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<td>Notes:</td>
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### Windows & Exterior Wall Penetrations

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<tr>
<th>Question</th>
<th>Compliant?</th>
<th>Yes</th>
<th>No</th>
<th>Num:</th>
<th>Den:</th>
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</thead>
<tbody>
<tr>
<td>Are exterior wall penetrations dry and free from any evidence of water incursion or mold?</td>
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<tr>
<td>Compliant?</td>
<td>Yes</td>
<td>No</td>
<td>Num:</td>
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## Infection Control Tracer for Construction Projects

### Site: 7718 Froedtert Memorial Lutheran Hospital, Inc

### Program: Hospital

<table>
<thead>
<tr>
<th>Questions (* = Required)</th>
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</thead>
<tbody>
<tr>
<td><strong>34</strong> Are window panes and sills free from condensation, mold growth, and water incursion?</td>
</tr>
<tr>
<td>N/A</td>
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<tr>
<td>Compliant? ◯ Yes ◯ No</td>
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<td>Notes:</td>
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### Build-ins

| **35** Are countertops and cabinets solid, continuous, and undamaged? |
| N/A |
| Compliant? ◯ Yes ◯ No | Num: ____ | Den: ____ |
| Notes: |

| **36** Do sinks installed in patient rooms have off-center drains to mitigate splashing from the faucet/fixture? |
| N/A |
| Compliant? ◯ Yes ◯ No | Num: ____ | Den: ____ |
| Notes: |

| **37** Are all materials installed compliant with Appendix H of the ICRA Policy? (Infection Prevention and Control Recommendations of Facility Design) |
| N/A |
| Compliant? ◯ Yes ◯ No | Num: ____ | Den: ____ |
| Notes: |

### The Water System

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<thead>
<tr>
<th>Question</th>
<th>Compliant?</th>
<th>Yes</th>
<th>No</th>
<th>Num:</th>
<th>Den:</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>Are all uninstalled water pipes stored off of the ground and capped on both ends?</td>
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<tr>
<td>Is the water system energized at a time agreed upon in the ICRA?</td>
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<tr>
<td>If the water system is energized, is the contractor or Enterprise Facility Services representative performing flushing activities as agreed upon in the ICRA?</td>
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<tr>
<td>During flushing activities, are all plumbing fixtures draining appropriately and not leaking? (If not present during flushing, run the faucet yourself and look for water dripping or pooling, or sinks backing up anywhere)</td>
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<td>Questions (* = Required)</td>
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<tr>
<td>42</td>
<td>If applicable, are the outdoor air intakes properly isolated away from the construction site?</td>
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<td></td>
<td>N/A</td>
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<td>Compliant?  ○ Yes  ○ No  Num: _____  Den: _____</td>
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<tr>
<td>43</td>
<td>If applicable, are storm drains outside of the project open and free flowing, so as to limit the pooling of water into the construction site? (Drain filters over the storm drain covers are acceptable, but should appear clean and unclogged)</td>
<td></td>
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<td></td>
<td>N/A</td>
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<td>Compliant?  ○ Yes  ○ No  Num: _____  Den: _____</td>
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<tr>
<td>44</td>
<td>For minor projects in existing spaces, are supply and return vents filtered or sealed where applicable?</td>
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<td></td>
<td>N/A</td>
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<td>Compliant?  ○ Yes  ○ No  Num: _____  Den: _____</td>
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<tr>
<td>45</td>
<td>Is all uninstalled ductwork sealed on both ends and stored in a clean manner?</td>
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<td></td>
<td>N/A</td>
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<td>Compliant?  ○ Yes  ○ No  Num: _____  Den: _____</td>
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<th>Yes</th>
<th>No</th>
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</thead>
<tbody>
<tr>
<td>46 If the air handling system is not functional yet, are all supply and return vents sealed within the ceiling grid?</td>
<td>□ N/A</td>
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<td>Notes:</td>
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<tr>
<td>47 If the air handling system is functional, are all supply and return vents clean, free from damage, and functioning appropriately?</td>
<td>□ N/A</td>
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<td>Notes:</td>
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<tr>
<td>48 Does the pressurization of the ventilation match the ASHRAE-170 requirements for the room based upon the room's intended use? (All room, clean utility, etc.)</td>
<td>□ N/A</td>
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<td>Notes:</td>
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### Quality Assurance

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<th>Yes</th>
<th>No</th>
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</thead>
<tbody>
<tr>
<td>49 Are food and beverages found only within the space designated by the Contractor and note elsewhere within the project space? (closed water bottles containing only water are acceptable)</td>
<td>□ N/A</td>
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<td>50</td>
<td>Is any patient care equipment remaining in the room covered and protected from construction dust/debris?</td>
<td>Yes/No</td>
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<td>51</td>
<td>Is the egress of construction debris done to limit dust/dirt in covered carts?</td>
<td>Yes/No</td>
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<td>Notes:</td>
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<td>52</td>
<td>Is the egress route agreed upon in the ICRA being adhered to?</td>
<td>Yes/No</td>
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<td>53</td>
<td>Is the contractor, or contractor’s representative, performing daily cleaning activities to mitigate dust being tracked outside of the project site?</td>
<td>Yes/No</td>
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**Site:** 7718 Froedtert Memorial Lutheran Hospital, Inc  
**Program:** Hospital

### Questions (* = Required)

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<th>Question</th>
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<th>No</th>
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<tbody>
<tr>
<td>Is the contractor, or contractor’s representative, following the guidelines for construction cleaning enumerated in Appendix D of the ICRA Policy? (Specifications for Construction and Terminal Cleaning)</td>
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<tr>
<td>Post construction clean, are all delivered items removed from their shipping boxes before being delivered to their final area?</td>
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<td>Is Environmental Services performing terminal cleaning following the guidelines enumerated in Appendix D of the ICRA policy? (Specifications for Construction and Terminal Cleaning)</td>
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PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Owner’s Interim Life Safety Measures (ILSM) Policy.
   2. Owner’s Interim Life Safety Measures (ILSM) Program.

B. Reference Documents:

1.2 DEFINITIONS

A. Building Maintenance Program (BMP): The Plant Operations managed program used to continuously assess compliance with LSC.

B. Construction: Any space renovation, remodeling or modifications which affect compliance with the LSC.

C. Construction Project Management (CPM): The Plant Operations Department Project Management Team.

D. Fire Watch: Where a required Fire Alarm or Automatic Sprinkler System is out of service for more than four hours in a 24-hour period, the authority having jurisdiction shall be notified, and the building shall be evacuated or an approved fire watch shall be provided for all parties left unprotected by the shutdown until the fire alarm or sprinkler system has been returned to service.

E. Interim Life Safety Measures (ILSMs): Series of eleven administrative actions required to be taken to temporary compensate for the hazards posed by existing life safety deficiencies or construction activities. ILSMs are actions designed and implemented to compensate for Life Safety Code deficiencies that cannot be immediately corrected.

F. Immediately Corrected: Within twenty-four hours.

G. Life Safety Code (LSC): That particular edition of NFPA 101 adopted by the authority having jurisdiction. The requirements of the LSC provide the criteria against which the LSC compliance assessments are to be made.

H. Life Safety Committee: Committee chaired by the Director of Plant Operations focused on LSC compliance.

I. Safety Systems: Systems required by Code for occupant safety and protection. Examples: Fire barriers; smoke barriers; exit pathways; emergency power; fire alarms; medical gases; HVAC systems; fire-rated doors.

J. Zone Mechanics (ZM): Plant Operations personnel responsible for the LSC compliance in their particular zones of the hospital.

1.3 SYSTEM DESCRIPTION AND PLANNING

A. Due to projects requiring the construction of barriers, installation of temporary systems, and training of personnel, Contractor shall begin ILSM planning prior to the beginning of the project in coordination with Owner.
1.4 QUALITY ASSURANCE

A. Interim Life Safety Measures (ILSM) program shall comply with 2006 JCAHO Standards.

B. Contractor’s responsibility is to properly notify Architect and Owner of anticipated and actual problems in order to comply with the ILSM program. Contractor shall set up control procedures so the ILSM is adhered to.

PART 2 PRODUCTS

A. Not used.

PART 3 EXECUTION

3.1 OWNER’S ILSM POLICY

A. All occupants shall be protected during periods when the Life Safety Code (LSC) is not met.

B. Owner’s designated personnel implementing the Building Maintenance Program, shall determine when the LSC is not met. When the LSC is not met, the Owner’s designated representative (or Contractor on behalf of Owner’s designated representative) shall complete an assessment (Exhibit A) to determine the need for an ILSM. All deficiencies shall be reported to Owner’s designated representative. Owner’s designated representative shall coordinate implementation of the necessary ILSMs required to maintain the safe environment.

C. Other staff, such as Facilities, Plant Operations, Safety and Security, Nursing, etc., may identify a potential life safety deficiency. When the LSC is not met, an assessment to determine the need for an ILSM will be completed. All deficiencies shall be reported to Owner’s designated representative or designee. Owner’s designated representative will coordinate implementation of the necessary ILSMs required to maintain the safe environment.

D. During construction, Owner’s designated representative shall ensure the LSC requirements are met. The Construction Project Management Team shall coordinate the implementation of all required actions and communicate same to Owner’s designated representative.

E. On a periodic basis (not less than quarterly), Owner’s designated representative shall report the status of the ILSM Program to the Hospital Safety Committee (Environment of Care Safety Council). On an annual basis, Owner’s designated representative shall perform an evaluation of the effectiveness of the ILSM Program.

F. Contractors, Subcontractors, and their representatives, and all construction employees engaged in projects for the hospital shall be required to comply with the ILSM program to ensure that the safe environment is maintained. Compliance will be determined with the Owner’s designated representative.

G. Documentation of all related actions shall be as required and maintained in with the Owner’s designated representative.

3.2 OWNER’S ILSM PROGRAM

A. Buildings or areas under construction must maintain escape routes at all times. Means of egress in construction areas shall be inspected daily by Contractor. To comply with Owner’s ILSM Program, Contractor shall:
   1. Maintain free and unobstructed egress along exit routes. Personnel shall receive training if alternative exits must be designated.
   2. Maintain free and unobstructed access to emergency departments and services and for emergency forces.
3. Ensure that fire alarm, detection, and suppression systems are not impaired. Provide temporary, but equivalent, system when any fire suppression system is impaired. Temporary systems must be inspected and tested monthly.
4. Temporary construction partitions are smoke tight and built of noncombustible material or limited combustible material that will not contribute to the development or spread of fire.
5. Provide additional firefighting equipment and training for personnel.
6. Prohibit smoking in or adjacent to all construction areas.
7. Develop and enforcement of storage, housekeeping, and debris removal practices that reduce the flammable and combustible fire load of the building to the lowest level necessary for daily operations.
8. Conduct a minimum of two (2) fire drills per shift per quarter.
9. Conduct regular hazard surveillance of buildings, grounds, and equipment with special attention to excavations, construction areas, construction storage, and field offices.
10. Train personnel when structural or compartmentation features of fire safety are compromised.
11. Conduct organization wide safety education programs to ensure awareness of any LSC deficiencies, construction hazards, and these ILSM.

3.3 PROJECT ILSM PROCEDURES

A. Contractor shall be responsible for safety of persons, property, and compliance with all applicable statues, rules, regulations, and orders for work under this project. Contractor shall implement the following procedures:
1. Material for construction operations shall be brought in and work conducted as to avoid any interference with existing Owner’s facilities or normal operations.
2. Every effort shall be made to limit dust, noise, weather, and fire hazards during construction and a secured dust wall around each space and ceiling area shall be constructed where required to ensure the health and safety of those spaces not involved during each stage of construction.

B. Contractor is responsible for developing and managing a site safety program as specified.
1. Provide correction plan for compromised utility services. Example: medical gases, medical air, vacuum, electricity (normal, critical and life safety), water, HVAC systems, steam, and any other such utility service.

C. Contractor shall maintain free and unobstructed access and exits to public ways as specified and indicated on the drawings. This includes, but is not limited to the following:
1. Modify existing walkways and cover walkways to provide access to existing facilities for use by public and Owner’s personnel.
2. Other exists as indicated.

D. Contractor shall provide alternate means of exit where indicated and notify Owner of time of switchover.
1. Alternate means are to be in place prior to abandonment of existing mean of exit. Contractor shall allow Owner one (1) week to train staff after creating the alternate means of exit and before abandoning existing means of exit.
2. Contractor shall review alternate means of exit with Fire Marshall prior to abandonment.

E. Contractor shall maintain escape routes for construction workers within the construction limits. Inspect means of egress in construction areas daily and report any discrepancies. Contractor shall promptly correct any deficiencies.
1. Report problems and measures taken to correct problems to Architect and Owner.

F. Contractor shall provide emergency access for existing ambulance garage at all times (emergency department) (if required).
1. Phase utility work in roadways and sidewalks as necessary to maintain constant, 24 hour vehicular and pedestrian access to the Ambulance Garage and Emergency Entrances.
2. Schedule and organize procedures to minimize interferences with Owner’s Operations.
3. Provide access for firefighters and other emergency personnel.

G. Contractor shall provide protection for the helipad (Life Flight) to maintain access and use of the space.
1. Keep all utilities service the helipad including but not limited to: power, communication, fuel lines and tanks operational at all times.
2. Helipad Flight patch contours indicated may not be violated by any permanent or temporary construction equipment, including cranes.
3. On grade routes used by emergency personnel to transport life-flight patients from the helipad or treatment areas within the hospital must not be compromised.

H. Develop and enforce fire safe means of material storage, housekeeping, and debris removal consistent with the Material Delivery and Construction Logistics (MDCL) Plan.

I. Contractor shall ensure that fire alarm, detection, and suppression systems are not impaired.

3.4 PROJECT ILSM IMPLEMENTATION

A. Upon award, Contractor shall prepare an ILSM Assessment of the project. Contractor shall provide a written copy of this Assessment to Owner’s designated representative for review, comment, and approval. Reference 01 35 34 Exhibit A – ILSM Assessment Form.

B. Contractor shall also pay particular attention to the Proactive Construction Risk Assessment (PCRA) form included in Section 01 35 33.

C. Contractor shall prepare a written ILSM Plan, and submit to Owner’s designated representative for review, comment, and approval. The ILSM Plan shall include daily inspections, visuals, graphics, and drawings indicating potential impacts that construction activities may have on the LSC throughout the project. The ILSM Plan shall also include mitigation narratives, details, and drawings to establish compliance with Owner’s ILSM Policy and Program.

D. Contractor shall fill out and document daily inspections of the ILSM program and measures. Reference 01 35 34 Exhibit B – ILSM Daily Checklist Form. Copies of daily ILSM Checklist shall be kept with the project files, and turned over to Owner’s designated representative upon completion.

E. Contractor shall fill out and maintain a fire watch log when appropriate. Copies of the fire watch log shall be kept with the project files, and submitted with the Daily ILSM Checklist to the Owner’s designated representative.

F. Contractor shall facilitate regular meetings and publish minutes dedicated to ensure compliance with the ILSM Plan.

END OF SECTION
ILSM Assessment

**Date:**

**Building:**

**Floor:**

**Deficiency Description:**

1. Will a fire watch be needed? (Yes, if a fire alarm or sprinkler system is out of service more than 4 hours in a 24-hour period in an occupied building.)
   - [ ] Yes
   - [ ] No
   - [ ] N/A
   
2. Will signage identifying the location of alternate exits for everyone affected be needed?
   - [ ] Yes
   - [ ] No
   - [ ] N/A
   
3. Will inspection of exits in affected areas on a daily basis be needed? If yes, please use Exhibit B.
   - [ ] Yes
   - [ ] No
   - [ ] N/A
   
4. Will temporary but equivalent fire alarm and detection systems for use when a fire system is impaired be needed?
   - [ ] Yes
   - [ ] No
   - [ ] N/A
   
5. Will additional fire fighting equipment be needed?
   - [ ] Yes
   - [ ] No
   - [ ] N/A
   
6. Will temporary construction partitions that are smoke-tight, or made of noncombustible material, or made of limited combustible material that will not contribute to the development or spread of fire be needed?
   - [ ] Yes
   - [ ] No
   - [ ] N/A
   
7. Will increased surveillance of buildings, grounds, and equipment, giving special attention to construction areas and storage, excavation, and field offices be needed?
   - [ ] Yes
   - [ ] No
   - [ ] N/A
   
8. Will enforcing storage, housekeeping, and debris removal practices that reduce the building’s flammable and combustible fire load to the lowest feasible level be needed?
   - [ ] Yes
   - [ ] No
   - [ ] N/A
   
9. Will additional training to those who work in the hospital on the use of fire-fighting equipment be needed?
   - [ ] Yes
   - [ ] No
   - [ ] N/A
   
10. Will one additional fire drill per shift per quarter be needed? If yes, please use Exhibit B.
    - [ ] Yes
    - [ ] No
    - [ ] N/A
   
11. Will inspections and testing of temporary systems monthly be needed? If yes, please use Exhibit D.
    - [ ] Yes
    - [ ] No
    - [ ] N/A
   
12. Will education to promote awareness of building deficiencies, construction hazards, and temporary measures implemented to maintain fire safety be needed?
    - [ ] Yes
    - [ ] No
    - [ ] N/A
   
13. Will training for those who work in the hospital to compensate for impaired structural or compartmental fire safety features be needed?
    - [ ] Yes
    - [ ] No
    - [ ] N/A

**ILSM**

Assessment Identification Number: (example: 03162011-WH-0001)
Filled out by:
Organization:
Contact Information:
Construction Project: Yes [ ] No [ ]
Implementation Date:
Duration of ILSM:
Approved By Director-Plant Operations or Designee:
FROEDERT HOSPITAL  
CONSTRUCTION & RENOVATION PROJECTS  
INTERIM LIFE SAFETY MEASURES – DAILY CHECK LIST

Project: ____________________________  
Date: ____________________________

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<th>YES</th>
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<tr>
<td>1.</td>
<td>Are all fire exits (permanent and temporary) and corridors clear and unobstructed?</td>
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<td>2.</td>
<td>If exits need to be closed off, have all hospital and construction personnel been notified of alternate exit routes?</td>
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<td>3.</td>
<td>Are hallways free and unobstructed to allow emergency forces access to department/services?</td>
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<td>4.</td>
<td>If fire alarm, detection, or suppression systems are impaired, has an equivalent system been provided?</td>
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<td>5.</td>
<td>Have temporary and equivalent fire and equivalent fire systems been inspected and tested on a monthly basis?</td>
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<td>6.</td>
<td>Are all temporary construction partitions smoke tight and built of noncombustible materials?</td>
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<td>7.</td>
<td>Has additional fire fighting equipment and training been provided for personnel?</td>
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<td>8.</td>
<td>Is the no smoking policy being enforced in or adjacent to all construction areas including interstitial spaces and service bays?</td>
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<td>9.</td>
<td>Is housekeeping and removal of excess debris being done on a daily basis and is combustible storage limited?</td>
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<td>10.</td>
<td>Have a minimum of two fire drills been conducted per shift per quarter?</td>
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<td>11.</td>
<td>Are weekly safety audits of the entire site being conducted?</td>
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<td>12.</td>
<td>Is the integrity of all smoke walls and fire walls being maintained and are personnel trained to detect compromised systems?</td>
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<td>13.</td>
<td>Do the weekly and monthly safety meetings cover the items noted above?</td>
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COMMENTS:  
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__________________________________________________________________________  
__________________________________________________________________________  

Reviewed by: ____________________________
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Disruption Avoidance Program.
   2. Shutdown Requests & Disruption Notices
   3. Shutdown Procedure

1.2 REFERENCES

A. Froedtert Hospital Mechanical / Utility Shutdown and Disruption Notice Form

1.3 DEFINITIONS

A. Disruption: Any activity that causes a change in the Owner’s normal and day-to-day operations. This includes, but is not limited to: interruptions in utility service(s), paths of travel, noise and vibration, odors, room closures, relocations, etc.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 DISRUPTION AVOIDANCE PROGRAM

A. Contractor shall develop and maintain a Disruption Avoidance Planning (DAP) program for the duration of the project. The DAP Program should be documented in written format and reviewed with Owner’s designated representative shortly after award. The DAP Program should include the following items:
   1. Identification of anticipated existing utility shutdowns.
   2. Process for review and approval of disruption plans

B. Disruption Avoidance Log. The DAP Log shall be developed and maintained by Contractor in order to track which disruption plans are prepared, reviewed, and approved. Log should consist of all known disruptions in advance so they can be communicated, planned, and discussed in a timely manner.
   1. Log should be updated at a minimum of weekly and distributed at the scheduled OAC meeting(s).
   2. Log shall forecast anticipated shutdowns or impacts when they are discovered or known.

C. Meetings. Contractor shall be responsible for scheduling meetings with all affected users and departments to discuss, review, and approve the disruption plans. Owner’s designated representative shall assist Contractor in establishing the attendees list, however, Contractor shall be responsible for scheduling attendees. Meeting minutes should be kept and published by Contractor. Meetings should be held weekly at a minimum, or at scheduled times as confirmed by Owner’s designated representative.

D. Should it be necessary, Contractor shall review anticipated disruption avoidance plans with specific users to ensure their requirements are being considered, planned, and met.

E. Timing of meetings and disruption notice reviews will be based on project timeline requirements and may be monthly, weekly, or daily as determined by Owner and project team.
3.2 SHUTDOWN REQUESTS & DISRUPTION NOTICES

A. Contractor shall submit a Shutdown / Disruption Notice for any construction work that will affect a mechanical, electrical, plumbing, or other utility prior to performing any work.

B. Contractor shall follow timeline requirements as detailed in 01 35 35 Exhibit A. ONLY EMAIL REQUESTS FOR SHUTDOWNS ARE ACCEPTED. Submitting the request does not automatically guarantee approval of the shutdown request.

C. Shut Down notice form is included in 01 35 35 Exhibit A.

D. Shutdown Contacts: Froedtert Designated Representative.

3.3 SHUTDOWN PROCEDURE

A. The shutdown procedure included in 01 35 35 Exhibit A shall be followed.

B. Approval of the proposed shutdown must be received by Contractor before beginning work.

C. Copy of approved shutdown notice shall be kept with construction personnel at the location of work.

END OF SECTION
Shut Down / Disruption Avoidance Form

The purpose of this document is to provide a guideline for all parties involved with construction related projects taking place within Froedtert Hospital. The figure below identifies the process to be followed.

1. **Contractor:**
   - Fills in Shutdown form at least 96 hours prior to beginning work & submits to Froedtert P.M.

2. **Froedtert P.M. / Rep.:**
   - Receives form, verifies form to be correct, notifies affected departments, & makes arrangements if needed.

3. **Approval is granted**
   - Contractor receives notification & proceeds with work
   - **-OR-** Approval is denied and changes must be made.

   **-OR-** Sends form & associated documents to: construction project calendar, contractor, & impacted group including FMLH staff and Plant Ops if assistance is needed at least 72 hours prior to the time being requested for work to be performed for review & approval.

   **-OR-** Approves the shutdown if review is not value added & warranted.

- **Required with all shutdowns:**
  - *Complete all bullet point items!* If an item is not applicable, enter “n/a” or appropriate comments.
  - Include highlighted life safety drawings showing the affected areas.
  - The fire watch with log is required when fire systems are compromised and/or Hot Work is being performed.
  - The person in charge of the shutdown shall make arrangements to have a qualified representative(s) visit the area(s) impacted by the shutdown no less than five (5) minutes before the shutdown occurs. A qualified representative would typically be of the same trade relating to the shutdown. The qualified representative(s) shall deliver a contact information card to the highest ranking Froedtert staff member, or at minimum a licensed nurse if in a nursing unit, explain the planned shutdown, and then stay for five (5) minutes after the shutdown begins to observe that the shutdown is going according to plan. They may abort the plan if the conditions do not match the planned shutdown.
  - If the shutdown needs to be changed to a different day, time, or otherwise modified, the box at the bottom of the form will be check “approved as modified” by the approving FH representative.
  - For each division of shutdowns, (electrical, sprinkler, HVAC, etc…) The General Contractor will be responsible to keep these shutdowns numbered in order for the entirety of project.
  - For each project, shutdowns need to be numbered, 000 – 999. Numbers for one off shutdowns may be “n/a.”
  - All electrical panel shutdowns must have the panel name included in the names of documents & shutdown file.
  - Name and number all shutdown files as shown just below & use the same for your e-mail subject line:

    “Shutdown number ### - Job Name – Detail of Shutdown - System Getting Shutdown”

    **Examples...**

    001 – E.D. Obs. -Normal Power Panel X – Electrical
    002 – E.D. Obs. – Removing Heads – Fire Sprinkler
    003 – E.D. Obs. – New Fixtures - Domestic Hot Water

Instruction Page – Revised 3/18/2020
SHUTDOWN NUMBER: #
FORM MUST BE SUBMITTED BY GENERAL CONTRACTOR TO (Choose): Froedtert Project Manager OR Trades

ON-SITE GENERAL CONTRACTOR INFORMATION
Name: __
Company Name: __
Phone#: __
Project Name: __
Today's Date: Friday, July 24, 2020  Time: 10:39 AM

PERSON PERFORMING SHUTDOWN
Name: __
Company Name: __
Phone#: __
Pager#: __
Person Completing Fire Watch: __

FIRE ALARM DEVICES IMPACTED: __
DESCRIBE WORK BEING PERFORMED: __
SYSTEM(S) AFFECTED:
- Medical Gas/Plumbing
- Contractor Work
- Fire
- HVAC
- Electrical
- Hot Work

PROPOSED DATE(S): Click Here to Choose
PROPOSED START TIME(S) OF SHUTDOWN:
PROPOSED DURATION OF SHUTDOWN:
AREAS AFFECTED BY SHUTDOWN: BLDG: FLOOR(S): ROOM(S):#
FOR WIDESCREEN AREAS, A PRINT MAY SERVE TO INDICATE ROOM NUMBERS INSTEAD OF LISTING THEM ALL.

CONSIDERATIONS REQUIRING FMLH ASSISTANCE (Must have prior approval):
- ☐ Communication to impacted end users is completed: Froedtert Project Managers Trades
  OR Vendor:
  List of end user names OR explanation:

TO BE APPROVED BY FROEDTERT REPRESENTATIVE / PM:
- ☐ Approved as Proposed
- ☐ Approved as Modified
- ☐ Not Approved, Reason:

APPROVAL BY: Froedtert Project Manager OR Trades DATE: 7/24/20

* Hot Work Permit & Penetrations Permit are available from Plant Operations. Fire watch log is required to be completed with all Hot Work Permits.
** Must comply with all codes, including NFPA 25 & 13. (FMLH requires fire watch for all FA system shutdowns)
*** Open system must be recertified.

Shutdown / Disruption Avoidance Form – Revised 3/18/2020
Risk Mitigation *Pre-Planning & Action to take if failure occurs*

**Low Risk**
- Non-Patient Care areas

**High Risk**
- Patient Care areas
  - Examples: ICU, Surgery

---

### Is patient care affected where a negative outcome or life safety impact could be present?

- **No**
  - Continue on low risk level
- **Yes**
  - Go to high risk

---

### Can damage occur if not resolved ASAP?

- **No**
  - Continue on low risk level
- **Yes**
  - Make corrections & contact Enterprise Facilities Services

---

### Is a Policy & Procedure in place that addresses the issue?

- **No**
  - Go to low risk
- **Yes**
  - Follow Policy & Procedure...

---

**Risk Map**

1. Provide a contingency plan.
2. Verify that N+1 equipment is fully functional if it exists.
3. Begin shutdown in mock form with a grace period.
4. Monitor impacted areas throughout shutdown to ensure adverse results are not occurring. Provide contact information for impacted areas.

---

**Shutdown / Disruption Avoidance Form – Revised 3/18/2020**

#### Example:

1. Delete this text and state what the risk is. *For example:* Outage of critical 120 V power to the Emergency Department.

2. Delete this text and assess the risk. *For example:* This is high risk per the flow chart. Critical power is impacted in a vulnerable patient care area, the Emergency Department.

3. Delete this text and communicate the risk. *For example:* Emergency Department staff, Security, and Plant Operations have been informed as detailed in the communication portion of page 2 of this shutdown form. Communication e-mails are attached.

4. Delete this text and mitigate the risk. *For example:* Temporary power cords have been installed to serve loads from alternative sources & impacted users have been communicated with, have given their approval to proceed, and have verified that accommodations have been made that are satisfactory and safe.
Fire Watch Log

Required when fire systems are compromised and/or Hot Work is being performed.

FIRE ALARM SHUTDOWN NUMBER

Plant Ops Representative devices Disabled & or hot work permit received by: _____________________________

Plant Ops Representative devices Enabled & or completed hot work permit received by: _______________

<table>
<thead>
<tr>
<th>GENERAL CONTRACTOR INFORMATION</th>
<th>PERSON PERFORMING SHUTDOWN</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME: __</td>
<td>NAME: __</td>
</tr>
<tr>
<td>PHONE#: __</td>
<td>COMPANY NAME: __</td>
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<tr>
<td>COMPANY NAME: __</td>
<td>PHONE#: __</td>
</tr>
<tr>
<td>PROJECT NAME: __</td>
<td>PAGER#: __</td>
</tr>
<tr>
<td>BLDG: FLOOR(S):</td>
<td>Person Completing Fire Watch: __</td>
</tr>
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FIRE ALARM DEVICES IMPACTED: __

DESCRIBE WORK BEING PERFORMED: __

Overseen By: __ Date: __ Time Completed: __

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<tr>
<th>Time</th>
<th>Initials</th>
<th>Time</th>
<th>Initials</th>
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</tr>
</tbody>
</table>
Dig Permit

This Form is Required Each Day Digging Occurs On or Around the MRMC Campus

Project: ___________________________ Date: ___________________________
GC Project Manager: ___________________________ GC Project Superintendent: ___________________________
Subcontractor: ___________________________ Sub Competent Person: ___________________________
Excavation Contractor: ___________________________ Operator: ___________________________

IDENTIFY LOCATION OF EXCAVATION (ATTACH PLANS)  Reference As-Built Dated: ___________________________

DO I NEED A REFRESH?
- Has the crew/operator changed? Yes / No
- Have markings been compromised? Yes / No

If the answer to either of these questions is “YES”, you must contact Digger’s Hotline and/or private utility locators for a refresh.

PUBLIC UTILITIES PRESENT IN AND AROUND EXCAVATION:
Digger’s Hotline Ticket #: ___________________________ Ticket Type: ___ 3-Day ___ 1-Day ___ 1-Hour
Requested By: ___________________________ Date/Time Requested: ___________________________
Date/Time Ticket Cleared: ___________________________

<table>
<thead>
<tr>
<th>Utility In Work Area Per As-Builds</th>
<th>Are Markings Present?</th>
<th>Do Markings Match As-Builds?</th>
<th>If &quot;No&quot; Who Has Been Contacted?</th>
<th>Condition Corrected?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas</td>
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<tr>
<td>Sewer</td>
<td>☐ Yes ☐ No</td>
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</tr>
<tr>
<td>Water</td>
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<td>☐</td>
</tr>
<tr>
<td>Fiber</td>
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<td>☐ Yes ☐ No ☐ No ☐ No</td>
<td></td>
<td>☐</td>
</tr>
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</table>

PRIVATE UTILITIES PRESENT IN AND AROUND EXCAVATION:
Private Locator Ticket #: ___________________________ Ticket Type: ___ 3-Day ___ 1-Day ___ 1-Hour
Requested By: ___________________________ Date/Time Requested: ___________________________
Date/Time Ticket Cleared: ___________________________

<table>
<thead>
<tr>
<th>Utility In Work Area Per As-Builds</th>
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<td></td>
<td>☐</td>
</tr>
<tr>
<td>Lighting</td>
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<tr>
<td>Steam</td>
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<tr>
<td>Chilled Water</td>
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<tr>
<td>Sanitary Sewer</td>
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<td>Water</td>
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<tr>
<td>Fiber</td>
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<tr>
<td>Internet/Cable</td>
<td>☐ Yes ☐ No</td>
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<td></td>
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</tr>
</tbody>
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Dig Permit

PRE-WORK CHECKLIST

- Current Utility Drawings have been reviewed to identify utilities in the work area: Yes/No
- Current Utility Drawings verified against Hotline markings: Yes/No
- Visual Inspection performed for unmarked utilities: Yes/No
- A Crew Onsite Refresh requested if any markings are missing: Yes/No/NA
  - If marking missing, contact Project Owner, Project Manager, and Utility
- Any overhead hazards present?: Yes/No
- Hand digging and visual observation of utilities at all utility crossings: Yes/No/NA
- Confirm utilities are abandoned prior to removing: Yes/No/NA
- Hazard Analysis prepared and reviewed: Yes/No
- Protection for the public is in place: Yes/No/NA
- All Crew Members briefed on this plan: Yes/No/NA
- Pictures have been taken to document completed markings, pictures taken by: ___________________________

Subcontractor Competent Person: ___________________________  __________________________
Project Supervisor: ___________________________  __________________________

CONTACT LIST OF LOCATORS ASSIGNED TO THE PROJECT AND THEIR SUPERVISOR

Section to be completed by Project Management at Pre-Construction Meeting.

Olameter Contacts
(We Energies facilities locating)
Electrical & Natural Gas
Primary - Matt Frittitta
Damage Prevention Technician
Cell: 424-403-6284

Secondary - Zac Hein
Operations Manager
Cell: 218-252-3235

We Energies Main Contacts
Sr. Service Manager
O: 414-449-3018
Cell: 414-333-6340

Secondary - Andrew LaTona
Sr. Operations Supervisor
O: 414-944-5649
Cell: 414-315-1895

Private Lines
Primary - Mark
Cell: 414-313-2328

Secondary -
Cell:

Adesta
Primary – Larry Lucero
Locator
Cell: 715-919-0079

Secondary – Alexander Clark
Superintendent
Cell: 815-378-4759

USIC
(AT&T and TWC)
Primary - Robert
Cell: 262-219-9105

Secondary - Ed
Cell: 414-788-5361

Ever-Green Energy
Primary – Mark Whitaker
Cell: 414-837-7107

Secondary -
Cell:
**Dig Permit**

*This Form is Required Each Day Digging Occurs On or Around the MRMC Campus*

<table>
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<tr>
<th>Project:</th>
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<tbody>
<tr>
<td>GC Project Manager:</td>
<td>GC Project Superintendent:</td>
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<td>Subcontractor:</td>
<td>Sub Competent Person:</td>
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<tr>
<td>Excavation Contractor:</td>
<td>Operator:</td>
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**IDENTIFY LOCATION OF EXCAVATION (ATTACH PLANS)**  Reference As-Built Dated: 

---

**DO I NEED A REFRESH?**

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<tr>
<th>Digger’s Hotline Ticket #:</th>
<th>Ticket Type: 3-Day 1-Day 1-Hour</th>
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<tbody>
<tr>
<td>Requested By:</td>
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<table>
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<tr>
<th>Date/Time Ticket Cleared:</th>
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</table>

<table>
<thead>
<tr>
<th>Utility In Work Area Per As-Builts</th>
<th>Are Markings Present?</th>
<th>Do Markings Match As-Builts?</th>
<th>If &quot;No&quot; Who Has Been Contacted?</th>
<th>Condition Corrected?</th>
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<tr>
<td>Electric</td>
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</tr>
<tr>
<td>Sewer</td>
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<td>Water</td>
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<tr>
<td>Fiber</td>
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<table>
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<th>Private Locator Ticket #:</th>
<th>Ticket Type: 3-Day 1-Day 1-Hour</th>
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<tr>
<td>Lighting</td>
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<tr>
<td>Steam</td>
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<td>Chilled Water</td>
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Dig Permit

***Take Pictures of Completed Markings***

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Subcontractor Competent Person: __________________________ Print __________________________ Signature

Project Supervisor: __________________________ Print __________________________ Signature

Project Supervisor: __________________________ Print __________________________ Signature

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  - Damage Prevention Technician
  - Cell: 424-403-6284

- Secondary - Zac Hein
  - Operations Manager
  - O: 704-321-3781
  - Cell: 218-252-3235

Electrical & Natural Gas

- Primary - Garrett Nyman
  - Sr. Service Manager
  - O: 414-449-3018
  - Cell: 414-333-6340

- Secondary - Andrew LaTona
  - Sr. Operations Supervisor
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  - Cell: 414-315-1895

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  - Cell: 414-313-2328

- Secondary -
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Adesta

- Primary – Larry Lucero
  - Locator
  - Cell: 715-919-0079

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  - Cell: 414-788-5361

Ever-Green Energy

- Primary – Mark Whitaker
  - Cell: 414-837-7107

- Secondary -
  - Cell:
SECTION 01 35 43
ENVIRONMENTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY
A. Section Includes:
   1. Hazardous Materials Management Program
   2. Material Safety Data Sheets (MSDS)
   3. Hazardous Materials Abatement of Existing Construction

1.2 DEFINITIONS
A. Hazardous Materials: Materials that are potentially harmful to one’s health, safety, or well-being that, when in contact with the material, may have an adverse effect on the individual.
   1. Construction Related: asbestos, mold, unknown dust, vapors, fumes, odors, or chemicals, etc.
   2. Hospital Related: surgical instruments, blood, bodily fluids, soiled linens and bedding, etc.

PART 2 FACILITY INFORMATION

2.1 HOSPITAL HAZARDOUS MATERIALS MANAGEMENT PROGRAM
A. Contractor may obtain information regarding hospitals hazardous materials management program, or information related to hazardous materials to which they may be exposed to from the hospital Safety Manager 414-805-7755.
B. At Owner’s discretion, Owner may retain services of a licensed abatement company for the abatement, removal, and disposition of hazardous materials (like asbestos). Contractor to coordinate with Owner’s designated representative to understand project-specific protocol and action plan.

PART 3 EXECUTION

3.1 MATERIAL SAFETY DATA SHEETS (MSDS)
A. Contractor shall provide Material Safety Data Sheets (MSDS) to the Owner’s designated representative for all Contractor-supplied chemicals that are used within the occupied spaces of the hospital.
B. Contractor shall have all MSDS readily available at the project site where during their use. Contractor shall follow procedures and manufacturer’s instructions for use of the products as indicated by Contractor’s Site Specific Safety Plan.
C. Contractor shall provide copies of all construction related MSDS sheets to Owner’s designated representative and hospital Safety Manager prior to starting work. It is Contractor’s responsibility to update and insert supplemental MSDS sheets as the project warrants.
D. Contractor shall provide both electronic and hard copies of the MSDS sheets. While services are available to carry all MSDS sheets on smartphones, portable computers, or other electronic devices, Owner specifically requires that Contractor provide a readily-accessible hard copy and electronic copy of all MSDS.
E. Contractor shall provide all independent ventilation (as required by MSDS) for installation and use of products that may have an odor, smell, or unpleasant/strong aroma.
F. All materials used during construction shall be asbestos free.
3.2 HAZARDOUS MATERIALS ABATEMENT OF EXISTING CONSTRUCTION

A. Contractor may encounter potentially hazardous materials throughout the course of construction. In those instances when hazardous materials may be encountered, the following process should be followed:
   1. Stop all work immediately in the area.
   2. Make all reasonable attempts not to disturb the potential hazardous material.
   3. Contact Owner’s designated representative.
   4. Enact project specific hazardous materials mitigation plan.
      a. In case of asbestos or mold, Owner’s vendor will be contacted to remediate and mitigate the hazardous materials.
      b. In case of blood borne pathogen exposure, Owner will follow facility standard protocols for clean-up and removal.

B. Upon correction of the unsafe condition, Owner will communicate to Contractor when it is safe to resume work activities in the area.

C. If a hazardous material or condition is encountered, Contractor should contact their respective safety department, Owner’s designated representative, and Safety Manager.

END OF SECTION
SECTION 01 36 00
MEDICAL EQUIPMENT COORDINATION

PART 1 GENERAL

1.1 SUMMARY
A. Section Includes:
   1. Major Medical Equipment Coordination.
   2. Minor Medical Equipment Coordination.
   3. Owner Furnished Specialties.

1.2 DEFINITIONS
A. Major Medical Equipment: Signature pieces of medical equipment that require significant amounts of coordination related to architectural, structural, mechanical, electrical, or plumbing. Examples include: X-ray equipment, CT, Linear Accelerators, Imaging Equipment, surgical lighting, booms, etc. This equipment is typically provided by very specialty vendors and has a long lead time and require specific owner training upon installation.

B. Minor Medical Equipment: Pieces of ancillary or smaller equipment that require less amount of coordination. Examples include: kitchenette equipment, refrigerators, microwaves, coffee makers, ice machines, exam room furniture, Pyxis machines, crash carts, etc.

C. Owner Furnished Specialties: Pieces of small equipment that are typically commodity-based in nature and may/may not require special mechanical, electrical, or plumbing infrastructure. Examples include: sharps containers, garbage cans, soap dispensers, paper towel dispensers, hand sanitizers, chart holders, room flags, privacy curtains, etc.

PART 2 PRODUCTS
Not Used.

PART 3 EXECUTION

3.1 MAJOR MEDICAL EQUIPMENT COORDINATION
A. Owner’s Responsibilities for Major Medical Equipment:
   1. Solicitation of proposed equipment vendors (ex. Issuance of RFPs, scoping confirmation).
   2. Issuance of purchase orders and agreements to vendors.
   3. Service contracting and maintenance agreements with vendors.

B. Contractor’s Responsibilities for Major Medical Equipment:
   1. Coordination with Owner’s purchasing department or agent to establish timing of issuance of purchase orders to vendor consistent with the agreed upon project schedule. Contractor is expected to follow up with Owner’s purchasing department during and after vendor solicitation, and be utilized as a resource for Owner during the solicitation process.
   2. Constructability and coordination review of product information, proposed details, and MEP infrastructure coordination with existing conditions based on vendor-provided information (either general or site specific).
   3. Upon issuance of Owner Purchase Order to the equipment vendor, contractor shall institute regular meetings with major medical equipment vendors to ensure that material is being procured on-time and consistent with the terms of Contractor’s schedule and Owner’s agreement with vendor.
4. Coordination of site specific equipment drawings with the construction documents in collaboration with Architect. Discrepancies and comments shall be forwarded to Architect for review.

5. Issuance of updates to construction documents to Owner’s equipment vendor.

6. Make reasonable accommodations for access to the site for installation (typically by equipment vendor). Contractor shall be proactive in identifying a proposed delivery route to the site and confirm this route with Owner and vendor.

7. Prepare the construction site in a clean and orderly manner to allow for efficient and expedient installation of equipment. This may include additional protection of existing or new construction in order to protect finished surfaces from damage caused by equipment vendor during installation. Examples include: floor protection, wall protection, temporary enclosures, removal and replacement of existing openings or obstructions.

8. Coordination of subcontractors for final connections to equipment as required by the Owner’s agreement with vendor and the construction documents.

9. Identifying sufficient procurement activities, installation durations, and training/applications milestones in the master project schedule.

10. Facilitation of turnover of equipment as-builts, closeout documents, warranty records, spare parts, etc. to Owner’s designated representative.

3.2 MINOR MEDICAL EQUIPMENT

A. Owner’s Responsibilities for Minor Medical Equipment:

1. Solicitation of proposed equipment vendors (ex. Issuance of RFPs, scoping confirmation). Depending on requirements of the Owner, Contractor may be tasked with facilitating this solicitation.

2. Issuance of purchase orders and agreements to vendors.

3. Service contracting and maintenance agreements with vendors.

B. Contractor’s Responsibilities for Minor Medical Equipment:

1. Coordination with Owner’s purchasing department or agent to establish timing of issuance of purchase orders to vendor consistent with the agreed upon project schedule. Contractor is expected to follow up with Owner’s purchasing department during and after vendor solicitation, and be utilized as a resource for Owner during the solicitation process.

2. Constructability and coordination review of product information, proposed details, and MEP infrastructure coordination with existing conditions based on vendor-provided information (either general or site specific).

3. Upon issuance of Owner Purchase Order to the equipment vendor, contractor shall institute regular meetings with major medical equipment vendors to ensure that material is being procured on-time and consistent with the terms of Contractor’s schedule and Owner’s agreement with vendor.

4. Coordination of site specific equipment drawings with the construction documents in collaboration with Architect. Discrepancies and comments shall be forwarded to Architect for review.

5. Issuance of updates to construction documents to Owner’s equipment vendor.

6. Make reasonable accommodations for access to the site for installation. Contractor shall be proactive in identifying a proposed delivery route to the site and confirm this route with Owner and vendor.

7. Prepare the construction site in a clean and orderly manner to allow for efficient and expedient installation of equipment. This may include additional protection of existing or new construction in order to protect finished surfaces from damage caused by equipment vendor during installation. Examples include: floor protection, wall protection, temporary enclosures, removal and replacement of existing openings or obstructions.

8. Coordination of subcontractors for final connections to equipment as required by the Owner’s agreement with vendor and the construction documents.

9. Identifying sufficient procurement activities, installation durations, and training/applications milestones in the master project schedule.
3.3 OWNER FURNISHED SPECIALTIES

A. Owner’s Responsibilities for Owner Furnished Specialties:
   1. Solicitation of proposed vendors (ex. Issuance of RFPs, scoping confirmation). Depending on requirements of the Owner, Contractor may be tasked with facilitating this solicitation or even procurement.
   2. Issuance of purchase orders and agreements to vendors.

B. Contractor’s Responsibilities for Owner Furnished Specialties:
   1. Coordination with Owner’s purchasing department or agent to establish timing of issuance of purchase orders to vendor consistent with the agreed upon project schedule. Contractor is expected to follow up with Owner’s purchasing department during and after vendor solicitation, and be utilized as a resource for Owner during the solicitation process.
   2. Prepare a detailed take-off of Owner Furnished Specialties and provide to Owner’s purchasing department for review.
   3. In instances where Owner has an attic stock of such specialties items (inventory), Contractor shall review current supply and make recommendations for procurement and/or use of existing stock.
   4. Constructability and coordination review of product information, proposed details, and coordination with existing conditions based on vendor-provided.
   5. Upon issuance of Owner Purchase Order to the equipment vendor, contractor shall institute regular check-ins with suppliers and/or vendors to ensure that material is being procured on-time and consistent with the terms of Contractor’s schedule and Owner’s agreement with vendor.
   6. Verification of scope of OFOI and OFCI items with the contract documents and Owner’s expectations.
   7. Issuance of updates to construction documents to Owner’s equipment vendor (if required).
   8. Identifying sufficient procurement activities, installation durations, and training/applications milestones in the master project schedule.

3.4 CONTRACTOR INSTALLATION OF MEDICAL EQUIPMENT

A. Depending on preference of Owner, Contractor may be tasked with installation of minor medical equipment on behalf of Owner. Contractor shall discuss and confirm Owner’s intent for installation early in the project, and ensure the construction documents reflect the direction of Owner’s intention for installation by Contractor.

B. Contractor shall document decisions related to OFOI and OFCI items on the equipment responsibility matrix.

3.5 EQUIPMENT RESPONSIBILITY MATRIX

A. Contractor shall establish an equipment responsibility matrix for the project. All major, minor, CFCI, OFOI, and OFCI items shall be tracked in a manner consistent with project requirements.

B. Contractor shall review and approve the equipment responsibility matrix with Owner and Architect at the beginning of the project, and be used to provide regular updates at project meetings for the duration of the project.

C. A sample equipment responsibility matrix is provided in 01 36 00 Exhibit A.

END OF SECTION
## Equipment Responsibility Matrix

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<th>VENDOR</th>
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3.00 OTHER SYSTEMS

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4.00 NOTES & UPDATES

03/01/2012: Log Created
SECTION 01 37 00
COORDINATION OF WORK BY OWNER

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Information Systems / Information Technology Department Coordination.
   2. Bio-Med Department Coordination.
   3. Physicist Coordination.
   4. User Group Coordination.
   5. Move & Relocation Services Coordination.
   6. Permanent Signage Coordination.
   7. Furniture Coordination.
   8. Enclosure Consultants
   9. Roofing Inspection
   10. Insurance Carrier Audits
   11. Commissioning Agent
   12. Safety & Security Department Coordination

1.2 RELATED SECTIONS

A. Section 01 36 00 – Medical Equipment Coordination: Equipment Responsibility Matrix.

1.3 DEFINITIONS

A. Major Medical Equipment: Signature pieces of medical equipment that require significant amounts of coordination related to architectural, structural, mechanical, electrical, or plumbing. Examples include: X-ray equipment, CT, Linear Accelerators, Imaging Equipment, surgical lighting, booms, etc. This equipment is typically provided by very specialty vendors and has a long lead time and require specific owner training upon installation.

B. Minor Medical Equipment: Pieces of ancillary or smaller equipment that require less amount of coordination. Examples include: kitchenette equipment, refrigerators, microwaves, coffee makers, ice machines, exam room furniture, Pyxis machines, crash carts, etc.

C. Owner Furnished Specialties: Pieces of small equipment that are typically commodity-based in nature and may/may not require special mechanical, electrical, or plumbing infrastructure. Examples include: sharps containers, garbage cans, soap dispensers, paper towel dispensers, hand sanitizers, chart holders, room flags, privacy curtains, etc.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 INFORMATION SERVICES / INFORMATION TECHNOLOGY DEPARTMENT COORDINATION

A. Owner’s IS / IT Department will be responsible for contracting with vendors and subcontractors related to data, communication, and other structured cable installation on projects.

B. Owner’s Responsibilities:
   1. Solicitation of proposed IS/IT related trades (ex. Issuance of RFPs, scoping confirmation)
   2. Issuance of purchase orders and agreements to trades.
C. Contractor’s Responsibilities:

1. Coordination with Owner’s IS/IT Department and/or purchasing department to establish timing of issuance of purchase orders to vendor consistent with the agreed upon project schedule. Contractor is expected to follow up with Owner’s purchasing department during and after vendor solicitation, and be utilized as a resource for Owner during the solicitation process.
2. Assist Owner in bid or proposal reviews of proposed trades.
3. Upon issuance of Owner Purchase Order to the equipment vendor, Contractor shall institute regular meetings with selected trades to ensure that material is being procured on-time and planned installation is consistent with the terms of Contractor’s schedule and Owner’s agreement with vendor.
4. Issuance of updates to construction documents to Owner’s selected trades.
5. Make reasonable accommodations for access to the site for installation.
6. Confirm scope between Owner’s trade and Subcontractors to ensure complete scope (examples include responsibility for rough-in, cover plates, cable-tray, access, and schedule)
7. Identifying sufficient procurement activities, installation durations, and training/applications milestones in the master project schedule.

3.2 BIO-MED DEPARTMENT COORDINATION

A. Owner’s Responsibilities:
   1. See Section 01 36 00 – Medical Equipment.

B. Contractor’s Responsibilities:
   1. See Section 01 36 00 – Medical Equipment.

3.3 PHYSICIST COORDINATION

A. Owner shall retain the services of a resident physicist when required by the project scope. Contractor shall assist Owner in assembly and coordination of information, details, plans, equipment drawings, and construction means and methods for use by physicist in determination and consideration of shielding requirements.

B. Contractor shall coordinate with Architect to interpret physicist’s requirements, and help facilitate incorporation into the construction documents.

C. Contractor shall coordinate with Owner and physicist for final shielding report(s) and/or sign-off for spaces that require shielding.

3.4 USER GROUP COORDINATION

A. Contractor shall facilitate and participate in user group meetings on behalf of Owner. In instances where Contractor is engaged prior to design completion, Contractor’s attendance at design user group meetings is mandatory.

B. During construction, Contractor shall facilitate, coordinate, and schedule user group discussions and meetings to ensure that affected persons are aware of upcoming project activities. Contractor shall distribute agendas and meeting minutes as records of the discussions.

3.5 MOVE & RELOCATION COORDINATION

A. In some instances, construction activities may cause occupants to move or relocate in order to allow construction activities to commence. In those instances, the Owner may procure the services of a professional moving and relocation vendor.

B. Contractor shall facilitate and coordinate Owner’s move and relocation vendor on behalf of Owner’s designated representative. Contractor shall prepare a schedule of moves and relocations for review and approval by Owner in order to comply with the master project schedule.

C. Contractor shall distribute agendas and meeting minutes as records of the discussions related to move and relocations.
D. Contractor shall identify specific move-out, relocation, and move-in dates and milestones on the master project schedule. Communication and coordination of these dates with Owner’s move and relocation vendor is responsibility of Contractor.

3.6 PERMANENT SIGNAGE COORDINATION

A. Owner will be responsible for contracting with permanent signage vendors and/or subcontractors on projects.

B. Owner’s Responsibilities:
1. Issuance of purchase orders and agreements to trades.

C. Contractor’s Responsibilities:
1. Solicitation of permanent signage vendors and/or Subcontractors on behalf of Owner.
2. Coordination with Owner’s purchasing department to establish timing of issuance of purchase orders to vendor consistent with the agreed upon project schedule. Contractor is expected to follow up with Owner’s purchasing department during and after vendor solicitation, and be utilized as a resource for Owner during the solicitation process.
3. Assist Owner in bid or proposal reviews of proposed trades.
4. Upon issuance of Owner Purchase Order to the equipment vendor, Contractor shall institute regular check-ins with Owner’s vendor to ensure that material is being procured on-time and planned installation is consistent with the terms of Contractor’s schedule and Owner’s agreement with vendor.
5. Issuance of updates to construction documents to Owner’s vendor as required.
6. Make reasonable accommodations for access to the site for installation.
7. Identifying sufficient procurement activities, installation durations, and training/applications milestones in the master project schedule

D. Contractor shall coordinate final installation responsibility of permanent signage with Owner. Direction and decisions related to permanent signage shall be documented on the equipment responsibility matrix.

3.7 FURNITURE COORDINATION

A. Owner will be responsible for contracting with furniture vendors and/or subcontractors on projects.

B. Owner’s Responsibilities:
1. Issuance of purchase orders and agreements to trades.

C. Contractor’s Responsibilities:
1. Solicitation of furniture vendors and/or Subcontractors on behalf of Owner. Contractor shall coordinate with Architect for verification of furniture plan(s) to ensure a complete bid scope.
2. Coordination with Owner’s purchasing department to establish timing of issuance of purchase orders to vendor consistent with the agreed upon project schedule. Contractor is expected to follow up with Owner’s purchasing department during and after vendor solicitation, and be utilized as a resource for Owner during the solicitation process.
3. Assist Owner in bid or proposal reviews of proposed trades.
4. Upon issuance of Owner Purchase Order to the equipment vendor, Contractor shall institute regular check-ins with Owner’s vendor to ensure that material is being procured on-time and planned installation is consistent with the terms of Contractor’s schedule and Owner’s agreement with vendor.
5. Issuance of updates to construction documents to Owner’s vendor as required.
6. Make reasonable accommodations for access to the site for installation.
7. Identifying sufficient procurement activities, installation durations, and training/applications milestones in the master project schedule

D. Contractor shall coordinate final installation responsibility of furniture with Owner. Direction and decisions related to furniture installation shall be documented on the equipment responsibility matrix.
3.8 ENCLOSURE CONSULTANT SERVICES

A. If required by the scope of the work, Contractor shall hire the services of an enclosure consulting firm. Contractor shall confirm with Owner at the beginning of the project that services are recommended or expected. If required by Owner, services to be coordinated include the items below.

B. Coordination. Contractor shall coordinate as necessary with other trades, Plant Operations, and Owner’s designated representative to assure proper and adequate provisions of the work for those trades that interfere with the work of this section.

C. Document Review. Enclosure consultant shall review the construction documents, progress drawings, test reports, submittals, RFIs, or other pertinent information related to the enclosure of the project. Contractor shall furnish copies of this information to enclosure consultant. Meetings to discuss the finding shall be coordinated with Architect, Owner’s designated representative, and subcontractor (if needed).

D. Meetings. Not less than ten (10) calendar days prior to scheduled enclosure work, a pre-installation meeting shall be conducted at the project site.
   1. Visually inspect all substrata upon which roofing is scheduled to be applied.
      a. Determine general acceptability and determine areas requiring further preparation.
      b. Determine acceptable remedies for unacceptable areas.
   2. Discuss the proposed schedule for installation of the enclosure and reach agreement as to dates of start and finish of installation.
   3. Discuss proposed methods for installation of materials, and the equipment and personnel to be used.
   4. Discuss inspection methods to be used, reports to be issued by the enclosure consultant, responsibilities and limits of the enclosure consultant, and potential problems arising from the use of methods not agreed to in the pre-installation meeting(s).

E. Inspections during Installation. The enclosure consultant shall:
   1. Verify that materials delivered to the project site are those approved by the Architect for use in performing the work.
   2. Visually observe installation of the enclosure, including, but not limited to:
      a. Verify use of installation procedures agreed upon in the pre-installation meeting.
      b. Call attention of Contractor’s representative on the project to unacceptable methods and unacceptable results.
      c. Report to Contractor and Architect is unacceptable methods or unacceptable results are not corrected.

F. Reports. The enclosure consultant shall:
   1. Make daily written reports of enclosure activities, delivering copies to the Contractor and others as agreed to in the pre-installation meeting.
   2. Upon completion of the enclosure system, compile a comprehensive report covering activities performed under this section, and deliver a copy of the report to: Contractor, Architect, Owner’s designated representative, or others as determined in the pre-installation meeting.

G. Limits of Enclosure Consultant’s Responsibility. The enclosure consultant is not empowered to:
   1. Act for, in lieu of, representatives of the governmental agencies having jurisdiction.
   2. Revise any part of the contract documents.
   3. Approve a change in methods agreed upon in the pre-installation meeting.

H. Failure of enclosure consultant to notice unacceptable methods or unacceptable results during progress of the work does not absolve the Contractor from their responsibility to complete the work in accordance with the specified requirements and the agreed methods.

3.9 ROOFING INSPECTION SERVICES

A. If required by the scope of the work, Contractor shall hire the services of a roofing inspection firm. Services to be coordinated include the items below.
B. Coordination. Contractor shall coordinate as necessary with other trades, Plant Operations, and Owner’s designated representative to assure proper and adequate provisions of the work for those trades that interfere with the work of this section.

C. Pre-Roofing Meeting. Not less than three (3) and no more than ten (10) calendar days prior to scheduled roofing work, a roofing substrata inspection and pre-roofing meeting shall be conducted at the project site.

   1. Visually inspect all substrata upon which roofing is scheduled to be applied.
      a. Determine general acceptability and determine areas requiring further preparation.
      b. Determine acceptable remedies for unacceptable areas.
   2. Discuss the proposed schedule for installation of the roofing and reach agreement as to dates of start and finish of installation of the roofing.
   3. Discuss proposed methods for installation of the roofing, and the equipment and personnel to be used.
   4. Discuss inspection methods to be used, reports to be issued by the roofing inspector, responsibilities and limits of the roofing inspector, and potential problems arising from the use of methods not agreed to in the pre-roofing meeting.

D. Inspection during Roofing Installation. The roofing inspector shall:

   1. Verify that materials delivered to the project site are those approved by the Architect for use in performing the work.
   2. Visually observe installation of roofing, including, but not limited to:
      a. Verify use of installation procedures agreed upon in the pre-roofing meeting.
      b. Call attention of Contractor’s representative on the project to unacceptable methods and unacceptable results.
      c. Report to Contractor and Architect is unacceptable methods or unacceptable results are not corrected.

E. Reports. The roofing inspector shall:

   1. Make daily written reports of roofing inspection activities, delivering copies to the Contractor and others as agreed to in the pre-roofing meeting.
   2. Upon completion of the roofing installation, compile a comprehensive report covering activities performed under this section, and deliver a copy of the report to: Contractor, Architect, Owner’s designated representative, or others as determined in the pre-roofing meeting.

F. Limits of Roofing Inspector’s Responsibility. The roofing inspector is not empowered to:

   1. Act for, in lieu of, representatives of the governmental agencies having jurisdiction.
   2. Revise any part of the contract documents.
   3. Approve a change in methods agreed upon in the pre-roof meeting.

G. Failure of roofing inspector to notice unacceptable methods or unacceptable results during progress of the work does not absolve the Contractor from their responsibility to complete the work in accordance with the specified requirements and the agreed methods.

3.10 INSURANCE CARRIER AUDITS

   A. Contractor shall notify, at the appropriate time, Owner’s designated representative to schedule reviews by Owner’s insurance carrier, if required.

3.11 COMMISSIONING AGENT

   A. Owner may, at their discretion, engage the services of a 3rd party commissioning agent on the project. Contractor shall fully coordinate these services with respect to scheduling, documentation, reporting, and collaboration as required by the agreed upon scope of services.

   B. Owner will contract directly with the commissioning agent.
3.12 SAFETY & SECURITY DEPARTMENT COORDINATION

A. Contractor shall coordinate all requirements for project safety & security, card access, etc. with Owner’s safety & security vendors, departments, and users.

END OF SECTION
PART 1 GENERAL

1.1 SUMMARY
A. Section Includes:
   1. Requirements for implementing, maintaining, and managing a site specific quality program through the duration of the project including:
      a. Site Specific Quality Program
      b. Preconstruction Requirements
      c. Construction Requirements
      d. Closeout Requirements

1.2 RELATED SECTIONS
A. Reference Section 01 45 23 – Testing & Inspection Services

PART 2 PRODUCTS
A. Not used.

PART 3 EXECUTION

3.1 SITE-SPECIFIC QUALITY PROGRAM
A. Contractor shall implement and maintain a project specific quality program for the duration of the project. Contents of the Site Specific Quality Program include, but are not limited to:
   1. Quality Documentation – written policies, procedures, instructions, and programs for use during the project.
   2. Quality Inspections - Copies quality inspections shall be made available to Owner upon request.
B. Contractor shall document the site specific quality plan and provide a copy to Owner for review and comment prior to starting work.

3.2 PRECONSTRUCTION REQUIREMENTS
A. Contractor shall complete pre-installation meetings with certain work scopes prior to starting of the work scope on-site:
   1. Sitework
   2. Cast-In-Place Concrete
   3. Precast Concrete
   4. Structural Steel
   5. Masonry
   6. Glass & Glazing, Glazed window systems
   7. Drywall & Gypsum Board Assemblies
   8. Roofing and/or Waterproofing
   9. Fireproofing
   10. MEP Systems
   11. Other areas as appropriate
B. Contractor shall review contract documents, specifications, details, schedule, general project requirements and guidelines, etc. during the pre-installation meeting. Minutes should be kept of the meetings and made available to Owner’s designated representative upon request.
3.3 CONSTRUCTION REQUIREMENTS

A. Contractor shall be required to implement the following quality assurance requirements during the construction phase:
   1. Compliance with all inspection and quality control requirements set forth in the technical specifications or testing agency(ies)
   2. Compliance with all field inspections conducted by Architect, Owner, or Engineer(s)
   3. Facilitate and perform periodic quality-related inspections to ensure all quality control requirements are met. Inspections will should documented on scope-specific checklists and forms.
   4. Correct any deficiencies timely, and verify acceptance with Architect and Owner.

B. At a minimum, inspections during construction shall be performed on the following work scopes:
   1. Cast-In-Place Concrete
   2. Backfilling
   3. Underslab Waterproofing Systems
   4. Vapor Barriers
   5. Roofing
   6. Building Enclosure Systems (specific to project)
   7. In-wall inspections for Drywall (prior to closing walls)
   8. Above-ceiling inspections (prior to closing up ceilings)
   9. MEP Systems
   10. Scopes that will eventually be covered by other work and cannot be readily visible
   11. Other areas as appropriate

3.4 CLOSEOUT REQUIREMENTS

A. Contractor shall comply with the following quality assurance requirements during the project closeout phase:
   1. Perform startup & testing of provided equipment
   2. Cleanup
   3. Punchlist completion and closeout
   4. Submission of all required closeout documentation
   5. Other requirements as set forth in Division 01, contract documents, technical specifications, and/or request of Owner’s designated representative.

END OF SECTION
PART 1 GENERAL

1.1 SUMMARY
   A. Section Includes:
      1. Procedures to measure and report the quality and performance of construction.
   B. Related Sections:
      1. Refer to the General Conditions for general requirements, and technical specifications for
         specific testing requirements and methods.
      2. Section 01330 - Submittal Procedures.

1.2 REFERENCES
   A. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing
      and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
   B. ASTM E329 – Standard Specification for Agencies Engaged in the Testing and/or Inspection of
      Materials Used in Construction.

1.3 QUALIFICATIONS OF TESTING AGENCY
   A. "Approved independent testing laboratory" shall mean an independent testing agency acceptable to
      the Owner and the Architect and possessing the professional qualifications and equipment to
      perform the specified tests and to evaluate and report the results.

1.4 QUALITY ASSURANCE
   A. Comply with requirements of ASTM E329 and ASTM D3740.
   B. Laboratory shall maintain a full-time registered Engineer on staff to review services.
   C. Laboratory authorized to operate in State in which Project is located.
   D. Testing equipment shall be calibrated at reasonable intervals with devices of an accuracy traceable
      to either NBS Standards or accepted values of natural physical constants.

PART 2 PRODUCTS
   Not used.

PART 3 EXECUTION

3.1 TESTING AND SPECIAL TESTING
   A. Unless otherwise provided in the specifications, provide materials, samples, mock-ups or
      assemblies for tests specified in various sections of specifications, or as directed by the Architect,
      and pay shipping costs of such samples to laboratory or other testing location and facility.
      1. Unless specified otherwise, all tests shall be made by an approved independent testing
         laboratory and reports provided to Architect.
   B. Tests shall be provided and accomplished in accordance with the standard used as the reference
      for the particular material or product, unless other test methods or criteria are specified.
C. In the absence of a referenced standard, tests shall be accomplished in accordance with applicable ASTM Standards or Test Methods, current at the date of the Contract Documents.

3.2 PAYMENT FOR TESTS

A. Except for the types of tests specified as being paid for by the Owner, the cost of other tests shall be paid by the Construction Manager/Contractor. Tests to be paid for by the Owner will be paid directly to the testing laboratory by the Owner.

B. The Owner will not pay for tests to determine if a proposed material will initially meet the specified requirements, which will include but not be limited to, analysis of paving aggregate, paving mix designs, and similar tests.

C. In general, it is intended the Contractor will pay for those field tests to determine the quality of materials and quality of installation at site. The following is the list of the type of tests the Contractor will pay for, where tests are specified or later determined as necessary:
   - concrete compressive strength
   - structural steel field welds
   - structural steel bolting
   - welding or brazing of piping
   - fireproofing samples

D. In general, it is intended the Owner will pay for the following testing and/or services
   - Hazardous Material Testing & Abatement
   - Air Quality Testing
   - Field survey of existing conditions prior to starting construction (ie site survey / Phase 1, etc.)
   - Soil Borings

3.3 TESTS TO DEMONSTRATE QUALIFICATION

A. In addition to tests specified, should the Contractor propose a product, material, method or assembly that is of unknown or questionable quality to the Architect, the Architect may require and order suitable tests to establish a basis for acceptance or rejection.
   1. Such tests will be paid for by the Contractor, or by the Subcontractor requesting approval.
      "Standard" test reports on "similar" material will not be acceptable.

B. The Owner and Architect reserve the right to require certification or other proof that the material, assembly, equipment, system or other product furnished or proposed to be furnished, for this Project is in compliance with any test or standard called for.
   1. The certificate shall be signed by a representative of the independent testing laboratory.

C. Any tests required to qualify the Contractor or any workmen for any phase of the work, and any test of a method, system or equipment that may be required by specification or law to qualify the item for use, shall be made or taken without additional reimbursement.

D. If exploratory work is required to determine the cause of defects, the cost of such work shall be borne by the Contractor responsible for such work if the work is found, in the judgement of the Architect to be defective.
   1. If the Contractor responsible for the work is adjudged by the Architect to be not at fault, exploratory testing will be paid by the Owner.

3.4 INSPECTIONS

A. Should the specifications, Architect's instruction, laws, ordinances or any public authority require any work to be inspected or approved, give timely notice of its readiness for inspection and a reasonable date fixed for such inspection. If any work requiring inspection should be covered up without approval or consent of the approving agency, it must be uncovered for examination at Contractor's expense.
3.5 CERTIFICATES

A. Except for test reports provided and signed by approved independent testing laboratories, all certificates required by the specification shall be signed by an authorized official of the firm providing the certificate, with the signature notarized, when such certificates by the producer are acceptable to the Architect.

3.6 RETEST RESPONSIBILITY

A. Where results of required inspections, tests or similar prove unsatisfactory and do not indicate compliance of related work with requirements of the contract documents, then retests are responsibility of Contractor, regardless of whether original test was Contractor’s responsibility.

B. Retesting of work revised or replaced by Contractor is Contractor’s responsibility, where required tests were performed on original work.

END OF SECTION
**SECTION 01 51 00**  
**TEMPORARY FACILITIES, UTILITIES & CONTROLS**

**PART 1 GENERAL**

**1.1 SUMMARY**

A. Section Includes:
   1. Temporary Electricity & Lighting
   2. Temporary Fire Protection
   3. Fire Suppression Systems
   4. Temporary Heating, Ventilation, and Air Conditioning
   5. Temporary Plumbing & Water Use
   6. Temporary Telecommunications & Data
   7. Construction Site Notification Signage
   8. Temporary Field Offices
   9. Sanitary Facilities for Construction Use
   10. Cold Weather Protection
   11. Temporary Guardrails & Barricades
   12. Temporary Partitions
   13. Temporary Controls
   14. Temporary Construction Aids

**1.2 RELATED SECTIONS**

A. Section 01 35 13 – Special Procedures for working in Healthcare Facilities

B. Section 01 35 33 – Project Risk Assessments

C. Section 01 35 34 – Interim Life Safety Measures (ILSM)

D. Section 01 35 35 – Disruption Avoidance and Planning: Exhibit A – Systems Shut Down Request Form.

**PART 2 PRODUCTS**

Not Used.

**PART 3 EXECUTION**

**3.1 GENERAL**

A. For any tie-in to existing house utilities such as electricity, fire protection, HVAC, or plumbing, Contractor shall submit a Systems Shut Down Request form. Reference Section 01 35 35 Exhibit A – Systems Shut Down Request Form.

**3.2 TEMPORARY ELECTRICITY & LIGHTING**

A. Owner’s policy for working on energized circuits: In order to minimize disruption of any power circuit at Froedtert Hospital, the following policy must be followed:

1. Where possible, all live circuits shall be de-energized. Before de-energizing
   a. Contractor shall investigate all existing circuits that may be affected by de-energizing. A list of equipment, computers, areas, and users shall be identified on the request form.
   b. Contractor shall fill out the Systems Shut Down Request form and follow the prescribed procedure identified in Section 01 35 35.
   c. Contact Plant Operations manager. At that time, Plant Operations will make the decision whether or not to notify the hospital.
d. Contractor shall follow appropriate lock-out tag-out procedures, and provide the following information to Plant Operations:
   1) Date
   2) Time de-energized
   3) Approximate shut down time
   4) Areas affected
   5) Breaker number
   6) Contractor’s Name

2. When it is not possible to de-energize a circuit, Contractor will be notified immediately by Plant Operations. When working on live circuits, Contractor shall take every precaution to protect the worker and maintain uninterrupted power to the hospital. Contractor shall follow all prescribed personal protective equipment and OSHA required safety precautions for working on energized circuits. When needed, Contractor shall schedule work on these circuits off-hours or off-shift to facilitate ability for de-energizing the circuit.

B. Contractor is allowed to use hospital power for interior renovation work at no cost to them. Contractor shall identify which circuits will be used for construction use, and obtain approval from Plant Operations. Service provided shall be dedicated to:
   1. General lighting
   2. Fractional horsepower hand tools

C. Contractor is responsible for all temporary power and electrical equipment needed for construction activities.

D. Contractor is responsible for all temporary lighting during construction. Light output levels must be consistent with OSHA and National Electrical Code standards and requirements. Contractor is responsible for providing all individual task lighting required to facilitate construction activities.

E. If Contractor contemplates the use of equipment that requires a different voltage or greater capacity than that available or specified, Contractor is required to arrange with the Utility for this additional service and pay for installation of the service and necessary additional switches and/or wiring required.

F. Contractor shall be responsible for all temporary wiring and service for any field offices or trailers.

G. The Owner will pay for all electrical energy consumed for construction purposes for all trades including that required for operation of ventilating equipment, for heating of buildings, and for testing and operating of all equipment.

H. Contractor shall be provided by Contractor for exterior lighting and security purposes during construction, and coordinated with Owner’s designated representative.

I. Contractor must provide and use GFCI (ground fault circuit interrupters) as set for in the latest OSHA regulations.

J. After substantial completion of the permanent electrical distribution system and building wiring by Contractor, permanent receptacles may be used during finishing work. Permanent wiring for light fixtures, switches and receptacles will be installed after all masonry and drywall work is completed. This wiring shall not be used for motors greater than ½ HP or for welding equipment. Circuits for larger motors and welding equipment may be provided with special circuits directly to electrical panels at the expense of Contractor as required. Confirmation of these circuits shall be coordinated with Plant Operations department.

3.3 TEMPORARY FIRE PROTECTION

A. Contractor is responsible for all temporary fire protection and fire suppression required to comply with hospital and project ILSM plan(s). This may include additional fire extinguishers within the project limits and the need to turn exiting sprinkler heads up to the deck.

B. Use of exiting hospital fire extinguishers for construction use is prohibited.
C. Contractor shall protect existing conditions and surrounding construction when welding, flame cutting, sparking devices, etc. Contractor shall provide necessary personnel and firefighting equipment to effectively address fire concerns. Open flames are not permitted.

D. Contractor shall take all necessary precautions to guard against and eliminate all possible fire hazards in accordance with fire protection laws and codes. Necessary precautions shall be taken by Contractor to prevent damage to any construction work, building materials, equipment, temporary field offices, storage sheds and all other property.

E. Contractor shall maintain a fire watch during hot work operations. After work is completed for the day, records of a fire watchman/rounds must be maintained on a fire watch log (Reference 01 35 35A Exhibit A – Systems Shut Down Request Form).

3.4 FIRE SUPPRESSION SYSTEMS

A. Contractor shall install permanent fire protection/suppression system, water supply, fire extinguishing equipment, and systems at the earliest possible date.

B. Contractor shall make every attempt to maintain existing fire suppression systems during all interior remodeling work.

3.5 TEMPORARY HEATING, VENTILATION, AND AIR CONDITIONING

A. Contractor is responsible for tempering and controlling of all HVAC systems within the construction limits. All heating required after enclosure of the building/project shall be considered Temporary Heat.

B. Contractor is responsible for providing all temporary heat as required by the scope of the work.

C. Contractor shall maintain negative pressure within the construction limits consistent with the hospital and project ICRA Plan.

D. Contractor shall provide, install, and maintain all temporary HVAC equipment, filters used during construction activities. In instances when house HVAC is used to establish temporary heating and cooling, Contractor shall verify that condition of the existing systems is adequate to handle proposed temporary measures. Cleaning, maintenance and service of the system during construction is the responsibility of Contractor within the project limits or as directed by Plant Operations and/or Owner’s designated representative.

3.6 TEMPORARY PLUMBING & WATER USE

A. Contractor shall provide connections for temporary water and plumbing required for construction activities. Contractor is responsible for all necessary patching of surfaces and of the structure after such temporary service is removed. If water cannot be obtained right away, Contractor is responsible to provide the necessary water for their operation until water is available.

B. Contractor shall coordinate with Owner’s designated representative for available water locations and appropriate areas for clean-up. In instances where existing hospital facilities are allowed for construction use, Contractor shall ensure that drains are left in a clean and unclogged condition (ex. Use of janitor’s closets slop sink for disposal of construction water).

C. Only designated hose bibs are available for Contractor’s use. Contractor shall obtain permission from Owner’s designated representative prior to use of water from any hose bib.

D. Contractor shall prevent waste of water and shall maintain valves, connections and hoses in good condition at all times. Contractor shall provide their own hoses and piping from hose bibs.

E. Contractor is responsible for their own drinking water.
3.7 TEMPORARY TELECOMMUNICATIONS & DATA
A. Contractor shall coordinate with Owner’s designated representative and IS/IT Department for
temporary use of telecommunication and data connections. In general, hospital computers are not
allowed for Contractor use.
B. Contractor is allowed to use cellular telephones in designated areas as directed by Owner.

3.8 CONSTRUCTION SITE NOTIFICATION SIGNAGE
A. Contractor shall install temporary project signage during construction on all temporary doors,
barriers, and enclosures. The following temporary project signage is required:
   1. "Construction Area, Hard Hat & Safety Glasses Required"
   2. Emergency contact list
   3. "Another Enhancement to the Healing Environment" (Reference Section 01 51 00 Exhibit A)
   4. Other signage as required by Owner’s designated representative.
B. All construction site notification signage shall be laminated and neatly adhered to the substrate on
which it is placed. Use of duct tape and colored tapes, shall be limited in appearance. All signage
shall be neat, clean, presentable, and visible. Contractor is responsible for updating, replacing, and
removing all signage though the project.
C. All temporary signage shall be documented on the site utilization plan, and approved by Owner’s
designated representative prior to installation.

3.9 TEMPORARY FIELD OFFICES
A. Contractor shall coordinate with Owner’s designated representative for permission and/or location of
temporary field office(s).

3.10 SANITARY FACILITIES FOR CONSTRUCTION USE
A. Contractor shall coordinate with Owner’s designated representative for approval and identification of
temporary restrooms facilities (both male and female) for use during interior renovation projects.
B. Contractor shall obtain permission from Owner’s designated representative for use of temporary
portable restrooms for use during exterior projects. Portable restrooms (both male and female) are
to be provided by Contractor if required.
C. Contractor shall identify these locations during project safety orientations as well as on the
Construction Logistics Plan. Use of alternate existing hospital facilities is prohibited.

3.11 COLD WEATHER PROTECTION
A. All heating and coverings required to protect any work from injury due to freezing or moisture during
the construction period prior to building enclosure shall be classified as Cold Weather Protection.
Such protection shall be provided by Contractor for the protection of their own work until the building
is enclosed.
B. Heating required to protect materials and workers from injury due to freezing during the construction
period prior to enclosure shall be provided by Contractor by means of portable heating units
intended for this purpose.
C. Contractor shall provide adequate ventilation when using temporary heating units. Use of temporary
units whose product of combustion will damage concrete, mortar, or other building materials will not
be allowed.
3.12 TEMPORARY GUARDRAILS AND BARRICADES

A. Contractor shall be responsible for installation, maintenance, and removal of all temporary protection at the building floor perimeters and around openings through the project. All other protection and safety barricades, devices, covers, etc., including at all roof areas, shall be provided by Contractor as it relates to the safe conduct of the work in accordance with all local, state, and federal regulations and guidelines.

3.13 TEMPORARY PARTITIONS

A. Contractor is responsible for installation, maintenance, and dismantling of all temporary partitions required throughout the course of the work. Reference section 01 56 15 – Airborne Contaminants Control for further information regarding temporary partitions and infection control procedures.

3.14 TEMPORARY CONTROLS

A. Contractor shall provide barricades and covered walk-ways required by governing authorities for protection of public rights-of-way for access to the building.

B. Contractor shall provide whatever means necessary to protect vehicular traffic, stored materials, existing facilities and adjacent properties from damage due to demolition or construction activities under Contractor's control or operations.

3.15 TEMPORARY CONSTRUCTION AIDS

A. Combination Man/Materials Hoist and Materials Hoist. If required, Contractor shall provide all temporary hoists, hoisting equipment, cranes, lifts, etc. required to unload, move and hoist materials.

B. Stairs. Ladders, Ramps, Runways, Scaffolds. Contractor shall furnish and maintain all temporary stairs, ladders, ramps, chutes, runways, scaffolds and the like required for proper execution of the work.

END OF SECTION
ENHANCING OUR HEALING ENVIRONMENT

No access to level 3, please use the B, D or E elevators

Thank you in advance for your cooperation.

Thank you, for any questions, problems or concerns:
Plant Operations: 414-314-6700
Security: 414-805-2828
Facility Planning (____________): 414-XXX-XXXX
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Hospital airborne contaminants control policy and procedures;
   2. Performance Requirements;
   3. Inspection Procedures;
   4. Containment Considerations;
   5. Protection;
   6. Airborne Contaminant Control Enclosures and Barriers; and
   7. Ceiling Access Control of Airborne Contaminants.

1.2 DEFINITIONS

A. Contaminant-Producing Activities include, but are not limited to:
   1. Demolition and removal of walls, floors, ceilings, and other finish materials;
   2. Demolition of plumbing, mechanical and electrical systems and equipment;
   3. Finishing operations such as sanding, painting, and application of special surface coatings;
   4. Routine construction activities which can generate dust; and
   5. Site-work operations.

B. Containment Areas: As determined by Owner and/or Owner's Representative and as shown on
   drawings. Includes area of construction, adjacent staging and storage areas, and passage areas for
   contractors, supplies and waste; includes ceiling spaces above and adjacent to construction, if
   appropriate.

C. Protection Areas: As determined by Owner and/or Owner's Representative and as shown on
   drawings as Protection Areas which include hospital areas adjacent to Containment Area, either
   occupied or used for passage, as well as areas connected to construction area by mechanical
   system air intake, exhaust and ductwork.

D. "Minor ceiling access" is defined as visual observation or minor adjustments or other activity that
   does not disturb dust. Acoustical panels shall be replaced or access panel shall be closed
   immediately prior to the contractor leaving the work area.

E. "Major ceiling access" describes any other access not defined as "minor ceiling access".

F. "Thorough" cleaning of surfaces which were potentially exposed to dust shall be accomplished by
   use of a HEPA-filtered vacuum followed by wet wiping and then a final round of HEPA-filtered
   vacuuming.

G. Negative Air Machine: HEPA-filtered portable mechanical unit used to create negative air pressure
   in the Containment Area(s), as specified in this Section. Negative air machines used to exhaust air
   into occupied spaces need to be tested and labeled prior to use. See section 2.1.A. for more
   information.

1.3 RELATED SECTIONS:
   1. 01 51 00 - Temporary Facilities, Utilities, & Controls
   2. 01 77 00 – Owner Closeout Requirements
1.4 POLICY

A. Fungal spores such as *Alternaria*, *Aspergillus*, *Cladosporium*, *Penicillium*, *Stachybotrys atra* or *S. chartarum*, and any other biological organisms that produce or may produce mycotoxins, cause disease (referred to collectively as "spores") or otherwise may negatively affect patients or other building occupants must be properly controlled.

B. Inhalation of these spores and other toxins released by construction activity can cause nosocomial fungal infections in immune-compromised patients.

C. *Aspergillus* and other spores are known to be present in construction dust, debris and earthwork excavation dust. Control of construction dust, debris and excavation dust is imperative to help prevent or minimize the risk of outbreaks of *Aspergillosis* or similar nosocomial fungal infections in immunocompromised patients.
   1. *Aspergillus* and other related spores are present in the natural environment and are generally not a risk to otherwise healthy hospital staff, visitors and construction workers in typical outdoor ambient concentrations.
   2. Workers are required to attend an orientation session. Refer to Article 1.7.A.

D. Control of airborne contaminants including spores is critical for ensuring a safe hospital environment. Limit distribution and transport of airborne contaminants produced by construction-related activities in order to protect immuno-compromised and otherwise healthy patients, staff, diagnostic operations, or sensitive procedures or equipment from possible undesirable effects of exposure to such contaminants.
   1. Dust in ceilings and construction debris may contain fungal spores. Construction activities causing disturbance of existing dust, creating new dust, or causing the release of other airborne contaminants must be conducted in air-tight enclosures to prevent migration of particulate matter into hospital-occupied areas.
   2. Ceilings and walls in Protection Areas and other areas in the Hospital as indicated on drawings must be secure at all times. If access into the ceiling in occupied areas is required, procedures as described in this Section shall be followed.

1.5 PERFORMANCE REQUIREMENTS

A. Owner Representative's Responsibilities
   1. Determine the Containment and Protection Areas as well as identify the standard of limitations of the Contractor's responsibilities required for the project.
   2. Statement of Requirements: Describe in graphic and written form as required to communicate the requirements listed above, based on evaluation of the construction area and the impact of the project on patient care.

B. Owner's Responsibilities
   1. Assist Owner's Representative in determining Containment and Protection Areas.
   2. Perform testing and monitoring as specified as indicated in Section 01 35 43.

C. Contractor's Responsibilities
   1. Comply with applicable regulatory codes and referenced controls and to use installation procedures and methods which satisfy applicable code requirements and referenced controls and procedures.
   2. Implement means and methods for achieving and maintaining control of airborne contaminants during construction.
   3. Provide a proposed work plan and procedures for control of airborne contaminants, as noted below.
   4. Plan Certification: Contractor's plan shall be signed and accepted in writing by Owner and/or Owner's Representative.
   5. Notification: Notify Owner and/or Owner's Representative a minimum of 48 hours prior to starting construction activity which might be expected to produce excess levels of airborne contaminants in containment area so that additional precautions may be taken.
6. Provide all dustproof enclosures, warning signs and warning lights to protect the patients, hospital staff, public occupants, the existing building, storage areas and materials or equipment. Enclosures shall be approved by Owner and/or Owner's Representative.

1.6 PROTECTION

A. If work is being done above a lay-in ceiling tile system and if work must be performed while the space below is occupied, provide temporary work surfaces to provide a safe working platform and protect the ceiling and the spaces below from falling objects and materials. Take all necessary precautions to protect the people and spaces below from injury due to the Contractor's work activities.

B. Exercise caution when handling fluids, particularly the heating water, in the interstitial space. When working with fluids, provide a water-tight barrier beneath the work area to catch and retain all spillage before it reaches the ceiling below.

C. Notify the Owner and/or Owner's Representative at least 48 hours, or greater if requested by the Owner and/or Owner's Representative, prior to commencing work in ceiling or interstitial spaces above occupied areas to allow at-risk patients to be relocated or otherwise protected.

D. Contractor is to maintain a log showing all persons who enter the interstitial space. This log is to show at a minimum the person's name, company, date, and time of entry in and exit from the interstitial space.

1.7 SUBMITTALS

A. Progress Schedules: Submit work areas and procedure schedules for containment of airborne contaminants.

B. Work Plan: Drawings and details of construction of necessary temporary barriers and description of procedures to be used to achieve and maintain control of construction-related airborne contaminants.

C. Certification: Submit Contractor's plan certification as specified.

1.8 GENERAL CEILING ACCESS

A. Notify Owner and/or Owner's Representative that work requiring access to the ceilings outside the Containment Area at least 48 hours before work is to begin.

B. The Contractor shall report to Owner's designated office and fill out a ceiling access form. An approved work tag must be attached to the ceiling access enclosure before work will be allowed to proceed.

C. Work Tag:
   1. The Contractor shall attach a completed and approved work tag on the ceiling access enclosure before work can proceed.
   2. The work tag can be removed only after the work is done and cleanup is completed.
   3. All tags issued from Owner and/or Owner's Representative shall be returned the same day to the office at which it was issued after work and cleanup for the day has been completed.

D. Spray top of ceiling panels to be removed and surrounding affected panels with a fine mist of a dilute bleach solution to prevent the release of settled dust prior to removal. Spray in a manner which does not saturate the underlying ceiling tile.

E. All above ceiling work is to be coordinated with the Plant Operations and/or Facility Planning and Development departments who will notify the department manager of the work being performed. Doors in critical areas should be maintained in the closed position to prevent the spread of airborne contaminants.

F. Owner and/or Owner's Representative shall be contacted for all ceiling access problems.
1.9 QUALITY CONTROL

A. Preconstruction Meeting: Before any onsite construction begins, Contractor and Subcontractors are required to attend a preconstruction orientation session held by Owner and/or Owner’s Representative for training and instruction on precautions to be taken. Training will include the following topics:
1. How the project work activities may impact patient care.
2. How to protect patients and staff from hazards and contaminants associated with the project.
3. The types and nature of diseases associated with patients in airborne isolation infection (AII) treatment rooms.

B. A written report from the Owner’s qualified air balancer will be submitted confirming specified air velocity whenever enclosure is erected or modified in designated Protection Area. Negative air machines shall be connected to emergency power and run continuously in such areas.

C. Contractor must provide at least 48-hours notification to Owner and/or Owner’s Representative prior to initiating construction activities which could potentially create or distribute airborne contaminants in Protection Area. Schedule work in ceiling spaces above occupied rooms in advance and during non-business days/times if possible.

D. Comply with requirements in Section 01 32 16 - Progress Schedules and Reports.

1.10 TESTING

A. Airborne Particulate Matter Monitoring: Owner will coordinate baseline monitoring for airborne particulate matter prior to initiating any construction work. Periodic performance monitoring for airborne particulate matter in Protection Areas will be performed during construction to monitor effectiveness of dust containment measures.

B. Differential Air Pressure Monitoring: Contractor to monitor pressure differential between the construction area and surrounding areas using a digital monitoring device. Monitor the pressure differential between the construction containment and the adjacent occupied areas on a continuous basis. Multiple differential pressure monitoring devices may be required to monitor and document negative pressure. Verify with the Owner and/or Owner’s Representative how many monitoring devices will be required. Setup the manometer to alarm if the pressure differential is below 0.010 inches water column for more than one minute. Notify the Infection Prevention Department if negative pressure has been lost for more than one minute in order to assess whether patients are at risk.

C. Provide any and all recorded data to Owner and/or Owner’s Representative at the end of the project and as otherwise requested.

PART 2 PRODUCTS

2.1 MATERIALS

A. Negative Air Machines: Micro Trap MT-C Negative Air Filtration Units by Micro-Trap, Inc., 38 North Pine Avenue, Maple Shade, New Jersey, 08052, or CRSI 2000 by Control Resource System Incorporated, 670 Marine Drive, Michigan City, Indiana, 46360, 1-800-418-1264 or equivalent.
1. Units shall include prefilters, final HEPA filters and filter static pressure gauges.
2. HEPA filters shall be 99.97% efficient at removing 0.3 micron particles.
3. If exhausting air from the construction containment directly outdoors cannot be achieved, authorization must be granted by the Owner and/or Owner’s Representative to exhaust air from the construction containment into hospital-occupied areas using a HEPA-filtered negative air machine.
a. Contractor must test the performance of the negative air machine by measuring particulate matter from the exhaust prior to discharging inside the facility. Verify that the negative air machine is achieving HEPA filter performance (i.e. 99.97% removal of 0.3 micron particulate matter). Document and maintain test records of the ambient and HEPA-filtered negative air machine unit discharge particulate matter levels.

b. Replace the pre-filter and primary HEPA filter as recommended by the filter and/or negative air machine manufacturer. Test the performance of the negative air machine by measuring particulate matter from the exhaust each time the primary HEPA filter is replaced and before the air is exhausted inside the facility. Verify that the negative air machine is achieving HEPA filter performance (i.e. 99.97% removal of 0.3 micron particulate matter). Document and maintain test records of the ambient and HEPA-filtered negative air machine unit discharge particulate matter levels. Follow the manufacturer’s suggested maintenance schedule and procedures.

B. Carpets or Mats: Provide carpets or mats at enclosure entrances, vacuumed or changed as often as necessary to prevent accumulation of dust. At Owner and/or Owner Representative’s request, Contractor may also be required to provide adhesive faced contamination control mats with disposable sheets in addition to or in lieu of vacuumed mats. Use sticky walk-off mats such as Tacky Mat by Liberty Industries, 133 Commerce Street, East Berlin, Connecticut, 06023, 1-800-828-5656, or equivalent. All vacuuming outside areas not under negative pressure shall be conducted using a certified HEPA-filtered vacuum.

C. Dust Caps: Block off all existing ventilation ducts including air supply and return air grills within the construction and anteroom areas. Method of capping ducts shall be air tight and withstand air flow.

D. Temporary Prefabricated Partition for Work in Sterile Corridors: Kontrol Kube, including Adjustable Aluminum Frame #6440; Vinyl Enclosure #6442; Wheel Base Platform #6443; by Fiberlock Technologies, Inc., P.O Box 432, Cambridge, MA. (617) 876-8020 or equivalent as approved by the Owner and/or Owner’s Representative. Provide with inspection window and pressure differential port hole. Include Nilfisk 87 cfm vacuum device and manometer or equivalent.

E. Fire-rated Partitions for Temporary Enclosure: Provide rated gypsum board wall construction meeting requirements of local jurisdiction for use as temporary enclosure.

F. Polyethylene: Fire-resistant, UL-labeled tarpaulins with flame spread rating of 15 or less. Provide translucent, nylon-reinforced laminated polyethylene or polyvinyl chloride, fire-retardant sheet certified as conforming to test results of test method 2 contained in NFPA 701, entitled Standard Method of fire Tests for Flame Propagation of Textiles and Films, unless local jurisdiction accepts test method 1 of NFPA 701 or requires other materials.

1. Portable Enclosures: Whenever work is done outside existing enclosed work areas, provide portable polyethylene enclosure, enclosing ladder and sealing off opening fitted tight to ceiling, or provide prefabricated unit.

PART 3 EXECUTION

INSPECTION

A. Before any demolition or construction begins, complete a field review of all Protection Areas (airborne contaminant control areas) and policies and revise the work plan if required.

B. Contractor shall inspect containment areas daily and record inspection results on the Infection Control Daily Checklist. Reference 01 56 15 Exhibit A. Provide copies of the Infection Control Daily Checklist at the completion of the project and as requested by the Owner and/or Owner’s Representative.
SCHEDULE OF REQUIREMENTS

A. Baseline airborne particulate matter levels in Protection Areas in or adjacent to the work area(s) will be established based upon historical monitoring data or determined prior to the start of the project.

B. Owner will monitor airborne particulate matter levels and other spore counts in the vicinity of the project in adjacent Protection Areas. Such areas are as set by Owner and may include but not be limited to the following: surgery department; ICUs; inpatient units; sterile processing department; and other patient care areas. Whenever baseline or otherwise acceptable particulate matter and/or spore counts as determined by the Owner and/or Owner’s Representative are exceeded or deficiencies related to dust containment, material handling, or cleaning are identified, Contractor will be notified and instructed to correct conditions immediately to avoid potential fines and work stoppage.

1. Work shall be stopped on the project whenever a potentially hazardous airborne contaminant control deficiency exists in or immediately adjacent to hospital-occupied areas.
2. Take immediate action to correct all deficiencies.
3. Verify with the Owner and/or Owner’s Representative that the deficiencies have been corrected prior to resuming work.

C. Before any demolition or construction begins in occupied areas, review all airborne contaminant control policies. Complete an air quality checklist with the Froedtert Hospital Project Manager and/or Owner’s Representative, an Infection Prevention Specialist and the Contractor to confirm that the area is ready for work to begin.

CONTAINMENT

A. Requirement: Maintain acceptable levels of airborne contaminants within limits as defined.

B. Negative air machines as described herein shall provide a minimum of 4 air exchanges per hour and at least 0.01 inches water column negative pressure at all enclosure entrances.

C. Air Quality Contaminant Control: Fasten windows shut, ventilate barricaded construction areas by use of negative air machines exhausted through filters to the outside of building, or to Owner and/or Owner’s Representative designated areas inside the building.

1. Provide a minimum of 2 negative air machines. Vent negative air machines to outside by removing existing windows and replacing them with vented sheet metal and/or plywood panels having fittings for exhaust holes. Provide added local exhaust during welding. Any deviation from this requirement must have prior written approval from the Owner and/or Owner’s Representative.
2. Change filters as frequently as necessary for duration of the project in order to maintain the required air exchanges and negative pressure inside the Containment Area.
3. Negative air machines shall be DOP tested or equivalent and certified prior to being placed in service, after a HEPA filter change, and when dropped, damaged, stored or moved extensively.

D. An anteroom may be required to contain dust/debris, maintain negative pressure or to don and doff PPE such as in sterile processing, surgery departments or other patient-sensitive areas. If required, install an anteroom sufficient in size to allow placement of a HEPA-filtered negative air machine, a HEPA vacuum, a wet or sticky walk-off mat, and the ability to transport materials into and out of the construction area. Contractor to verify with Owner and/or Owner’s Representative whether an anteroom is required.

PROTECTION

A. General: Provide and maintain all barriers, filters, ventilation, and cleaning and removal procedures as detailed in work plan.

B. Sealing of Openings: Use duct tape or other impenetrable sealant to seal barrier wall seams, cracks around window and door frames, exhaust system ductwork, pipes, joints and ducts.
C. Dust Control: Take appropriate steps throughout the duration of the Project to prevent airborne dust due to work under this contract. No chemical palliatives shall be used without permission of the Owner and/or Owner’s Representative.

1. Hard surface floors in work area, adjacent hallways and passage areas require vacuuming with HEPA-filtered vacuum cleaners and frequent wet-mopping during demolition and construction; protect adjacent carpeted areas with plastic and plywood and vacuum with a HEPA-filtered vacuum cleaner as needed.
2. At a minimum, vacuum carpet or fabric walk-off mats daily. Remove the individual sticky-film sheets as needed to provide a tacky surface.
3. Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent airborne dust from dispersing into atmosphere and migrating into hospital-occupied areas.

D. Airborne contaminant enclosures or infection control enclosures shall be air-tight. Any dust tracked outside of enclosure shall be removed/cleaned immediately. All cleaning outside enclosure should be by HEPA-filtered vacuum or other method approved by the Owner and/or Owner’s Representatives.

E. The following procedure shall be implemented when construction personnel are required to pass through a Protected Area to enter the Containment Area:

1. Provide airlock entry vestibules in dustproof enclosures when shown on drawings or required by Owner and/or Owner’s Representative.
2. Personnel shall wear protective clothing as required and provided by the Owner and/or Owner’s Representative while passing through Protected Areas.
3. Protective clothing shall be removed in the airlock vestibule prior to entering the Containment Area.
4. When exiting the Containment Area, the personnel shall re-don the protective clothing before reentering the Protected Area.

F. Contractor Personnel: Instruct personnel to refrain from tracking dust into adjacent hospital areas or opening windows or doors that would allow airborne contaminants into adjacent hospital areas.

G. Exterior Work: Direct exhaust from equipment away from building air intakes; ensure that filters on building air intakes are operational and protected from excessive amounts of airborne contaminants.

H. Any ceiling access panels opened for investigation beyond sealed areas shall be replaced immediately when unattended.

1. Whenever access panels are opened in occupied areas for work above ceilings, provide portable enclosure enclosing ladder and sealing off opening, fitted tight to ceiling as specified.
   Create negative pressure within the portable enclosure by using a HEPA-filtered vacuum or equivalent.

I. Provide thorough cleaning of existing surfaces which were potentially exposed to dust prior to occupancy by the Owner.

J. Removal of construction barriers and ceiling protection shall be done in a manner which minimizes dust generation and performed, if possible, outside of normal work hours. HEPA vacuum and clean all surfaces after the removal of construction barriers.

K. All vacuuming outside areas not under negative pressure shall be performed using a certified, Owner approved, HEPA-filtered vacuum.

AIRBORNE CONTAMINANT CONTROL ENCLOSURES AND BARRIERS

A. Install dustproof enclosures for work as indicated and when required to protect areas occupied by the Owner from dust, debris and damage.

1. Construction must be conducted in air-tight enclosures which prevent the migration of dust particles into hospital-occupied areas.
B. The Contractor must confirm with the Owner and/or Owner’s Representative whether or not a
dustproof enclosure is required to protect any adjoining areas.

C. Airborne Contaminant Control General Requirements: Floor to structure, air-tight enclosures,
drywall barriers, using tape and foam padding.
   1. Traffic between Containment Areas and open areas shall be kept to a minimum. Keep door to
      such areas closed at all times. Transport materials and refuse into an area from an external site
      without violating patient care areas by transporting in covered containers.
   2. Provide negative pressure in construction area as specified herein.
   3. Provide adequate forced ventilation of enclosed areas to cure installed materials, to prevent
      excessive humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.

Modify regarding when hard or plastic partitions are needed.

Ambulatory – 4 days
Hospital – 2 days
Business – 2 weeks
Based upon occupancy plans

D. Dustproof Enclosures for projects lasting longer than 2 weeks or as specified in the “Proactive
Construction Risk Assessment”
   1. Full height, noncombustible construction, with minimum 1/2 inch gypsum board both sides with
      3-1/2 inch R-11 insulation batts to reduce noise. Use 3-inch wide duct tape or equivalent to
      tightly seal top, bottom, and all seams, to prevent spread of dust to occupied areas, including
      above ceiling.
   2. Enclosure Doors: 4'-0” minimum width, unless shown otherwise, solid core wood with metal
      frame and hardware, including closer, tightly weather-stripped to prevent dust migration. Locate
      as directed and swing into construction area. Keep enclosures locked outside of working hours.
      Three keys for emergency access shall be furnished to the Owner. Alternatively, install a
      keypad passage handle and provide the code to the Owner.
   3. Obtain Owner’s and/or Owner Representative’s approval of exact location and details of
      enclosure construction. Materials for enclosure shall be precut in unoccupied areas. No
      explosive or pneumatic driven fasteners allowed. Provide entrance vestibules as detailed.
      Provide carpet and/or sticky walk-off mat inside vestibule and inside enclosures at door to
      vestibule. At a minimum, vacuum carpet daily and remove individual sticky film sheets as
      necessary to provide a tacky surface.
   4. Install dust containment barrier from floor to ceiling deck. Dust containment barriers must be
      constructed in a manner as to provide an air-tight barrier using a material suitable for
      preventing punctures, breeches and other damage.
   5. Contractor must get prior written approval from Owner and/or Owner’s Representative to
      deviate from any requirement described above.

E. Dustproof Enclosures for projects lasting 2 weeks or less or as specified in the “Proactive
Construction Risk Assessment”
   1. Install dust containment barrier from floor to ceiling deck. Dust containment barriers must be
      constructed in a manner as to provide an air-tight barrier using a material suitable for
      preventing punctures, breeches and other damage.
2. Install a zippered entrance into the dust containment. The entrance must be suitable for entry and exit of personnel, equipment and materials.

3. Prior to construction, obtain Owner’s and/or Owner Representative’s approval for the exact location and details of enclosure construction. Provide entrance vestibules as detailed. Provide carpet and/or sticky walk-off mat inside vestibule and inside enclosures at door to vestibule. At a minimum, vacuum carpet daily and remove individual sticky film sheets as necessary to provide a tacky surface.

4. Install dust containment barrier from floor to ceiling deck. Dust containment barriers must be constructed in a manner as to provide an air-tight barrier using a material suitable for preventing punctures, breeches and other damage.

5. Contractor must get prior approval from Owner and/or Owner's Representative to deviate from any requirement described above.

F. Containment above the ceiling inside or adjacent to patient care areas should be appropriately constructed and sealed using either a hard-wall or plastic-wall barrier to eliminate the risk of spreading dust above the ceilings of patient care areas. Regardless of the type of barrier used, the dust containment system (i.e. floor level and above ceiling) must be completely sealed and checked daily for damage or other defects which may allow migration of dust/debris into hospital-occupied spaces. Contractor is responsible for verifying with the Owner and/or Owner’s Representative whether a hard-wall or plastic-wall partition is required for dust containment above the ceiling.

G. Seal containment barriers (wall-wall, wall-floor, wall-ceiling and penetrations) by using taped seams or similar as appropriate depending on the type of dust containment.

H. Enclosure outside of work area (including spaces above furred ceilings): Whenever work is necessary outside of the construction enclosures, the space where work is being done, including ladders, shall be contained within a full height portable enclosure as specified herein. Contractor option: may use prefabricated unit specified herein.

1. Work performed outside the construction enclosure shown on drawings, including all work in corridors and lobbies, shall be performed outside of normal working hours and shall be scheduled in advance with Owner except where specified otherwise.

2. At no time shall any construction equipment or material be stored outside the construction enclosure.

3. Dust tracked outside of the construction area shall be cleaned up immediately. Contractor shall have the necessary manpower and equipment (HEPA vacuum, dust and wet mops, brooms, buckets and clean wiping rags) to keep adjacent occupied areas clean at all times.

4. Hospital Ceiling Access Procedures: Comply with hospital’s access and notification policy as specified in this Section and note information on associated fines for lack of compliance.

I. Power and Lighting: Provide sufficient temporary lighting and power ventilating equipment to ensure proper workmanship and safety everywhere.

J. Access Provisions: Provide ramps, stairs, ladders and similar temporary access elements as reasonably required to perform the work and facilitate its inspection during installation. Comply with all OSHA health and safety regulations and refer to Section 011419 for access to site.

K. Where work occurs in occupied areas, the Contractor is responsible for providing access openings through existing plaster, gypsum board walls, and/or acoustical ceilings and for restoring walls and ceilings to original condition after work is complete and for insuring dust control within access areas.

1. Provide temporary plywood panels anchored to existing steel ceiling support grid for support of workers crawling above ceiling. Panel thickness shall suit spans between existing steel supports.

2. Work conducted outside the construction enclosures shown on drawings, including all work in corridors in occupied areas, shall be performed outside of normal working hours as described in Section 011419 – Use of the Premises.
L. Remodeling work in certain rooms which serve other rooms, shall be coordinated with the phasing of the remodeled rooms if required, so that at no time are both rooms simultaneously inoperative. Any downtime necessitated by the remodeling work shall be fully discussed and coordinated with the Owner and/or Owner’s Representative in advance of the shutdown.

1. Dust: Generation of significant quantities of airborne dust will not be tolerated. Clean prior to starting work as necessary to minimize existing dust which may become airborne during construction. Provide drop cloths and dust partitions as necessary to contain dust and debris generated by the work.

2. Demolition material, dust and other debris shall be removed in tightly sealed, covered, rubber tired plastic dump carts. Containers shall be fitted with clean polyethylene covers, completely sealed at perimeter by wire tying or taping. Before leaving area all containers shall be wiped clean to prevent tracking or release of dust/debris. Place carpet or sticky walk-off mats inside barrier entrance, keep them clean or changed daily. Provide debris chutes if required as specified in Section 01 74 20 – Construction Waste Disposal and Recycling.

3. Hot Processes: Hot processes, particularly welding and flame cutting which generate significant quantities of smoke, pose a special concern. These processes have the potential of setting off the building fire alarm system which automatically calls the Fire Department as well as disrupting normal hospital operations. Therefore, all work involving hot processes shall be performed while the Owner's system deactivated. Follow all life-safety provisions including but not limited to fire watch, portable fire control equipment and training.

4. Portable vinyl tunnel or a polyethylene enclosure shall be used for a single ceiling access. The enclosure opening shall have a 3 foot overlap of plastic to decrease risk of airborne dust migration into hospital-occupied areas.

M. The portable vinyl tunnel or portable enclosure if specified shall remain in place until the ceiling is secured (all accesses closed). A HEPA vacuum or similar should be used to create negative pressure in the enclosure.

1. If the access is larger than the vinyl tunnel, a portable polyethylene enclosure also enclosing the ladder shall be used. The enclosure opening shall have a 2 foot overlap of plastic to decrease risk of airborne dust migration into hospital-occupied areas.

2. Polyethylene enclosures/barriers must be adhered to walls and floor with the use of suitable tape. The seam on the ceiling shall be reinforced with a frame and flat head screws. All polyethylene shall be fire retardant type.

3. If the Contractor must work in a chase or crawl space to access pipes, ducts, or other building infrastructure to investigate a condition, use Additional Procedures (i.e. wear a dust mask, put on disposable white coverall and disposable shoe covers) before going into the access. Afterwards, take off the coverall, and shoe covers carefully, turning the coverall "inside-out", and deposit the mask, coverall, and shoe covers into a plastic trash bag inside the enclosure. This plastic trash bag shall be secured (tied off) and be discarded as directed by Owner and/or Owner's Representative and may not be discarded within any patient care area.

4. When the Contractor leaves the work site, the access, especially at ceiling, shall either be completely closed or protected by an appropriate barrier.

5. In patient care areas, the apparatus (tunnel or enclosure) shall be dismantled, and access, (ceiling panels), or remodeling of access completed at the end of each day.

6. Thorough cleaning of surfaces which are potentially exposed to dust shall be performed prior to leaving the job site. The cleaning can be accomplished by the use of either a HEPA-filtered vacuum cleaner or damp mop.

N. Comply with applicable requirements specified in the Mechanical and Electrical Divisions.

ENFORCEMENT AND FINES

A. Process: Failure to maintain containment areas can result in issuance of written warning; if situation is not corrected within eight (8) hours of receipt of warning, Owner will have cause to stop the work as provided in Article 2.3 of the General Conditions.

1. Failure of Contractor to correct deficiencies in containment will result in corrective action taken by the Owner and deducting all associated costs to resolve the matter from the Contractor.
B. The following will be performed by Owner and/or Owner’s Representative:

1. Periodic Rounds - a photograph(s) will be taken to document each violation.
2. Contractor/Department information will be extracted from the PCRA, ILSM and/or ceiling work tag.
3. A record of all infection control and/or health and safety violations will be maintained, whether they occurred in occupied or unoccupied areas.

END OF SECTION
PART 1 GENERAL

1.1 SUMMARY
A. Section Includes:
   1. Methods and procedures to protect building occupants and surrounding area from excessive noise associated with construction work.
B. Related Sections:
   1. Section 01 56 15 – Airborne Contaminants Control: Additional Requirements.

1.2 DEFINITION
A. A-Weighting: A standard of frequency weighting which is commonly employed to measure the loudness or “noisiness of sounds. A-weighting filters the microphone signal in a manner which correlates better with the sensation of the human ear.

B. A-Weighting is required by regulation promulgated by the U.S. EPA, and others. A 10 db increase in sound level is perceived by people to be twice as loud. All noise data herein are A-weighted. Usually the unit of A-weighted sound level is written as dBA.

1.3 QUALITY ASSURANCE
A. References:
   1. San Francisco Noise Ordinance which prohibits the operation of equipment that emits noise in excess of 85 dBA when measured at a distance of 100 feet.
B. Enforcement:
   1. Monitor noise levels through measurements to establish levels in excess of 85 dBA at 50 feet, and implementing additional mitigation procedures based on recommendations of acoustical consultant.

1.4 SCHEDULING
A. Contractor shall schedule construction work generating severe levels of noise in advance, and set times as required and determined acceptable by Owner’s designated representative.

PART 2 PRODUCTS
Not Used.

PART 3 EXECUTION

3.1 MITIGATION
A. Contractor shall implement the following construction noise mitigation measures on this project:
   1. Equip internal combustion engine-driven construction equipment with good condition best available mufflers. Use quiet electric-powered compressors and generators.
   2. Use welded rather than T.C. bolted steel connections when possible to minimize use of impact wrenches.
   3. Erect barriers around noise generating operations.
   4. Turn off engines and compressors when not in operation; no idling.
5. Limit noise generating construction activities to times between 7:30 AM and 3:30 PM, or as directed by Owner’s designated representative.

6. Blasting is not permitted. Use ball and crane demolition techniques, or deconstruction.

7. Define truck routes to confine noisy trucks to streets that currently have the heaviest traffic. Develop a truck staging area away from acoustically sensitive areas.

8. Use electric-powered cranes in lieu of diesel-powered cranes when possible.

9. Use steel structural frames in lieu of concrete structural frames to yield a much shorter assembly time.

10. Pre-cut metal decks and metal studs off-site to minimize on-site sawing.

11. For excavations, used drilled pier soldier piles with wood lagging instead of sheet pile driving techniques where possible. Avoid impact pile driving.

12. Retain an acoustical consultant to provide assistance with developing additional noise attenuation techniques where needed.

13. Chemically demolish concrete where possible.


15. Avoid sheet metal debris chutes; use plastic chutes instead.

B. Contractor is responsible for site supervision of potential sources of noise (e.g. material delivery, shouting, debris box pick-up and delivery) for all trades. Maintain awareness among trades of noise sensitivity of project.

C. At any point during noise producing activities, Owner maintains the authority to stop all construction work due to noise violations or general noise concerns.

3.2 FIELD QUALITY CONTROL

A. Enforcement of Noise Control Policy:

1. Measurements will be taken on an unscheduled basis to document noise levels.

2. Information will be noted and transmitted to Contractor.

3. A record of noise violations will be maintained by Contractor.

END OF SECTION
SECTION 01 74 20
CONSTRUCTION WASTE DISPOSAL AND RECYCLING

PART 1 GENERAL

1.1 SUMMARY
A. Section Includes:
   1. Concrete and Masonry: Clean concrete, brick, rock, and masonry.
   2. Metals: Metal scrap including iron, steel copper brass, and aluminum including piping, fasteners, wiring, ductwork and sheet metal goods.
   4. Gypsum wallboard Scrap: Excess drywall construction materials including cuttings, other scrap, and excess materials.
   5. Paper and Cardboard: Discarded office refuse including unwanted files, correspondence, etc. Clean corrugated cardboard used for packaging, etc.
B. Non-Recyclable Waste: Collect and segregate non-recyclable waste for delivery to a permitted landfill site.
   1. Mixed Solid Waste: Solid waste commonly collected as a municipal service, exclusive of waste materials listed above.

1.2 DEFINITIONS
A. Waste Materials are defined as large and small pieces of listed materials which are excess to contract requirements and generally include materials to be recycled and/or recovered from existing construction and items of trimmings, cuttings and damaged goods resulting from new installations, which cannot be effectively used in the work.
B. Recycling is defined as the process of collecting and preparing recyclable materials and reusing them in their original form or in manufacturing processes that do not cause the destruction of recyclable materials and reusing them in their original form or in manufacturing processes that do not cause the destruction of recyclable materials in a manner that precludes further use.
C. Recovery is defined as any process that reclaims materials, substances, energy, or other products contained within or derived from waste on-site. It includes waste-to-energy, composting, and other processes.

1.3 SUBMITTALS
A. Construction Waste Management Plan: Before start of construction, Contractor shall submit a construction waste management plan for approval of Owner’s designated representative indicating how Contractor proposes to collect, segregate, recycle, and recover construction wastes and debris generated by the Work.

1.4 QUALITY ASSURANCE
A. Regulatory Requirements: Comply with applicable requirements of the State of Wisconsin and applicable local ordinances and regulations concerning management of construction, demolition, land clearing, inert, and yard trash debris and subsequent modifications and amendments to same.
B. Disposal sites, Recyclers, and waste materials processors: Use only facilities properly permitted by the State of Wisconsin and by local authorities where applicable.
C. Pre-Construction Waste Management Conference: Prior to beginning work at the site, schedule a conference to review Construction Waste Management Plan and discuss procedures, schedules and specific requirements for waste materials recycling and disposal. Contractor shall record minutes of the meeting, identify conclusions reached, and matters requiring further attention. Maintain waste management as an agenda item at future construction meetings.

1. Attendees: Contractor and related personnel, Architect, personnel in charge of waste management program, and Owner’s designated representative
2. Plan Revision: Contractor shall make revisions to the Construction Waste Management Plan consistent with discussions in the conference.

D. Implementation: Contractor shall designate and on-site party responsible for instructing workers and implementing the Construction Waste Management Plan. Copies of the plan shall be distributed to each subcontractor and trade on-site. Contractor shall provide on-site instruction on separation, handling, recycling, and recovery methods to be used by all parties.

1.5 STORAGE HANDLING

A. Site Storage: Remove materials for recycling and recovery from the work location to approved containers or storage areas as required.

B. Position containers for recyclable and recoverable waste materials at a designated location on the Project Site. If materials are sorted on-site, Contractor shall provide separate collection containers or storage areas for not less than the following materials.

1. Concrete and masonry.
2. Metals
3. Untreated lumber.
4. Gypsum wallboard scrap
5. Paper and cardboard.

C. Contractor shall change-out loaded containers for empty containers as demand requires.

D. Handling: Deposit indicated recyclable and recoverable materials in storage areas or containing in a clean (no mud, adhesives, solvents, petroleum contamination), debris-free condition. Do not deposit contaminated materials into the containers until such time as such materials have been cleaned.

1.6 PROJECT/SITE CONDITIONS

A. Environmental Requirements: Transport recyclable and recoverable waste materials from the work area to containers and carefully deposit in the containers without excess noise and interference with other activities, to minimize noise and dust.

1. Do not place recyclable waste materials on the ground adjacent to a container.

B. Existing Conditions: Contractor shall coordinate these requirements with “Instructions to Bidders” and “Supplementary Conditions”.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 WASTE MANAGEMENT

A. General: Implement waste management procedures in accordance with approved Construction Waste Management Plan.
B. Source Separation On- or Off-Site: Either separate, store, protect, and handle at the project site all identified recyclable and recoverable waste products to prevent contamination of materials and maximize recyclability and recoverability of materials. Or, mix all identified recyclable and recoverable waste products for separation off-site.

C. Contractor shall arrange for regular collection, transport from site, and delivery to respective recycling centers of indicated recyclable waste materials. Maintain records accessible to the Architect for verification of recycling and recovery.

D. Delivery Receipts: Arrange for timely pickups from the site or deliveries to approved recycling facilities of designated waste materials to keep construction site clear and prevent contamination of materials.

3.2 RECYCLABLE WASTE MATERIALS HANDLING

A. General: The following supplements handling requirements for various materials identified for classification and recycling listed in Part 1 “Summary” article above.

B. Concrete and Masonry: Free of metals, woods, and other contaminants. If possible during demolition, crush existing concrete and concrete masonry units on-site into aggregate size. Store crushed materials on-site in clean area to avoid contamination from other materials or building processes. Reuse on-site crushed material for fill, for stabilizing soils, or as base and subbase materials. If crushing on-site is impractical, store material during demolition processes on-site in clean uncontaminated area. Transport concrete and masonry materials to a certified concrete recycler as needed.

C. Metals: Cut items to lengths and sizes to fit within the container provided when necessary. Where there is sufficient quantity of a specific recyclable waste item (for example; salvaged metal roofing or duct work), Contractor shall make special arrangements for items to be bundled, banded or tied, and stack in designated location for a special pick-up.

D. Untreated Wood: Salvaged wood materials to be free from metals, concrete, gypsum wallboard, insulation, and other contaminating materials. Stack dimensional lumber into like piles. Reuse lumber on-site as backing, blocking, or other uses where appropriate.

E. Gypsum Wallboard Scrap: Separate gypsum wallboard from other wastes. Dispose of waste gypsum wallboard off-site at gypsum reclamation or recycling facility.

F. Paper and Cardboard: Classify and handle waste paper goods as follows:
   1. Bond Paper: General office quality paper used for specifications, correspondence, copies, PC laser printers, and Fax machines. Collect in separate container at each workstation and deposit loose in appropriate recycle container as required.
   2. Newsprint: Newspapers and tabloid style advertising shall be collected in single location and deposit as required in appropriate containers.
   3. Drawings: Setup single location for collection. Roll together to minimize space. Deposit as required in appropriate recycle containers.
   4. Cardboard and Paperboard Cartons and Boxes: Knock-down, fold flat, and deposit in recycling container.

G. Contractor is required to coordinate with Owner for all recycled material opportunities to verify if Owner wishes to take ownership of the material in lieu of recycling or salvaging. Owner has the option to accept the material should they choose. If material is determined to be recycled or salvaged or scraped, Contractor shall coordinate it’s disposal and removal on behalf of Owner. Should material have a salvage value, Contractor shall pass along all savings and/or money to Owner.

3.3 RECORD KEEPING & SIGNAGE

A. Contractor shall keep, prepare, and update waste management and recycling logs for the project documenting the following:
1. Number of loads of waste and recycled material
2. Date, Time, and location of disposal (if existing dumpsters are used)
3. General description of disposed material
4. Name of worker who disposed of the material.
5. % of recycled material(s).

B. Contractor has the option of relying on an outside service for this record keeping if they so choose.

C. All dumpsters and recycling bins/containers shall be clearly labeled with appropriate signage.

D. Application for Progress Payments: The Contractor shall submit with each Application for Progress Payment a Summary of Waste generated by the Project. Failure to submit this information shall render the Application for Payment incomplete and shall delay Progress Payment. The Summary shall be submitted on a form acceptable to the Owner and shall contain the following information:

1. The amount (in tons) of material landfilled from the Project, the identity of the landfill, the total amount of tipping fees paid, transportation costs (if separate) and the total disposal cost. Include manifests, weight tickets, receipt, and invoices.

2. For each material recycled, reused, or salvaged from the Project, the amount (in tons or cubic yards), the date removed from the jobsite, the receiving party, the transportation cost, the amount of any money paid or received for the recycled or salvaged material, and the net total cost or savings of salvage or recycling each material. Attach manifests, weight tickets, receipts, and invoices.

END OF SECTION
SECTION 01 77 00
OWNER CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Substantial Completion and Owner Occupancy
   2. Department of Health Services (DHS) Expectations
   3. Room Check-Out Procedures & Punchlist
   4. Systems and Equipment Testing Expectations
   5. Testing, Balancing and Adjusting
   6. Instructions to Owner
   7. Final & Terminal Cleaning
   8. Froedtert Project Manager Close-out Assistance

1.2 SUBSTANTIAL COMPLETION AND OWNER OCCUPANCY

A. Project close-out requirements should be reviewed by the PM and representatives from the GC and significant trade partners at a pre-close-out meeting some time before substantial completion. Reference Project Closeout Document Delivery Schedule (10 77 00E) form for required turnover timeframes. GC should demonstrate that they are meeting at a minimum the project specification requirements.

B. Contractor shall fill out the Project Closeout Checklist form included in Exhibit A. Successive meetings may be needed to confirm GC is addressing close-out items. Frequency and need to be determined by the team.

C. Owner has an urgent need to occupy Project and commence its intended use. A pre-occupancy walk-through should be planned with the Froedtert PM and GC to review open items

D. Contractor shall coordinate with Architect, Owner, and Authorities Having Jurisdiction (AHJs) to plan, schedule, and complete all required inspections, forms, and corrections to obtain Substantial Completion.

E. Permanent locks installed in all doors and keys must be transmitted to owner before occupancy.

F. After Substantial Completion, Contractor shall expedite completion of remaining work in an organized, efficient manner that maintains quality standards. Perform such work according to the following requirements:
   1. Scheduled work in advance with Owner.
   2. Perform work in occupied spaces when space is not in use, such as after hours in administrative areas or public spaces when public use hours are over for the day unless otherwise approved by Owner.
   3. When needed, Contractor shall use overtime to accomplish work not able to be completed during normal work hours.
   4. Perform work in occupied areas in a manner and at such time as will not significantly interfere with, hamper or inconvenience Owner’s program or function.

G. Contractor may be asked by Froedtert to coordinate with the following activities in support of owner move-in:
   1. Information technology
   2. Artwork
   3. Signs
   4. Furniture
   5. Department move
   6. Fire extinguisher tagging and inspection
1.3 DEPARTMENT OF HEALTH SERVICES (DHS) EXPECTATIONS

A. Contractor shall coordinate all final inspections with the Department of Health Services (DHS) inspector. Architect and Owner’s designated representative shall be present at these inspections.

B. In preparation of DHS and other AHJ inspections, contractor must perform the following and maintain records of these inspection
1. In-wall inspections
2. Above ceiling inspections, and fire wall integrity check before tile drop
3. Fire door inspections

C. DHS Health Care Facility Construction Documentation Checklist. Contractor shall provide all required information per the DHS Health Care Facility Construction Documentation Checklist at the time of final occupancy inspection. A copy of the most current DHS Checklist shall be obtained from the Department of Health Services website. Contractor is required to comply with all the requirements set forth in this checklist. Proper documentation for DHS includes:
1. As work progresses, maintain accurate record of documentation for each item.
2. Complete the checklist and comments sections for each item in the work category.
3. Submit required information to Architect and Owner at least two (2) weeks prior to DHs final occupancy inspection. Any information not available at that time must be documented in the checklist and a date must be provided for anticipated completion.
4. Review information with Architect and Owner.

D. Contractor shall prepare all required documentation for DHS in an organized format.

E. Contractor to provide one (1) copy to the DHS Inspector at the time of inspection. Additional copies to be distributed to Architect, Owner, and keep one copy for the project files. Copies must be presented in both electronic and hard copy form.

1.4 ROOM CHECKOUT PROCEDURES & PUNCHLIST

A. Contractor shall plan an efficient, orderly and coordinated completion process including organizing, scheduling and coordinating the following:
1. Work of Contractor’s own forces.
2. Work of subcontractors.
3. Establish firm commitments for on-time completion.
4. Establish Owner’s needs for accommodations and time to occupy project during closeout per the master project schedule.

B. Contractor shall coordinate with Architect and Owner to ensure ample time for Architects review and acceptance of the room.

C. Contractor shall provide a listing of uncompleted items to Architect and Owner in advance of any scheduled punchlist walk-through.

D. Architect is expected to provide a signed AIA G704 document for the project. This will be shared with Froedtert.

E. Final list of all punchlist items shall be given to Plant Operations. All items must be complete at time of occupancy, or approved plans in place to address remaining items

F. Froedtert staff or Operations may ask if additional work beyond scope can be done by the Contractor. These changes need to be identified, tracked, and separate costs identified and approved by the Froedtert project PM before proceeding. The request should be documented, the form given in Exhibit D is an example, and given to the Froedtert PM.

1.5 SYSTEMS AND EQUIPMENT TESTING EXPECTATIONS

A. Contractor shall prepare a comprehensive Systems and Equipment Testing Plan for review and approval by Owner’s designated representative at least thirty (30) working days prior to testing any system or piece of equipment. This plan shall include the following:
1. Procedure for testing of systems and equipment provided by Contractor.
2. Written record of tests and results per Section 01 78 00.
3. List of identified deliverables and disruption avoidance plans required to facilitate the testing.
4. Schedule for completion and testing of all systems and equipment.
5. Owner training schedule and considerations for efficient operation and maintenance. List of attendees to be documented.

B. Contractor to coordinate delivery of all information in the Systems and Equipment Testing Plan with Plant Operations. Plant Operations will review and critique the plan prior to testing.

C. Contractor shall identify systems and equipment testing in the master project schedule.

D. For those systems that are weather dependent and may be installed off-season, Contractor shall include supplemental visits to the facility when weather is appropriate to perform testing of weather-dependent equipment and systems. Contractor is expected to work with Owner to coordinate this timing.

E. If ‘warranty walks’ are part of the close-out process of that project, all set-points on equipment covered under the warranty will be reviewed at that time.

F. Contractor shall perform a review of the specified sequence of operations with the Plant Operations department to ensure conformance with hospital staff and maintenance standards.

G. All piping, duct, med gas zone valve labelling must be done before handover.

1.6 TESTING, BALANCING AND ADJUSTING

A. Contractor shall complete the installation consisting of several parts and systems and all equipment installed according to the requirements of the specifications and as shown on the drawings. Equipment shall be ready in all respects for use by Owner and shall be subjected to a test at full operating conditions and pressures of normal conditions of use.

B. Contractor shall make all necessary adjustments and replacements affecting the work, which are necessary to comply with the directions, recommendations of the manufacturer of the equipment, and to comply with all local codes and regulations which may apply to the installation.

C. Contractor shall make all necessary adjustments to comply with the provisions of the contract drawings and specifications.

D. Contractor shall keep records and reports of system startup and testing, and shall be submitted to Owner as part of the closeout submittal.

E. Contractor shall assist Plant Operations with incorporation of new points into the Building Management System. Progress to be reviewed at close-out meetings.

1.7 INSTRUCTIONS TO OWNER / TRAINING

A. Contractor shall provide instructions to Owner prior to receipt of final payment. Contractor shall provide evidence that instructions/closeout submittals were delivered to and were acceptable to Owner.

B. Requirements for specific instructions, training, and deliverables are provided under individual specification sections. The full list should be reviewed and approved by Froedttert, or a consensus developed for additional or not required trainings.

C. Contractor shall collect information and data so deliverables are provided in sufficient time to permit review prior turnover of the project. Contractor shall coordinate the timing, expectations, and detail of deliverable with Owner, and document such in the Project Closeout Plan.

D. Contractor shall provide qualified representatives or subcontractors to give explanations and instructions on the deliverable to Owner and Architect prior to turnover.
E. Contractor shall properly instruct Owner in use, operation, care and maintenance of the Project, especially various systems and equipment installed by Contractor. Contractor shall give instructions and training methodically and carefully consistent with the Project Closeout plan.

1.8 FINAL & TERMINAL CLEANING

A. Contractor shall perform a "final" cleaning prior to inspection for Substantial Completion and occupancy. Plan, organize and coordinate cleaning to avoid working in spaces once cleaned. Coordinate timely cleaning with Owner and Architect. Thorough cleaning means:
1. All cleaning as identified in follow-up specification sections, specific to the material installed.
2. Removal of accumulated dust, dirt and debris from the project area.
3. Materials, equipment, surfaces, or other items.
4. Glass:
   a. Interior Glazing – clean to a streak-free shine both sides and frame(s) if applicable.
   b. Exterior Glazing:
      1) If exterior glazing is existing – clean interior surface of glass and frame.
      2) If exterior glazing is new – clean both interior and exterior surfaces of glass and frames.
   c. Mirrors – clean to a streak-free shine an frame(s) if applicable.
5. Infection Control Area Clean Up:
   a. HEPPA vacuum clean above ceiling, pipes, and ventilation ducts after construction is completed.
   b. Check ventilation filters for breaks or leaks.
   c. Use damp mopping for dust control.
   d. Minimize traffic between construction area and patient control areas.
   e. Obtain Owner approval of cleaned area before proceeding.

B. Electrical-related Cleaning: Includes but is not limited to normally occupied areas, service areas, passages and corridors and similar spaces.
1. Interiors of electrical cabinets, panel boards and other electrical equipment.
2. Other work under contract needing cleaning.

C. Mechanical-related Cleaning. Includes but is not limited to:
1. Remove filters utilized during construction and install permanent new filters.
2. Ductwork
3. Fixtures and fittings
4. Insides of convectors
5. Unit heaters or similar heating units
6. Radiation
7. Piping and equipment in equipment rooms.
8. Other work under contract needing cleaning.

D. "Broom Clean" is allowed in the following areas:
1. Tunnels, shafts, air shafts and air plenums not constructed of ductwork.
2. Floors in equipment rooms (including rooms such as electrical equipment rooms)
   a. Except also wash floors and apply final coat of sealer if specified.

E. Floors (including concrete) must be free of stains and discolorations.

F. Hardware: Adjust and polish as needed.

G. Contractor shall perform cleaning as required to turn over to Owner the Project in new, well maintained condition, ready for use and occupancy. Areas made dirty after Substantial Completion must be cleaned prior to final completion.
H. Terminal Cleaning. Contractor to coordinate with Owner on scope of terminal cleaning requirements. Contractor shall facilitate responsibility determination, access, and timing with Owner prior to terminal cleaning.

1.9 FROEDTERT PROJECT MANAGER CLOSE-OUT ASSISTANCE

A. Contractor shall provide a final cost summary sheet and change order log to the Froedtert PM at close-out and update as new items are agreed upon

B. Final diversity and inclusion reports must be submitted to Froedtert PM if required by the project, when costs are finalized

C. All owner allowances and other set-asides must be reconciled at the end of the project

D. Final lien waivers and consent of surety must be submitted to the Froedtert PM for the project

E. All final invoices and/or final GMP number must be reconciled with a close-out change order within 6 months of occupancy

END OF SECTION
### Project Close-out Preparation Items

<table>
<thead>
<tr>
<th>Item #</th>
<th>Yes</th>
<th>N/A</th>
<th>Project Close-out Preparation Items</th>
<th>Target Date</th>
<th>Actual Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td></td>
<td></td>
<td>Close-out requirements reviewed from project specifications by GC/CM and PM.</td>
<td></td>
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<tr>
<td>1.2</td>
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<td>Pre-occupancy meetings with local inspectors and DHS have been conducted.</td>
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<tr>
<td>1.3</td>
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<td>Training as specified in project specifications has been reviewed by Froedtert and training additions or modifications have been identified.</td>
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<tr>
<td>1.4</td>
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<td>Attic stock / spare parts / small tools handover has been reviewed, timelines and locations to be stored have been identified.</td>
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<tr>
<td>1.5</td>
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<td>O&amp;M documentation requirements as required by the project specifications has been reviewed with Froedtert and any modifications noted (O&amp;M checklist is produced).</td>
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<td>1.6</td>
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<td>Accurate and complete room schedule has been given to Froedtert Plant Operations for entry into TMS system (revit).</td>
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<td>1.7</td>
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<td>Previous existing assets that have been demolished as part of construction were identified and submitted to Froedtert Plant Operations.</td>
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<td>1.8</td>
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<td>Moved assets need to be logged with new location and submitted to Froedtert Plant Operations.</td>
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<tr>
<td>1.9</td>
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<td>BAS system changes and verification is documented and reviewed by Froedtert. Includes Sequence of Operations, TSIs, setpoints, and alarms.</td>
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<tr>
<td>1.10</td>
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<td>Preliminary asset list with specific identifier.</td>
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<td>1.11</td>
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<td></td>
<td>Life safety code checklist has been reviewed by architect &amp; owner.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>N/A</td>
<td>Substantial Completion Items</td>
<td>Target Date</td>
<td>Actual Date</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>-------------------------------</td>
<td>-------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Project punchlists of space has been completed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>All field labeling is complete. Valve tags / pipe labels / med gas zone valve labeling complete.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>All above ceiling inspections coordinated and complete.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Punchlist document 01 77 00C - Operations Review Form has been completed following a Final walkthrough between Owner and CM.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Building systems commissioned and functional testing completed for initial occupancy.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>All expectations of fire department, DHS, and AHJs inspections have been met and documented.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>BAS system changes and verification is complete and confirmed by Plant Operations. Includes Sequence of Operations, TSIs, setpoints, and alarms. All activated.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Signed AIA G704 Document (certificate of substantial completion).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plumbing systems have been adequately flushed &amp; tested prior to occupancy. Testing documentation turned over to Froedtert Plant Operations.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training &amp; Space Turnover Items</th>
<th>Target Date</th>
<th>Actual Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>3.1.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Plant Operations training is complete before area handover, training records and recordings transmitted to Froedtert Plant Operations, and warranties on training items understood.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any nursing maintenance or other staff training is complete.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent locks installed and keys have been transmitted to Froedtert Security.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attic stock / spare parts / small tools have been transmitted to Froedtert Plant Operations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asset tag and maintenance procedure import sheets have been populated and uploaded by Froedtert Operations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All spaces final cleaned by GC/CM, including service bays, mechanical rooms, shell spaces, and interstitial.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Froedtert has completed fire extinguisher tagging and inspection (checklist item only).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional IT needs determined and either authorized or rejected (checklist only).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formal interim warranty walk through is scheduled prior to expiration of warranty (checklist only).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Final Project Construction Documentation Items

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>N/A</th>
<th><strong>Final Project Construction Documentation Items</strong></th>
<th>Target Date</th>
<th>Actual Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.1</td>
<td></td>
<td></td>
<td>Electronic copies of O&amp;M manuals and commissioning documentation have been transmitted to Froedtert Plant Operations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.2</td>
<td></td>
<td></td>
<td>Revit model changes have been transmitted and model checked back in.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.3</td>
<td></td>
<td></td>
<td>As-builts of new spaces have been transmitted to Froedtert Plant Operations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.4</td>
<td></td>
<td></td>
<td>Life safety drawings, including CAD files, have been updated and transmitted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.5</td>
<td></td>
<td></td>
<td>All electrical documentation not otherwise referenced -- Biomed report, panel tags, directory updates -- done.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.6</td>
<td></td>
<td></td>
<td>Project and component warranties are transmitted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td></td>
<td></td>
<td>Project in-wall and above ceiling pictures have been transmitted to Froedert.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3</td>
<td></td>
<td></td>
<td>LEED or other organization accreditation support documentation.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Project Financial and Close-out Coordination Items

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>N/A</th>
<th><strong>Project Financial and Close-out Coordination Items</strong></th>
<th>Target Date</th>
<th>Actual Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td></td>
<td></td>
<td>Final cost summary sheet and change order log is submitted to Froedtert PM.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2</td>
<td></td>
<td></td>
<td>Final diversity and Inclusion reports submitted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.3</td>
<td></td>
<td></td>
<td>Owner allowances reconciled.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.4</td>
<td></td>
<td></td>
<td>Final lien waivers and consent of surety received.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.5</td>
<td></td>
<td></td>
<td>All final invoices / GMP reconciled by close-out change order.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.6</td>
<td></td>
<td></td>
<td>Municipal Bonds (i.e.: Landscape, Road Repair, etc. posted bonds) are closed out.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sign off for completion Project manager: ____________ Contractor: ____________ Date: ________
PART 1       GENERAL

1.1     RATIONALE

A. Asset tags are an essential component of the Owner's Preventative Maintenance (PM) program on this project.
B. Devices requiring asset tag include all devices/equipment that requires maintenance, service, inspection, and/or exercise on a regularly scheduled basis.
C. Installation of asset tags during the construction phase of the project by the contractor while they are prior to final installation of devices is most efficient.
D. Electronic logs (spreadsheets) provided by Commissioning Provider (CxP) and completed by the installing contractor allows for standardized importation into the owner’s PM program.

1.2     SCOPE OF WORK

A. Contractor shall identify each piece of contractor provided relevant equipment. The contractor installing owner supplied devices will assume responsibility for asset tagging those devices specified by the owner (see section 3.1 for examples).
B. Contractor shall populate provided electronic logs with all required supporting data for all equipment. Typically there are two (2) spreadsheets:
   1. Spreadsheet for all identifying information for the device (i.e. description, areas served, model and serial numbers, warranty information, etc.). Initial spreadsheet to be turned over upon start of construction (indicating equipment identifiers only) and final spreadsheet to be turned over upon completion of spreadsheet (all asset tags are in place and spreadsheet is filled in).
   2. Spreadsheet for routine (preventative) maintenance information (i.e. service requirements and intervals, etc.). Spreadsheet to be turned over early in construction.
C. Contractor shall affix an owner provided, barcoded or numbered, self-adhesive, asset tag to each piece of equipment. It is the expectation that all asset tags will stay adhered and visible throughout the usable life of the device.
D. Contractor shall identify and tag any existing piece of relevant equipment (as outlined in section 3.1) located within the physical confines of the project which will remain and is not already tagged. These additional pieces of equipment shall be included in the contractor's spreadsheets (identified by type and location); however, the contractor is not responsible for providing any other information about the device.
E. Contractor shall provide a construction drawing identifying the area(s) being renovated to Plant Operations. Plant Operations will generate a list of assets for the area that exist in their Computerized Maintenance Management System for the contractor to identify and report (as described in section 3.4) all existing equipment with tags which will be decommissioned.

1.3     SUBMITTALS

A. Final and complete electronic log will be submitted to CxP prior to importation into owner's PM program.
B. While contractor is responsible for making their own backups of electronic log throughout the tagging process, CxP recommends sending progress backups for review of compliance and for redundancy in case of data management mishaps.

1.4     SEQUENCING AND SCHEDULING
A. Contractor shall coordinate work with CxP and other contractors (as needed) to ensure tagging is completed by date of substantial completion.

PART 2 PRODUCTS

2.1 ASSET TAGS

A. Owner provided barcoded or numbered, self-adhesive, asset tag for each piece of equipment.
B. In addition to owner provided asset tags, Contractor shall provide labeling indicating device number / type on ACT grid for all asset tagged equipment and any other equipment, valves, etc. located above ceiling.

2.2 PREVENTATIVE MAINTENANCE (PM) SPREADSHEETS

A. CxP provided electronic spreadsheets for recording required data for each piece of equipment / system, including all manufacturers’ recommendations from the equipment O&M manuals.

PART 3 EXECUTION

3.1 INCLUDED DEVICES

A. Any contractor provided piece of equipment that requires maintenance/service such as: lubrication, filter changing, aligning would be tagged.
B. Any item requiring inspection such as: pressure monitors, fire/smoke dampers, fire dampers, fire rated door assemblies, smoke rated door assemblies would be tagged.
C. Owner provided equipment set in place by the contractor such as: televisions and microwave ovens located in break rooms, Fume Hoods shall be tagged.
D. In addition, items that would require regular exercise such as: floor main isolation valves for HVAC, Plumbing, and Fire Protection would be tagged.
E. Examples of items that require tagging are listed in the table below (this list is not all inclusive).

<table>
<thead>
<tr>
<th>GC/CM</th>
<th>HVAC</th>
<th>Plumbing</th>
<th>Electrical</th>
<th>Fire Protection</th>
<th>Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire rated doors</td>
<td>Humidifiers</td>
<td>Isolation valves</td>
<td>ATS for generator</td>
<td>Isolation valves</td>
<td>Communication</td>
</tr>
<tr>
<td>Fire extinguishers and cabinets</td>
<td>Filter housings (not inside of AHU or A/C unit)</td>
<td>RPBPs</td>
<td>Generator</td>
<td>RPBPs</td>
<td>Anything related to infection control or life support</td>
</tr>
<tr>
<td>Smoke doors (installed in any smoke walls)</td>
<td>Negative isolation room controllers on walls (separate - not tied in to other components)</td>
<td>Water heaters/heat exchangers</td>
<td>Switchboards (not individual breakers / components on it)</td>
<td>Kitchen exhaust hood fire systems</td>
<td>Anything to maintain or inspect for code compliance or equipment that depreciates over time</td>
</tr>
<tr>
<td>Warming Cabinets</td>
<td>Isolation valves</td>
<td>Medical gas panels</td>
<td>Speakers</td>
<td>Fire pump</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medical gas outlets (on booms and in panels)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Televisions</td>
<td>VAV box (includes entire assembly)</td>
<td>Remote monitor panels</td>
<td>UPS systems (not the batteries)</td>
<td>Jockey pump</td>
<td></td>
</tr>
</tbody>
</table>
### EXAMPLES OF ITEMS TO BE ASSET TAGGED BY CONTRACTORS

<table>
<thead>
<tr>
<th>GC/CM</th>
<th>HVAC</th>
<th>Plumbing</th>
<th>Electrical</th>
<th>Fire Protection</th>
<th>Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refrigerators (all)</td>
<td>Heat Exchangers</td>
<td>Water filters</td>
<td>* Strobes</td>
<td>Test and drain valves</td>
<td></td>
</tr>
<tr>
<td>Fume hoods</td>
<td>Pumps</td>
<td>Plaster grease trap</td>
<td>FA panel</td>
<td>Dry pipe valves</td>
<td></td>
</tr>
<tr>
<td>Beds</td>
<td>Chemical feeders</td>
<td>Pumps</td>
<td>Batteries</td>
<td>Air compressors</td>
<td></td>
</tr>
<tr>
<td>Gurneese</td>
<td>Air handling units</td>
<td>Eye wash stations</td>
<td>Battery Back-up Emergency lighting</td>
<td>Tamper switches</td>
<td></td>
</tr>
<tr>
<td>Ice machines</td>
<td>Exhaust fans</td>
<td>Grease traps</td>
<td>* Exit signs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial grade food service equipment</td>
<td>Unit heaters</td>
<td>Plaster traps</td>
<td>Exit lights</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freezers</td>
<td>Heat pumps</td>
<td>Compressors</td>
<td>* Smoke detectors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumatic tube system blowers, diverters, stations</td>
<td>Stairwell pressurization fans</td>
<td>Steam pressure reducing stations</td>
<td>* Duct detectors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walk in coolers or freezers</td>
<td>Air conditioning units</td>
<td>Emergency shower</td>
<td>* Pull stations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgical lights</td>
<td>Carbon monoxide detectors</td>
<td>Water softeners</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automatic doors</td>
<td>Fan powered VAVs</td>
<td>Vacuum pumps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dock levelers</td>
<td>Airflow monitoring stations</td>
<td>Refrigerated drinking fountains</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roll down fire doors</td>
<td>Furnaces</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stairwell doors</td>
<td>Fan coil units</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WON doors</td>
<td>Smoke dampers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overbed tables</td>
<td>Fire dampers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overbed tables</td>
<td>Combination fire / smoke dampers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air curtains</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Indicates alternate tagging system (spreadsheet and tags provided by Froedtert Fire Alarm representative).

### 3.2 EXCLUDED DEVICES

A. Owner provided furniture is an example of an item contractors do not have to tag (will be done by owner).
B. Bio-Medical items such as infusion devices, Bio Safety Cabinets, do not have to be tagged by the contractors (will be done by owner).
C. Owner provided equipment set in place by the owner does not have to be tagged by the contractor (will be done by owner).
D. Examples of items that do not require tagging are listed in the table below (this list is not all inclusive).

### EXAMPLES OF ITEMS NOT TO BE ASSET TAGGED BY CONTRACTORS

<table>
<thead>
<tr>
<th>GC/CM</th>
<th>HVAC</th>
<th>Plumbing</th>
<th>Electrical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infusion devices</td>
<td>HW valve for VAV box (part of assembly)</td>
<td>Plumbing fixtures</td>
<td>VFDs (part of assembly)</td>
</tr>
</tbody>
</table>
EXAMPLES OF ITEMS NOT TO BE ASSET TAGGED BY CONTRACTORS

<table>
<thead>
<tr>
<th>GC/CM</th>
<th>HVAC</th>
<th>Plumbing</th>
<th>Electrical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bio safety cabinets</td>
<td>Thermostats (part of assembly)</td>
<td></td>
<td>Starters (part of assembly)</td>
</tr>
<tr>
<td>Telephones</td>
<td></td>
<td></td>
<td>Occupancy sensors</td>
</tr>
<tr>
<td>Furniture</td>
<td></td>
<td></td>
<td>Lights</td>
</tr>
<tr>
<td>Water coolers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coffee makers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toasters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clocks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glove box holders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mask dispensers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharps containers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow meters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suction regulators</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPHYGMOMANOMETER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garbage cans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microwave ovens</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.3 INSTALLATION

A. Asset tags shall be obtained either directly from the owner or through Construction Manager (CM) and/or CxP.
B. Asset tags shall be placed in a logical and visible location on the device, mounted to a permanent part of the device. Do not adhere label to a removable service panel.
C. If device will be located in an area seen by the general public, label should be discretely placed.
D. Proper preparation of surfaces to ensure proper adhesion is required.
E. Asset tags must be protected from over spray if they are attached before finish and/or insulation is applied.

3.4 DECOMMISSIONING OF TAGS FOR REMOVED ASSETS

A. A list identifying number and equipment type for assets which are being removed from service shall be supplied to Plant Operations for removal from the Computerized Maintenance Management System.

END OF SECTION
## FROEDTERT OPERATIONS NEW SPACE REVIEW REPORT

<table>
<thead>
<tr>
<th>Area Aspect</th>
<th>Pass/Fail</th>
<th>Comments</th>
<th>Facilities Approval</th>
<th>Contractor Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plumbing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HVAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Gas</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire Protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room Ceiling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room Walls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room Floors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**OTHER OBSERVATIONS:**

<table>
<thead>
<tr>
<th>Operations Management Approval</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Pre-Move</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Current Asset List</td>
<td>X</td>
</tr>
<tr>
<td>Retired Assets</td>
<td>X</td>
</tr>
<tr>
<td>Room Number Information</td>
<td>X</td>
</tr>
<tr>
<td>Fire Alarm/Fire Damper Sequences/ Schedules</td>
<td>X</td>
</tr>
<tr>
<td>New Asset Information</td>
<td>X</td>
</tr>
<tr>
<td>Preventative Maintenance Information</td>
<td>X</td>
</tr>
<tr>
<td>Operation &amp; Maintenance Information</td>
<td>X</td>
</tr>
<tr>
<td>Record Drawings</td>
<td>X</td>
</tr>
<tr>
<td>Record Documents</td>
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</tr>
<tr>
<td>Turn over asset list to finance</td>
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</tr>
<tr>
<td>Electronic BIM Model (Revit)</td>
<td>X</td>
</tr>
<tr>
<td>DHS Checklist</td>
<td>X</td>
</tr>
</tbody>
</table>
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Closeout Submittals Format
   2. Testing Reports and Certificates
   3. Operation & Maintenance Data (O&Ms)
   4. Warranties and Guarantees
   5. Project Record Documents (As-Builts)
   6. Spare Parts
   7. Attic Stock Materials
   8. Model Information

1.2 CLOSEOUT SUBMITTAL FORMAT

A. Contractor shall provide all closeout submittals in both electronic and hard-copy format (if needed). Contractor shall coordinate closeout deliverable with Owner at the start of the project.

B. Contractor shall prepare a list of proposed closeout submittals at the beginning of the project and submit to Architect and Owner's designated representative for review, comment, and approval. Owner has the right to add, delete, or modify this list based on the project requirements. List shall include:
   1. Item description
   2. Specification Section (if applicable)
   3. Proposed Organization and groupings

C. Project closeout documentation should be submitted in the following format:
   • Project Name
     o Discipline (Folder for each discipline, then each of the folders below in each discipline)
       ▪ Warranty info
       ▪ O&M
       ▪ Training
       ▪ Submittals
       ▪ Testing
       ▪ As Builts
       ▪ Permitting

D. Contractor may be asked to provide supplemental closeout documentation for the following items. These items should be reviewed and determined by the Froedtert PM and Contractor prior to close-out:
   1. Statement of Completion by Contractor indicating warranty period consistent with Contract
   2. Substantial Completion and Compliance Statements
   3. DHS and AHJs Inspection Reports
   4. Project Photos
   5. Daily Reports and Safety Inspections
   6. Quality Inspections and Correction Notices
   7. Project Contact Directory
   8. Testing Reports and Certificates
   9. Operation & Maintenance Data
   10. Warranties and Guarantees
   11. Project Record Documents (As-Builts)
   12. Spare Parts
   13. Attic Stock
14. Owner Training Records (videos, sign-in sheets, agendas)

1.3 TESTING REPORTS AND CERTIFICATES

A. Contractor shall provide all test reports and certificates as required by the technical specification sections.

1.4 OPERATION & MAINTENANCE DATA (O&M)

A. Contractor shall provide a list of operation and maintenance data for the project prior to construction turnover.

B. Contractor shall provide operation and maintenance data in accordance with Section 01 77 00.

C. Contractor shall organize information by classes or types of equipment and systems as follows:

1. Manual shall consist of neatly edited and typed instruction manuals to explain use, function and control of equipment, materials and systems. Information shall include:
   a. Warranties and guarantees.
   b. Common errors made, which will “abuse” equipment or system
   c. Use, function and control of equipment and systems
   d. Clean installation data and pamphlets (not to be left at equipment but included in manuals)
   e. Instructions and explanations
   f. Cleaning instructions
   g. Wiring and piping diagrams
   h. Various types of maintenance procedures
   i. Lubrication data and schedules
   j. Maintenance materials to be used
   k. Maintenance information
   l. Maintenance instructions with frequency
   m. Other maintenance information
   n. Adjustment and repair data
   o. Parts list with numbers and recommended parts list for Owner’s stock
   p. Name, address, and telephone numbers of parts distributor
   q. Names, address, and telephone numbers of appropriate service organizations for various items and equipment.

2. Manuals shall include systems and equipment as, but limited to the following information:
   a. Heating and ventilation equipment
   b. Fan units
   c. Air conditioning
   d. Controls for mechanical systems
   e. Alarm systems
   f. Electrical distribution systems
   g. Operating equipment of general construction
   h. Mechanical and electrical work
   i. Power operated doors
   j. Other similar systems and equipment

D. Contractor shall fill out and submit to Plant Operations the New Asset Information Form. This form will be used by Plant Operations to set up the preventative maintenance schedule and routine for new pieces of equipment installed by Contractor. To assist them, this form must be completed and turned into Plant Operations at least ten (10) days prior to substantial completion. Reference Section 01 78 00 Exhibit A – New Asset Allocation Form.

1.5 WARRANTIES AND GUARANTEES

A. Contractor shall provide a list of proposed warranties at the beginning to Owner and Architect for review and comment. List shall include specific warranty description, warranty duration, and applicable contact information specific to each item.
B. Contractor shall establish with Owner’s designated representative the process for warranty or callback work. This process shall be documented in the closeout submittal, and held through the warranty period specified by Owner.

C. Contractor shall provide all written guarantees as specified in the technical specifications. Where guarantee terms are included in the technical specifications or is referenced, Contractor shall submit guarantee in specified form.

D. Contractor shall warrant to the Owner that the labor, materials, and equipment furnished for the project will be of good quality and new unless otherwise specified by the contract documents. The work will be free of defects not inherent in the quality required or permitted and that the work will conform to the requirements of the contract documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. Contractor’s warranty excludes remedy for damage of defect caused by abuse, improper or insufficient maintenance, improper operation, or normal wear and tear, and normal usage.

E. A warranty item management process shall be developed with Froedtert Operations and understood.

F. Contractor shall provide opportunities if not on site to walk with Froedtert Operations personnel through the recently handed over site at 5 months and 11 months, need and dates to be determined by Froedtert Operations with the Contractor and Froedtert PM.

G. Uncovering of the Work:
   1. If a portion of the work is covered contrary to the Architect’s or Owner’s request or to requirements specifically expressed in the contract documents, it must be uncovered for the Architect’s and Owner’s examination and be replaced at Contractor’s expense without change in the project timeline.
   2. If a portion of the work has been covered which the Architect or Owner has not specifically requested to examine prior to its being covered, the Architect or Owner may request to see such work and it shall be uncovered by Contractor. If such work is in accordance with the contract documents, costs of uncovering and replacement shall, by appropriate Change Order, be at Owner’s expense. If such work is not in accordance with the contract documents, correction shall be at the Contractor’s expense unless the condition was caused by the Owner in which even the Owner and Contractor shall be responsible for payment of such costs.

H. Correction of Work:
   1. Before or After Substantial Completion:
      a. Contractor shall promptly correct work rejected by Architect or Owner for failing to conform to the requirements of the contract documents. Costs of correcting such rejected work, including additional testing and inspections and compensation for Architect’s and Owner’s services and expenses shall be at Contractor’s expense.
   2. After Substantial Completion:
      a. Owner may, depending on the Agreement between Owner and Contractor, extend the warranty period beyond the industry standard one (1) year term. Refer to the Agreement between Owner and Contractor for further information.

I. Acceptance of Nonconforming Work. Owner may prefer to accept work that is not in accordance with the contract documents. The Owner may do so in lieu of requiring its removal and correction, in which case the Contractor’s Sum will be adjusted as equitable. Such adjustments shall be effected whether or not final payment has been made.

J. Warranty Documents. Warranty Documents must be submitted to Owner as part of the Closeout Submittal. This includes the following requirements:
   1. Fill out and attach the warranty statement form as a cover to each warranty submitted. Reference 01 78 00 Exhibit B – Warranty Statement Form.
   2. Warranty letter shall be signed by an officer of the company.
   3. Warranty letter shall include the effective dates as required by the Agreement between Owner and Contractor unless the technical specifications indicate otherwise.
1.6  PROJECT RECORD DOCUMENTS (AS-BUILTS)

A. Contractor shall provide a record set of drawings and specifications to Architect at completion of the project. Owner, at their discretion, may require the electronic record documents be issued to the Architect or other entity of their choosing for incorporation into the facility master set of as-builts. Contractor shall request, document, and follow-through with Owner’s direction.

B. If project completion is in phases, Froedtert, Architect, and Contractor need to come to agreement on process of handling as-builts and submittal timings prior to the first phase completion.

C. Contractor, during construction, shall maintain a clean set of drawings and specifications for sole purpose of recording changes to the project. No work shall be permanently concealed until all changes have been recorded.

D. Contractor shall mark the record set methodically as work progresses, clearly and neatly, in color.

E. Contractor shall include information cut and pasted into appropriate location of documents to reference change, adjustment, or clarifications. Type of information to be recorded on record set includes but is not limited to:
   1. Addendum items sent during bidding
   2. Changes, deviations or revisions made, except minor or non-critical dimensions, including those made by Change Order or Supplementary Instructions.
   3. Accepted submittals including shop drawings, product data, and samples.
   4. Omissions, including work omitted by accepted alternates.
   5. Dimensioned locations of major or main utility lines, such as main conduit runs, piping mains and similar work.
   6. Locations of control valves
   7. Additions of the work
   8. Changes in significant details
   9. Locations of electrical home run boxes, including circuit numbers and panel designations for each box.
   11. Panel tags / updated panels
   12. Directory updates
   13. Valve charts
   14. Coordination drawings
   15. Changes in locations of panel boards, outlets, drains, piping, openings, dampers and similar features.
   16. Other similar data.

F. Contractor shall provide all as-built information electronically, in both .pdf and source files (ie. AutoCAD, Revit, Sketch-up, etc.) with the Closeout Submittals.

G. Contractor must also provide the following information for Froedtert Operations use in updating their TMS system:
   1. List of assets which have been eliminated
   2. Room schedule for new space
   3. New assets installed in new space
   4. Preventative maintenance additions or changes

H. Approval of as-built documents, regardless of form, shall be obtained from the Architect and Owner.

1.7  SPARE PARTS

A. Contractor shall retain all loose and small detachable parts for apparatus and equipment furnished by Contractor until completion of the work and shall turn them over to Owner’s designated representative upon turnover of the project. Owner shall provide an itemized receipt for the project files if applicable.
B. Prior to final completion, Contractor shall furnish to Owner all spare parts as indicated in the technical specifications. Contractor shall deliver to Owner under separate transmittal. Copy of transmittal shall be included in the Closeout Submittal.

C. Copy of the proposed spare parts list must be reviewed and approved by Plant Operations prior to turnover of materials.

D. Contractor shall assist Owner in delivery, relocation, and storage of material as directed by Owner.

1.8 ATTIC STOCK

A. Contractor shall furnish a list of anticipated attic stock indicated in the technical specifications to Owner for review, approval, and comment. Owner has the right to forgo any attic stock called for in the technical specifications.

B. Owner does not require any attic stock for flooring, paint, acoustical ceilings, wallcovering and other finish materials provided the materials specified are part of the Froedtert Standard Finish Palette. For non-standard finishes, Contractor shall provide attic stock meeting the minimum requirements as follows: one carton of ceiling tile, one carton or roll of vinyl base, one box VCT, one box carpet tile, one box ceramic tile, or 120sq ft of rolled goods. Contractor shall verify with Owner and provide recommendations on required attic stock based on the above criteria.

C. For electrical and mechanical/plumbing components, provide an option for store credit to buy components in lieu of actual components being supplied.

D. Contractor shall assist Owner in delivery, relocation, and storage of material as directed by Owner.

1.9 MODEL INFORMATION

A. Reference Section 01 31 13B – Froedtert BIM Standards for specific BIM model information required at project close-out.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

A. Contractor to provide a written plan that covers all the topics listed in Part 1 and specify for their project.

B. Contractor to schedule regular meetings 6 months out from substantial completion to discuss close-out progress with the Froedtert project manager and representatives from operations.

END OF SECTION
<table>
<thead>
<tr>
<th>GC/CM</th>
<th>HVAC</th>
<th>Plumbing</th>
<th>Electrical</th>
<th>Fire Protection</th>
<th>Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire rated doors</td>
<td>Humidifiers</td>
<td>Isolation valves</td>
<td>ATS for generator</td>
<td>Isolation valves</td>
<td>Communication</td>
</tr>
<tr>
<td>Fire extinguishers and cabinets</td>
<td>Filter housings (not inside of AHU or A/C unit)</td>
<td>RPBPs</td>
<td>Generator</td>
<td>RPBPs</td>
<td>Anything related to infection control or life support</td>
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<td>Smoke doors (installed in any smoke walls)</td>
<td>Negative isolation room controllers on walls (separate - not tied in to other components)</td>
<td>Water heaters/heat exchangers</td>
<td>Switchboards (not individual breakers / components on it)</td>
<td>Kitchen exhaust hood fire systems</td>
<td>Anything to maintain or inspect for code compliance or equipment that depreciates over time</td>
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<tr>
<td>Warming Cabinets</td>
<td>Isolation valves</td>
<td>Medical gas panels</td>
<td>Medical gas outlets (on booms and in panels)</td>
<td>* Speakers</td>
<td>Fire pump</td>
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<tr>
<td>Televions</td>
<td>VAV box (includes entire assembly)</td>
<td>Remote monitor panels</td>
<td>UPS systems (not the batteries)</td>
<td>Jockey pump</td>
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<td>Refrigerators (all)</td>
<td>Heat Exchangers</td>
<td>Water filters</td>
<td>* Strobes</td>
<td>Test and drain valves</td>
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<td>Fume hoods</td>
<td>Pumps</td>
<td>Plaster grease trap</td>
<td>FA panel</td>
<td>Dry pipe valves</td>
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<tr>
<td>Beds</td>
<td>Chemical feeders</td>
<td>Pumps</td>
<td>Batteries</td>
<td>Air compressors</td>
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<td>Gurnees</td>
<td>Air handling units</td>
<td>Eye wash stations</td>
<td>Battery Back-up Emergency lighting</td>
<td>Tamper switches</td>
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<tr>
<td>Commercial grade food service equipment</td>
<td>Unit heaters</td>
<td>Plaster traps</td>
<td>Exit lights</td>
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<tr>
<td>Freezers</td>
<td>Heat pumps</td>
<td>Compressors</td>
<td>* Smoke detectors</td>
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<tr>
<td>Pneumatic tube system blowers, diverters, stations</td>
<td>Stairwell pressurization fans</td>
<td>Steam pressure reducing stations</td>
<td>*Duct detectors</td>
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<tr>
<td>Walk in coolers or freezers</td>
<td>Air conditioning units</td>
<td>Emergency shower</td>
<td>*Pull stations</td>
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<tr>
<td>Surgical lights</td>
<td>Carbon monoxide detectors</td>
<td>Water softeners</td>
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<td>Automatic doors</td>
<td>Fan powered VAVs</td>
<td>Vacuum pumps</td>
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<td>Dock levelers</td>
<td>Airflow monitoring stations</td>
<td>Refrigerated drinking fountains</td>
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<td>Roll down fire doors</td>
<td>Furnaces</td>
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<td>Stairwell doors</td>
<td>Fan coil units</td>
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<td>WON doors</td>
<td>Smoke dampers</td>
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<td>Overbed tables</td>
<td>Fire dampers</td>
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<tr>
<td>Combination fire / smoke dampers</td>
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</table>

* Indicates alternate tagging system (spreadsheet and tags provided by Froedtert Fire Alarm representative).
# EXAMPLES OF ITEMS NOT TO BE ASSET TAGGED BY CONTRACTORS

<table>
<thead>
<tr>
<th>GC/CM</th>
<th>HVAC</th>
<th>Plumbing</th>
<th>Electrical</th>
<th>Fire Protection</th>
<th>Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infusion devices</td>
<td>HVAC valve for VAV box (part of assembly)</td>
<td>Plumbing fixtures</td>
<td>VFDs (part of assembly)</td>
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<tr>
<td>Bio safety cabinets</td>
<td>Thermostats (part of assembly)</td>
<td>VFDs (part of assembly)</td>
<td>Starter (part of assembly)</td>
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<tr>
<td>Telephones</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Occupancy sensors</td>
</tr>
<tr>
<td>Furniture</td>
<td></td>
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<td></td>
<td>Lights</td>
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<td>Water coolers</td>
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<td></td>
<td></td>
<td></td>
<td>Pull stations</td>
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<tr>
<td>Coffee makers</td>
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<td></td>
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<tr>
<td>Teasers</td>
<td></td>
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<tr>
<td>Scales</td>
<td></td>
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<tr>
<td>Clocks</td>
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<tr>
<td>Glove box holders</td>
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<td>Mask dispensers</td>
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<tr>
<td>Sharps containers</td>
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<td>Flow meters</td>
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<tr>
<td>Carts</td>
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<tr>
<td>Suction regulators</td>
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<tr>
<td>SPHYGOMANOMETER</td>
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<tr>
<td>Garbage cans</td>
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</table>
In accordance with the Specification Sections of Division 01, warrants the completed construction at the project referenced above for a period of _______ years commencing on the date of Substantial Completion.
SECTION 019113 – GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE

A. This section includes specifications for the implementation, tracking and verification of the commissioning process.

B. Commissioning is a comprehensive and systematic process to verify that the building systems perform as designed to meet the Owner’s requirements. Commissioning during the construction, acceptance, and warranty phases is intended to achieve the following specific objectives:

1. Verify and document that equipment is installed and started per manufacturer’s recommendations and to industry accepted minimum standards.
2. Verify and document that equipment and systems receive complete operational checkout by installing contractors.
3. Verify and document equipment and system performance.
4. Verify the completeness of operations and maintenance materials.
5. Confirm that the Owner’s operating personnel are adequately trained on the operation and maintenance of building equipment.

C. 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 product.

D. The purpose of this section is to specify the responsibilities and participation in the commissioning process for the following:

1. Division 21 - Fire Suppression
2. Division 22 - Plumbing
3. Division 23 - HVAC
4. Division 26 – Electrical
5. Division 27 – Communications
6. Division 28 – Electronic Safety & Security

G.E. Building Enclosure Commissioning responsibilities are located in section 019119

1.2 REFERENCE

A. Applicable provisions of Division 1 govern work under this section.

B. Specific performance requirements are given in the following sections of these specifications:

1. Division 01 Section "Project Management and Coordination"
2. Division 01 Section "Submittal Procedures"
3. Division 01 Section “Sustainability Certification Project Requirements”
4. Division 01 Section “Quality Requirements”
5. Division 01 Section “Starting and Adjusting”
6. Division 01 Section "Closeout Procedures"
7. Division 01 Section “Closeout Submittals”
8. Division 01 Section "Demonstration and Training”
9. Division 20 Section “Functional Performance Testing Common Work Results, Division 21 – 28”
10. Division 21 Section “Commissioning of Fire Suppression”
11. Division 22 Section "Commissioning of Plumbing”
12. Division 22 Section "Instrumentation and Control of Plumbing”
13. Division 23 Section "Basic Mechanical Requirements”
14. Division 23 Section "Basic Mechanical Materials and Methods"
15. Division 23 Section "Testing, Adjusting, and Balancing for HVAC"
16. Division 23 Section "Commissioning of HVAC"
17. Division 23 Section "Instrumentation and Control for HVAC"
18. Division 25 Section "Commissioning of Integrated Automation"
19. Division 26 Section "Basic Electrical Requirements"
20. Division 26 Section 'Electrical Inspections and Testing"
21. Division 26 Section "Commissioning of Electrical Systems"
22. Division 26 Section "Instrumentation and Control for Electrical System"

0. Division 27 Section “Commissioning of Communications”
0. Division 28 Section “Commissioning of Electronic Safety and Security”

E.C. Sustainable Design Intent: Comply with project requirements to meet the applicable commissioning prerequisites and credits pursued for the LEED Green Building Rating System, of the US Green Building Council.

1.3 DEFINITIONS

A. Commissioning (Cx): The process of ensuring that systems are designed, installed, functionally tested and performing in conformity with Owners Project Requirements (OPR) the design intent (Basis of Design BoD)) and that the building operator has received complete equipment and systems documentation and training.

B. Commissioning Provider (CxP): The entity identified to lead, monitor, coordinate and report on project commissioning activities.

C. Commissioning Plan: A detailed plan of the organization, schedule, allocation of resources, procedures and documentation requirements of the commissioning process.

D. Construction Verification (CV): A quality control verification process performed by the installer as building assemblies, components, equipment and systems are being installed which documents that the materials, installation procedures, interfaces with other trades, start-up, testing and operation are correct, complete and in compliance with contract documents and manufacturer’s recommendations and are ready for functional performance testing.

E. Functional Performance Tests (FPT): Contractor testing of installed building assemblies, components, equipment, systems and interfaces which confirms correct performance through all operating modes and compliance with contract documents and manufacturer’s recommendations.

F. Commissioning Report: A document that records the activities and results of the commissioning process.

1.4 COORDINATION

A. Commissioning Team: The members of the commissioning team consist of the Commissioning Provider (CxP), the Owner’s Project Manager (OPM), the Construction Manager or General Contractor (CM or GC), the design Architect and Engineers (A/E), the Mechanical Contractor (MC), the Electrical Contractor (EC), the Testing, Adjusting, and Balancing contractor (TAB), the Controls Contractor (CC), the Communications and Technology Contractor (CTC), the Owner’s maintenance staff, and any other installing subcontractors or suppliers of equipment.

B. Management: The general contractor that is awarded the project shall not include the cost of the Commissioning Provider in their price. The general contractor (and their sub-contractors) shall include cost for their involvement in the commissioning process as described in this section and other related commissioning sections, including completion of construction verification checklists, demonstration of installed equipment to the commissioning team members during the functional performance testing portion of the project.

C. Scheduling: The CM/GC shall integrate all commissioning activities into the master construction schedule. A timeline determined by the commissioning agent will be dedicated for system commissioning. The MEP Contractors shall coordinate their commissioning schedule needs
with CM prior to the start of construction to ensure inclusion into the overall construction schedule. The CxP will work with the OPM and CM/GC to schedule commissioning activities. All parties will address scheduling issues in a timely manner in order to expedite the commissioning process.

D. Tracking Contractor Required Testing: Each contractor is responsible for completing various tests per their associated specifications. Each contractor will forward a list of their associated tests to the CxP, who will generate an overall list for tracking purposes.

1.5 COMMISSIONING PROCESS

A. The following activities describe the commissioning tasks and the general order in which they occur. The CxP coordinates all activities.

1. Scoping Meeting: All members of the design and construction team that will be involved in the commissioning process meet and agree on the scope of work, tasks, schedules, deliverables, and responsibilities for implementation of the Commissioning Plan.

2. Commissioning Plan: The Commissioning Plan developed by the CxP provides guidance in the execution of the commissioning process. The Specifications take precedence over the Commissioning Plan.

3. Submittals: Contractor submittals, including detailed start-up procedures, applicable to systems being commissioned is submitted to the CxP to be reviewed concurrent with the A/E’s review. The CxP will review contractor submittals for compliance with OPR and BoD.

4. Site Visits: Commissioning is a team effort requiring the cooperation of all parties. Contractors are to proactively carry out their commissioning responsibilities and are to assist the CxP during site visits in performing commissioning tasks. This includes providing access to and demonstrating the installation, operation and testing of commissioned systems; responding to CxP requests for information; carrying out proactive and corrective actions; and accurate reporting on system status and conditions.

5. Start-Up/Construction Verification Checklists: The CxP works with the Subcontractors to develop startup plans and documentation formats, including providing the Subcontractors with construction verification checklists to be completed prior to the acceptance testing process.

6. Functional Performance Testing: The CxP develops specific equipment and system functional performance test procedures. The Subcontractors review the procedures. The procedures are executed by the Subcontractors, under the direction of, and documented by the CxP.

7. Deficiencies and Resolution: The CxP documents items of non-compliance in materials, installation or operation in an Issues Log. The items are corrected at the Sub’s expense and the equipment or systems are retested. Each contractor is responsible for completing action items in a timely manner that are noted in the Issues Log as their responsibility. Timely response and successful completion are a requirement to avoid withholding of payment. The CM/GC will be responsible for any cost associated with the CxP for retesting.

8. Operations and Maintenance Documentation: The CxP reviews the Operation and Maintenance documentation provided by the Subcontractors for completeness.

9. Training: The CxP reviews the training provided by the Subcontractors and verifies that it is completed.

10. Seasonal Testing: Deferred or seasonal testing is conducted, as required.

11. Warranty Review: The CxP will review status of warranty and building performance issues with the OPM, A/E, CM/GC roughly 10 months after occupancy.

1.6 RESPONSIBILITIES

A. The responsibilities of various parties in the commissioning process are provided in this section. Note that the services for the Owner’s Project Manager, Design Team, and Commissioning
Provider are not included in this contract. The Contractor is not responsible for providing their services. Their responsibilities are listed here to clarify the commissioning process.

B. Commissioning Provider (CxP): The CxP is not responsible for design concept, design criteria, code compliance, general construction scheduling, cost estimating, or construction management. The CxP may assist with problem-solving deficiencies, but ultimately that responsibility resides with the General Contractor and the A/E. The primary role of the CxP is to develop and coordinate the execution of a testing plan to verify and document that systems are functioning in accordance with the design intent and the Construction Documents.

1. Construction and Acceptance Phase:
   a. Coordinates and directs all commissioning activities. Work with the CM/GC and OPM to confirm that commissioning activities are scheduled.
   b. Maintain an up-to-date Commissioning Plan.
   c. Plan and conduct the commissioning scoping meeting.
   d. Request and review additional information required to perform commissioning tasks, including Operation and Maintenance materials, contractor start-up and checkout procedures, and sequences of operation.
   e. Review Contractor submittals applicable to commissioned systems.
   f. Assist Subcontractors with the development of start-up and checkout plans.
   g. Write and distribute construction verification checklists to be completed by the responsible Subcontractor.
   h. Perform site visits, as necessary, to observe component and system installations. Attend construction job-site meetings, as necessary, to monitor construction and commissioning progress.
   i. Review completed construction verification checklist and start-up reports.
   j. Assist with coordination of start-up requirements with TAB requirements.
   k. Write functional performance test procedures for equipment and systems.
   l. Coordinate, witness, and document functional performance tests completed by installing contractors. Coordinate retesting as necessary until satisfactory performance is verified.
   m. Maintain a master deficiency and resolution record. Provide the OPM with written progress reports and test results with recommended actions.
   n. Review the training proposed by the contractors for the Owner’s operating personnel.
   o. Review the Operation and Maintenance manuals.
   p. Prepare a final commissioning report.

2. Warranty Period:
   a. Coordinate and supervise required seasonal or deferred testing and deficiency corrections.
   b. Assist in the development of a preventative maintenance plan and review as-built documentation.

C. Design Team (A/E):

1. Construction and Acceptance Phase:
   a. Attend commissioning scoping meeting and additional meetings, as necessary.
   b. Provide design intent and sequence of operation documentation as required by the CxP.
   c. Assist in resolution of system deficiencies identified during commissioning.
   d. Review and approve the operations and maintenance manuals.

2. Warranty Period:
   a. Assist in resolution of system deficiencies identified during warranty period commissioning.
b. Attend the end-of-warranty review walkthrough to assist in identifying issues requiring resolution and the action plan to do so.

D. Owner’s Project Manager (OPM):
1. Construction and Acceptance Phase:
   a. Manage the contract of the CxP.
   b. Attend commissioning scoping meeting and additional meetings, as necessary.
   c. Arrange for facility operating and maintenance personnel to participate in commissioning activities and training sessions.
   d. Provide final approval for the completion of the commissioning work.
2. Warranty Period:
   a. Ensure that any seasonal or deferred testing and any deficiency issues are addressed.
   b. Attend the end-of-warranty review.

E. General Contractor or Construction Manager (CM or GC):
1. Construction and Acceptance Phase:
   a. Facilitate the coordination of the commissioning work by the CxP.
   b. Attend commissioning scoping meeting and additional meetings, as necessary.
   c. Furnish copies of construction documents, addenda, change orders and approved submittals and shop drawings related to commissioned equipment to the CxP.
   d. Confirm that Subcontractors execute their quality assurance and commissioning responsibilities according to the Specifications and Commissioning Plan.
   e. Ensure CxP access to observe and witness equipment system installation and operation.
   f. Coordinate the training of Owner personnel, according to the Specifications.
   g. Prepare Operation and Maintenance manuals, according to the Specifications, including updating original sequences of operation to as-built conditions.
   h. Attend regularly scheduled commissioning meetings.
2. Warranty Period:
   a. Confirm that Subcontractors execute required seasonal or deferred functional performance testing.
   b. Confirm that Subcontractors correct deficiencies and make necessary adjustments to Operation and Maintenance manuals and as-built drawings for issues identified during the warranty period.
   c. Attend the end-of-warranty review.

F. Equipment Suppliers:
1. Provide requested submittal data, including detailed start-up procedures and specific responsibilities of the Owner to keep warranties in effect.
2. Provide information requested by CxP regarding equipment sequence of operation and testing procedures.
3. Assist in equipment testing and training per agreements with Subcontractors.

G. Mechanical, Electrical, Plumbing, Controls, TAB and other Sub-Contractors:
1. Installing subcontractors shall fill out construction verification checklists generated by the CxP.
2. The sub-contractor responsible for the startup and operational checkout of each commissioned system shall participate in functional performance testing and execute the test plans generated by the CxP.
3. Attend regularly scheduled commissioning meetings.
4. Ensure CxP access to observe and witness equipment system installation and operation.
5. Submit required Contractor quality assurance test reports to Architect and Commissioning Provider for review.
6. Submit completed start-up reports for commissioned equipment signed by the factory-trained and authorized representatives performing the associated work.
7. Submit Testing and Balancing plan for review and completed TAB report to Architect and Commissioning Provider for review.
8. Submit completed System Readiness Checklists, with completed startup sheets attached, to Commissioning Provider. System functional performance testing shall not commence until the system is documented as ready for testing.
9. Submit operation and maintenance (O&M) manuals for systems being commissioned to Architect and Commissioning Provider for review.
10. Provide training for the Owner’s facility staff for regular operations, maintenance, and troubleshooting.
11. Refer to applicable quality assurance and commissioning sections as noted in Section 1.2 for additional responsibilities.

1.7 COMMISSIONING SCOPE
A. The following checked equipment shall be commissioned for this project. Refer to the individual discipline’s commissioning specification for all equipment which shall be commissioned.
B. Existing downstream devices and terminal units of new primary equipment shall be included in the commissioning scope.
C. FPT sample is 100% unless noted otherwise.
D. Integrated systems interactions between HVAC, Electrical, etc. shall be tested. Reference Division 20 Section “Functional Performance Testing Common Work Results, Division 21 – 28”

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<tr>
<th>System</th>
<th>Equipment</th>
<th>FPT Sampling</th>
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<tbody>
<tr>
<td><strong>Division 21</strong></td>
<td>Fire Suppression Systems</td>
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<td></td>
<td>Sprinkler Piping</td>
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<td>Pre-action System</td>
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<td>Fire / Jockey Pump</td>
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<td></td>
<td>Fire-Suppression Water Storage</td>
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<tr>
<td><strong>Division 22</strong></td>
<td>Plumbing Systems</td>
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<tr>
<td></td>
<td>Domestic Hot Water Heating</td>
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<td>Booster and Circulation Pumps</td>
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<td>Hot Water Mixing Station</td>
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<td>Backflow Preventers (No FPT)</td>
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<td>Sump/Ejector Pumps</td>
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<td>Rainwater or Greywater Systems</td>
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<td>Solar Thermal Hot Water Heating</td>
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<td>Medical Gas</td>
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<td><strong>Division 23</strong></td>
<td>HVAC Systems</td>
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<td>Chillers</td>
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<td>Heating Hot Water and Chilled Water Pumps</td>
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<td>Variable Frequency Drives</td>
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<td>FPT Sampling</td>
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<td>Air Handling Units (Energy Recovery where applicable)</td>
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<td>VAV / CV Terminal Devices</td>
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<td>Terminal Devices: Fan Coil Units</td>
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<td>Hotel Room Fan Coil Units</td>
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<td>Terminal Devices: Cabinet Unit Heaters, Unit Heaters, Finned Tube Radiation</td>
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<td>Computer room cooling units</td>
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<td>Stairwell Pressurization</td>
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<td>Fire/Smoke and Smoke Dampers</td>
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<tr>
<td>Division 26</td>
<td>Automatic Temperature Control (ATC) / Building Management System (BMS)</td>
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<td>Division 27</td>
<td>Electrical Systems</td>
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<td>Secondary unit substations</td>
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<td>Lightning protection</td>
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<tr>
<td>Division 28</td>
<td>Renewable energy / photovoltaics</td>
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<td>Communications Systems</td>
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<td>Electronic Safety and Security Systems</td>
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<td>Fire Alarm: Tamper, Pull, Smoke, Heat, Door Access/Egress</td>
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<td>Refrigerant Detection</td>
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<td>Security</td>
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PART 306—PART 2 - PRODUCTS

306.42.1 TEST EQUIPMENT
A. All standard testing equipment required to perform startup and initial checkout and required functional performance testing shall be provided by the Division contractor for the equipment being tested. Equipment to be calibrated within the past year and in accordance with the manufacturer’s recommendations.
B. Contractors to provide the electronic means (equipment) required to enter construction verification data from on site if the Commissioning Provider utilizes a web-based program.
C. Proprietary test equipment and software required by any equipment manufacturer for programming and/or start-up, whether specified or not, shall be provided by the manufacturer of the equipment. Manufacturer shall provide the test equipment, demonstrate its use, and assist in the commissioning process as needed.
D. All testing equipment shall be of sufficient quality and accuracy to test or measure system performance as required by the specifications.
E. Datalogging equipment or software required to test equipment provided by the CxP shall not become the property of the CM/GC or Owner.

PART 307—PART 3 - EXECUTION

307.43.1 MEETINGS
A. Pre-Construction Scoping Meeting: The CxP will schedule, plan and conduct a pre-construction scoping meeting with the entire commissioning team in attendance. The CM/GC will ensure all relevant Subcontractors attend. The CxP will present an overview of the project’s commissioning process and the commissioning team members will be identified and their responsibilities reviewed.
B. Miscellaneous Meetings: Other meetings will be planned and conducted by the CxP as construction progresses. Each contractor is required to attend all meetings related to commissioning (pre-construction, construction progress, commissioning meetings, etc.) and to have personnel requested by CxP in attendance to facilitate quality control and coordinate commissioning efforts. Contractors are to provide a review of project progress, a report on the status of issues, commissioning tasks and scheduling for future commissioning tasks.
C. Warranty Review Meeting: Within 10 months of substantial completion and prior to completion of the warranty period, CxP will coordinate and facilitate a review meeting. The intent of the meeting will be to review the project design, construction, turnover, operation and warranty issues. Contractor is required to have key project personnel in attendance and participating in the review for the purposes of making future project delivery improvements.
D. The CxP will distribute meeting minutes to all parties.

307.23.2 REPORTING
A. The CM/GC shall include the CxP on all OAC construction meeting minutes distribution.
B. The CM/GC shall include the CxP on all Requests For Information (RFI) and Change Order Requests (COR) related to commissioned equipment and systems.
C. The CxP will regularly communicate with all members of the commissioning team, apprising them of commissioning progress and scheduling changes through memos, progress reports, etc.

D. The CM/GC will respond to the CxP’s deficiency record with resolution updates

E. The CM/GC will provide documentation as required for the CxP to compile a final Commissioning Report which summarizes all of the tasks, findings, and documentation of the commissioning process. The report addresses the actual performance of the building systems in reference to the design intent and contract documents. The report includes a summary of commissioning activities, contact and warranty information, completed construction verification checklists, functional performance testing records, diagnostic monitoring results, identified deficiencies, recommendations for warranty review meeting and ongoing commissioning effort.

307.33.3 SUBMITTALS

A. Refer to Division 01 General Requirements and Section “Submittals” and relevant Division sections for requirements.

B. The CM/GC shall provide the CxP submittals related to the commissioned equipment to review for conformance to the Construction Documents as it relates to the commissioning process. The review is intended primarily to aid in the development of functional performance test procedures.

C. The CM/GC shall respond to request for additional information from the CxP as needed to facilitate the commissioning process.

D. The CxP may request additional design and operations narrative from the design team and Controls Contractor regarding sequences of operations.

307.43.4 START-UP and CONSTRUCTION VERIFICATION CHECKLISTS

The following procedures apply to all equipment to be commissioned, according to Section 1.7, Commissioning Scope.

A. Start-Up Plans:
   1. The responsible contractors shall develop detailed start-up plans for all equipment to be commissioned. The CxP will review start-up plans to confirm that there is written documentation that each of the manufacturer-recommended procedures is completed.
   2. Subcontractors and equipment suppliers schedule startup and checkout with the OPM, CM/GC and CxP.
   3. All work to be installed in accordance with the manufacturer’s instructions. The subcontractors and vendors execute manufacturer installation procedures and start-up documentation. A copy of completed start-up checklists shall be provided to the CxP.
   4. The start-up plans and documentation may be provided to the OPM and A/E for review.

B. Construction Verification Checklists:
   1. The construction verification checklists are a formalized means to provide individual workers the criteria for a successful installation, adherence to the construction documents and to easily track construction progress.
   2. Each assembly, component, equipment, system and interface to be commissioned shall be verified by the installer at the site while work is underway and documented on the construction verification checklists. The contractor is responsible for successfully completing installations, documenting this on the construction verification checklist forms and correcting all deficiencies.
   3. Construction verification checklists are developed by the CxP for all major equipment and systems being commissioned. The checklist documents all equipment components are installed and functional and confirms the as-built status of the equipment or system.
These checklists also assist in confirming that the systems are complete and operational, so that the functional performance testing can be scheduled.

4. Construction verification checklists will be electronic and available via a web-based program. It is the contractor’s responsibility to have an electronic means of entering this data from on site.

5. Construction verification checklists shall be filled out and signed by the installing subcontractor for each piece of equipment. Only individuals who have completed or witnessed the line item task shall complete and sign the checklists.

6. Contractor shall periodically review the construction verification checklist schedule with the CxP allowing advance notice of activities of 5 business days so that the CxP may witness as deemed necessary.

7. Calibration of all sensors shall be included as part of the construction verification checklists performed by the Contractors.

C. Deficiencies, Non-Conformance, and Approval in Checklists and Startup:

1. The Subcontractors shall clearly list any items of the start-up and construction verification procedures not successfully completed at the bottom of the form or on an attached sheet. The procedures form and any outstanding deficiencies are provided to the CxP within two days of test completion.

2. The CxP will verify the accuracy of the completed start-up forms and construction checklists compared with actual field installation and recommends approval to the OPM.

3. If CxP identifies more than a 10% discrepancy rate during confirmation of construction verification checklists, the contractor shall correct all deficiencies and revalidate all items covered by the checklist and resubmit new checklists.

4. The cost of reconfirmation of construction verification checklists due to equipment or construction deficiencies is the responsibility of the contractor and subject to deductive change order at owner’s/construction manager’s discretion. Correction of deficiencies and revalidation are the responsibility of the contractor and are not subject to time extensions or delay claims.

**FUNCTIONAL PERFORMANCE TESTING**

A. Functional performance testing for each system in the commissioning scope shall be executed by the sub-contractor responsible for the startup and operational checkout of the system.

B. The following procedures apply to all equipment to be commissioned, according to Section 1.7, Commissioning Scope. This sub-section applies to all commissioning functional performance testing for all divisions.

C. Objectives and Scope: The objective of functional performance testing is to demonstrate that each system is operating according to the documented design intent and Construction Documents. Functional performance testing comprises a full range of tests to verify that all components, equipment, systems, and interfaces between systems operate correctly. This includes all operating modes, interlocks, control sequences, and responses to emergency conditions. All verification procedures are directed, witnessed, and documented by the CxP.

D. Development of Test Procedures: The CxP develops specific test procedures and forms to verify and document proper operation of each piece of equipment and system. Prior to execution, the CxP provides the test procedures to the Sub(s) who review the tests for feasibility, safety, equipment and warranty protection. The CxP may submit the tests to the A/E team for review.

E. Test Methods:

1. Functional performance testing and verification may be achieved by direct manipulation of system inputs (i.e. heating or cooling sensors), manipulation of system inputs with the building automation system (i.e. software override of sensor inputs), trend logs of system inputs and outputs using the building automation system, or short-term monitoring of system inputs and outputs using stand alone data loggers. A combination of methods...
may be required to completely test the complete sequence of operations. The CxP determines which method, or combination, is most appropriate.

2. Setup: Each test procedure is performed under conditions that simulate normal operating conditions as closely as possible. The Sub executing the test provides all necessary system modifications to produce the specified conditions (flows, pressures, temperatures, etc) necessary to execute the test. At completion of the test, the Sub returns all affected building equipment and systems to their pre-test conditions.

3. Sampling: Multiple identical pieces of non-life-safety or non-critical equipment may be functionally tested using a sampling strategy. The CxP shall establish sampling protocol with approval of the OPM, and at the time of testing select sample test locations for identical pieces of equipment. Where simulation of conditions or altering of setpoints or values is required to achieve an operating or failure mode for testing, the contractor must receive CxP approval. If, after three attempts at testing the specified sample percentage, failures are still present, then all remaining units are tested at the contractors’ expense.

F. Coordination and Scheduling: Every effort will be made to expedite the testing process and minimize unnecessary delays, while not compromising the integrity of the procedures.

G. Contractor shall coordinate functional performance testing with CxP, the construction manager, and the owner and notify them 5 business days prior to testing so that they may witness and document the test results. All contractors involved with specific assemblies, components, equipment, systems and interfaces shall have qualified installers and technicians present at the same time working together to perform testing and demonstrate correct performance through all operating and failure modes and compliance with contract documents and manufacturer’s recommendations.

H. With Owner and CM oversight, the CxP is responsible for witnessing functional performance testing and recording the results and deficiencies. The following sequential priorities are followed:

   1. Equipment is not "temporarily" started (for heating or cooling), until pre-start checklist items and all manufacturers’ pre-start procedures are completed and moisture, dust and other environmental and building integrity issues have been addressed.

   2. Functional performance testing does not begin until construction verification, start-up, controls verification of installation (all sequences and points), and TAB is completed for a given system.

   3. The controls system and equipment it controls are not functionally tested until all points have been calibrated and construction verification checklists are completed.

I. Contractors are responsible for completing and coordinating their work with all trades prior to testing, preplanning testing procedures, insuring necessary staff and resources are on hand and expediting testing. This includes, but not limited to, completing testing and balancing by the HVAC contractor required for successful functional performance testing, pre-testing of the systems (completing FPT) prior to testing with CxP. Pre-testing will include submission of trending per the request of CxP. Failure to complete or coordinate work, preplan or have staff and resources available to carry out testing will result in retesting.

J. Problem Solving: The CxP may recommend solutions to deficiencies identified during functional testing. However, the burden of responsibility to solve, correct and retest deficiencies is with the CM/GC, Subcontractors and A/E.

307.63.6 DOCUMENTATION, NON-CONFORMANCE, AND APPROVAL OF TESTS

A. Documentation:

   1. The CxP witnesses and documents the results of all functional performance tests using forms developed for that purpose. Prior to testing, these forms are provided to the OPM for review and approval.

B. Non-Conformance:
1. The CxP records the results of the functional test on the procedure or test form. All deficiencies identified during the verification testing are documented on a standard Issues Log form and reported to the project manager, contractors, and sub-contractors. The deficiency report includes all details of the components or systems found to be non-compliant with the parameters of the test plans. The report details the adjustments or alterations required to correct system operation and identifies the responsible party.

2. Corrections of minor deficiencies identified may be made during the tests at the discretion of the CxP. In such cases the deficiency and resolution will be documented on the procedure form.

3. Deficiencies that cannot be corrected during testing will be documented on the Issues Log and subject to retest. Retesting will continue until no deficiencies remain or by Owner’s request.

4. Retesting is required when testing cannot be successfully completed. Deficiencies requiring include:
   a. Incomplete work and/or coordination with others.
   b. Inadequate preparation of systems for testing.
   c. Inadequate preplanning.
   d. Inadequate staff, equipment, tools or resources for testing.
   e. Material, equipment or construction deficiencies.
   f. Incomplete or failed test due to reasons under the Contractor’s responsibility.

5. If there is a dispute about a deficiency or who is responsible:
   a. The deficiency is documented on the Issues Log and a copy given to the OPM and CM/GC.
   b. Resolutions are made at the lowest management level possible. Additional parties are brought into the discussions as needed. Final interpretive authority is with the A/E team. Final acceptance authority is with the Project Manager. The CxP documents the resolution process.
   c. Once the interpretation and resolution have been decided, the appropriate party corrects the deficiency and notifies the CxP that the equipment is ready to be retested.
   d. The CxP reschedules the test and the test is repeated until satisfactory performance is achieved.

C. Cost of Retesting:

1. The cost of retesting is the responsibility of the contractor and subject to deductive change order. Correction of deficiencies and retesting are the responsibility of the contractor and are not subject to time extensions or delay claims.

D. Approval:

1. The CxP makes formal approval of the functional performance test after review. The CxP recommends acceptance of each test to the OPM. The OPM gives final approval on each test.

**307.73.7 OWNER’S TRAINING**

A. Refer to Division 01 General Requirements and Section “Demonstration and Training” and relevant Division sections for requirements.

B. The Contractor is responsible for developing a cohesive training plan for all Divisions and Sections of work where training is specified. See technical sections for specified minimum training hours for each component and system.

C. The CM/GC shall provide the CxP a preliminary training plan and schedule related to the commissioned equipment to review and finalize incorporating comments received. The plan should include agendas including topics and objectives to be covered for each section, the instructor’s name and contact information, the anticipated duration and schedule for each
session, a formal training record listing of attendees and a training evaluation form. Develop the training schedule including number of hours for each component or system in coordination with the CxP and CM that complies with the owner’s and CxP’s personnel availability.

D. The CxP shall provide each trainee with a Training Evaluation Form and at completion of training collect forms for review. Based on evaluations and OPM training review, contractor shall repeat training sessions which were determined were inadequate or incomplete.

307.83.8 O&M DATA and CLOSEOUT SUBMITTALS

A. Refer to Division 01 General Requirements and Section “Closeout Submittals” and relevant Division sections for requirements.

B. The CM/GC shall provide the CxP closeout submittals related to the commissioned equipment to review and compile into a Recommissioning Systems Manual as required.

307.93.9 DEFERRED TESTING

A. Unforeseen Deferred Tests: If any test cannot be completed due to the building structure, required occupancy condition, or other deficiency, the functional testing may be delayed upon approval of the OPM. These tests are conducted in the same manner as the seasonal tests as soon as possible.

B. Seasonal Testing: Seasonal variation in operations or control strategies may require additional testing during the opposite season to verify performance of the HVAC system and controls. During the warranty period, seasonal testing and other deferred testing is completed as required to fully test all sequences of operation. The CxP coordinates these activities. Tests are executed and documented, with deficiencies corrected by the appropriate Subcontractors. Any final adjustments to the Operation and Maintenance manuals and as-builds due to the testing are also completed.

1. Two additional functional performance sessions are to be completed for the following systems.
   a. Air Handling Units / Rooftop Units
   b. Chilled Water Systems
   c. Heating Hot Water Systems

END OF SECTION 019113
SECTION 019119 – BUILDING ENCLOSURE COMMISSIONING

PART 1 - GENERAL

1.1 SCOPE

A. The purpose of this section is to specify the Divisions 03 thru 10 responsibilities and participation in the enclosure commissioning process.

B. Commissioning is a comprehensive and systematic process to verify that the building systems perform as designed to meet the Owner’s requirements. Commissioning during the construction, acceptance, and warranty phases is intended to achieve the following specific objectives:
   1. Verify and document that enclosure components and assemblies are installed per manufacturer’s recommendations and to industry accepted minimum standards.
   2. Verify and document that assemblies receive complete quality control checkout by installing contractors.
   4. Verify the completeness of operations and maintenance materials.
   5. Confirm that the Owner’s operating personnel are adequately trained on the operation and maintenance of building enclosure.

C. 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 product.

D. The purpose of this section is to specify the responsibilities and participation in the commissioning process for the following:
   1. Division 03 – Concrete
   2. Division 04 – Masonry
   3. Division 07 – Thermal and Moisture Protection
   4. Division 08 – Openings

E. General Commissioning Requirements responsibilities are located in section 019113

1.2 REFERENCE

A. Applicable provisions of Division 1 govern work under this section.

B. Specific performance requirements are given in the following sections of these specifications:
   1. Division 01 Section "Project Management and Coordination"
   2. Division 01 Section "Submittal Procedures"
   3. Division 01 Section "Sustainability Certification Project Requirements"
   4. Division 01 Section "Quality Requirements"
   5. Division 01 Section "Mockups"
   6. Division 01 Section "Closeout Procedures"
   7. Division 01 Section "Closeout Submittals"
   8. Division 01 Section "Demonstration and Training"
   9. Division 01 Section "Facility Shell Performance Requirements"
   10. Division 03 Section "Common Work Results for Concrete"
   11. Division 03 Section "Insulating Concrete Forming"
   12. Division 03 Section "Waterstops"
   13. Division 04 Section "Common Work Results for Masonry"
   14. Division 04 Section "Masonry Anchorage and Reinforcing"
   15. Division 07 Section "Common Work Results for Thermal and Moisture Protection"
   16. Division 07 Section "Dampproofing and Waterproofing"
   17. Division 07 Section "Thermal Protection"
   18. Division 07 Section "Weather Barriers"
19. Division 07 Section “Roofing and Siding Panels”
20. Division 07 Section “Membrane Roofing”
21. Division 07 Section “Flashing and Sheetmetal”
22. Division 07 Section “Roof and Wall Specialties and Accessories”
23. Division 07 Section “Joint Protection”
24. Division 08 Section “Common Work Results for Openings”
25. Division 08 Section “ Entrances, Storefronts, and Curtain Walls”
26. Division 08 Section “Windows”
27. Division 08 Section “Roof Windows and Skylights”
28. Division 08 Section “Glazing”
29. Division 08 Section “Louvers and Vents”
30. Division 10 Section “Exterior Specialties”

C. Sustainable Design Intent: Comply with project requirements to meet the applicable commissioning prerequisites and credits pursued for the LEED Green Building Rating System, of the US Green Building Council.

1.3 DEFINITIONS

A. Commissioning (Cx): The process of ensuring that systems are designed, installed, functionally tested and performing in conformity with Owners Project Requirements (OPR) the design intent (Basis of Design BoD)) and that the building operator has received complete equipment and systems documentation and training.

B. Building Enclosure Commissioning Provider (BECxP): The entity identified to lead, monitor, coordinate and report on project commissioning activities.

C. Commissioning Plan: A detailed plan of the organization, schedule, allocation of resources, procedures and documentation requirements of the commissioning process.

D. Construction Verification (CV): A quality control verification process performed by the installer as building assemblies, components, equipment and systems are being installed which documents that the materials, installation procedures, interfaces with other trades, start-up, testing and operation are correct, complete and in compliance with contract documents and manufacturer’s recommendations and are ready for functional performance testing.

E. Functional Performance Tests (FPT): Contractor testing of installed building assemblies, components, equipment, systems and interfaces which confirms correct performance through all operating modes and compliance with contract documents and manufacturer’s recommendations.

F. Commissioning Report: A document that records the activities and results of the commissioning process.

1.4 COORDINATION

A. Building Enclosure Commissioning Team: The members of the commissioning team consist of the Building Enclosure Commissioning Provider (BECxP), the Owner’s Project Manager (OPM), the Construction Manager or General Contractor (CM or GC), the design Architect and Engineers (A/E), the Masonry contractor, the Window contractor, the Waterproofing contractor, the Roofing contractor, and any other installing subcontractors or suppliers of materials.

B. Management: The general contractor that is awarded the project shall not include the cost of the Commissioning Provider in their price. The general contractor (and their sub-contractors) shall include cost for their involvement in the commissioning process as described in this section and other related commissioning sections, including completion of construction verification checklists, demonstration of installed equipment to the commissioning team members during the functional performance testing portion of the project.

C. Scheduling: The CM/GC shall integrate all commissioning activities into the master construction schedule. A timeline determined by the commissioning agent will be dedicated for system commissioning. The MEP Contractors shall coordinate their commissioning schedule needs
with CM prior to the start of construction to ensure inclusion into the overall construction schedule. The CxP will work with the OPM and CM/GC to schedule commissioning activities. All parties will address scheduling issues in a timely manner in order to expedite the commissioning process.

D. Tracking Contractor Required Testing: Each contractor is responsible for completing various tests per their associated specifications. Each contractor will forward a list of their associated tests to the CxP, who will generate an overall list for tracking purposes.

1.5 COMMISSIONING PROCESS

A. The following activities describe the commissioning tasks and the general order in which they occur. The CxP coordinates all activities.

1. Scoping Meeting: All members of the design and construction team that will be involved in the commissioning process meet and agree on the scope of work, tasks, schedules, deliverables, and responsibilities for implementation of the Commissioning Plan.

2. Commissioning Plan: The Commissioning Plan developed by the CxP provides guidance in the execution of the commissioning process. The Specifications take precedence over the Commissioning Plan.

3. Submittals: Contractor submittals, including detailed start-up procedures, applicable to systems being commissioned is submitted to the CxP to be reviewed concurrent with the A/E’s review. The CxP will review contractor submittals for compliance with OPR and BoD.

4. Site Visits: Commissioning is a team effort requiring the cooperation of all parties. Contractors are to proactively carry out their commissioning responsibilities and are to assist the CxP during site visits in performing commissioning tasks. This includes providing access to and demonstrating the installation, operation and testing of commissioned systems; responding to CxP requests for information; carrying out proactive and corrective actions; and accurate reporting on system status and conditions.

5. Start-Up/Construction Verification Checklists: The CxP works with the Subcontractors to develop startup plans and documentation formats, including providing the Subcontractors with construction verification checklists to be completed prior to the acceptance testing process.

6. Functional Performance Testing: The CxP develops specific equipment and system functional performance test procedures. The Subcontractors review the procedures. The procedures are executed by the Subcontractors, under the direction of, and documented by the CxP.

7. Deficiencies and Resolution: The CxP documents items of non-compliance in materials, installation or operation in an Issues Log. The items are corrected at the Sub’s expense and the equipment or systems are retested. Each contractor is responsible for completing action items in a timely manner that are noted in the Issues Log as their responsibility. Timely response and successful completion are a requirement to avoid withholding of payment. The CM/GC will be responsible for any cost associated with the CxP for retesting.

8. Operations and Maintenance Documentation: The CxP reviews the Operation and Maintenance documentation provided by the Subcontractors for completeness.

9. Training: The CxP reviews the training provided by the Subcontractors and verifies that it is completed.

10. Seasonal Testing: Deferred or seasonal testing is conducted, as required.

11. Warranty Review: The CxP will review status of warranty and building performance issues with the OPM, A/E, CM/GC roughly 10 months after occupancy.

1.6 RESPONSIBILITIES

A. The responsibilities of various parties in the commissioning process are provided in this section. Note that the services for the Owner’s Project Manager, Design Team, and Commissioning Provider are not included in this contract. The Contractor is not responsible for providing their services. Their responsibilities are listed here to clarify the commissioning process.
B. Commissioning Provider (CxP): The CxP is not responsible for design concept, design criteria, code compliance, general construction scheduling, cost estimating, or construction management. The CxP may assist with problem-solving deficiencies, but ultimately that responsibility resides with the General Contractor and the A/E. The primary role of the CxP is to develop and coordinate the execution of a testing plan to verify and document that systems are functioning in accordance with the design intent and the Construction Documents.

1. Construction and Acceptance Phase:
   a. Coordinates and directs all commissioning activities. Work with the CM/GC and OPM to confirm that commissioning activities are scheduled.
   b. Maintain an up-to-date Commissioning Plan.
   c. Plan and conduct the commissioning scoping meeting.
   d. Request and review additional information required to perform commissioning tasks, including Operation and Maintenance materials, contractor start-up and checkout procedures, and sequences of operation.
   e. Review Contractor submittals applicable to commissioned systems.
   f. Assist Subcontractors with the development of start-up and checkout plans.
   g. Write and distribute construction verification checklists to be completed by the responsible Subcontractor.
   h. Perform site visits, as necessary, to observe component and system installations. Attend construction job-site meetings, as necessary, to monitor construction and commissioning progress.
   i. Review completed construction verification checklist and start-up reports.
   j. Assist with coordination of start-up requirements with TAB requirements.
   k. Write functional performance test procedures for equipment and systems.
   l. Coordinate, witness, and document functional performance tests completed by installing contractors. Coordinate retesting as necessary until satisfactory performance is verified.
   m. Maintain a master deficiency and resolution record. Provide the OPM with written progress reports and test results with recommended actions.
   n. Review the training proposed by the contractors for the Owner’s operating personnel.
   o. Review the Operation and Maintenance manuals.
   p. Prepare a final commissioning report.

2. Warranty Period:
   a. Coordinate and supervise required seasonal or deferred testing and deficiency corrections.
   b. Assist in the development of a preventative maintenance plan and review as-built documentation.

C. Design Team (A/E):

1. Construction and Acceptance Phase:
   a. Attend commissioning scoping meeting and additional meetings, as necessary.
   b. Provide design intent and sequence of operation documentation as required by the BECxP.
   c. Assist in resolution of system deficiencies identified during commissioning.
   d. Review and approve the operations and maintenance manuals.

2. Warranty Period:
   a. Assist in resolution of system deficiencies identified during warranty period commissioning.
   b. Attend the end-of-warranty review walkthrough to assist in identifying issues requiring resolution and the action plan to do so.
D. Owner’s Project Manager (OPM):
   1. Construction and Acceptance Phase:
      a. Manage the contract of the BECxP.
      b. Attend commissioning scoping meeting and additional meetings, as necessary.
      c. Arrange for facility operating and maintenance personnel to participate in commissioning activities and training sessions.
      d. Provide final approval for the completion of the commissioning work.
   2. Warranty Period:
      a. Ensure that any seasonal or deferred testing and any deficiency issues are addressed.
      b. Attend the end-of-warranty review.

E. General Contractor or Construction Manager (CM or GC):
   1. Construction and Acceptance Phase:
      a. Facilitate the coordination of the commissioning work by the BECxP.
      b. Attend commissioning scoping meeting and additional meetings, as necessary.
      c. Furnish copies of construction documents, addenda, change orders and approved submittals and shop drawings related to commissioned equipment to the BECxP.
      d. Confirm that Subcontractors execute their quality assurance and commissioning responsibilities according to the Specifications and Commissioning Plan.
      e. Ensure BECxP access to observe and witness equipment system installation and operation.
      f. Coordinate the training of Owner personnel, according to the Specifications.
      g. Prepare Operation and Maintenance manuals, according to the Specifications, including updating original sequences of operation to as-built conditions.
      h. Attend regularly scheduled commissioning meetings.
   2. Warranty Period:
      a. Confirm that Subcontractors execute required seasonal or deferred functional performance testing.
      b. Confirm that Subcontractors correct deficiencies and make necessary adjustments to Operation and Maintenance manuals and as-built drawings for issues identified during the warranty period.
      c. Attend the end-of-warranty review.

F. Material Suppliers:
   1. Provide requested submittal data, including detailed installation and maintenance procedures and specific responsibilities of the Owner to keep warranties in effect.
   2. Provide information requested by BECxP regarding material and testing procedures.
   3. Assist in equipment testing and training per agreements with Subcontractors.

G. Building Envelope Contractors – Window, Waterproofing, Sealants
   1. Attend commissioning kick-off meeting and additional meetings, as necessary.
   2. Provide additional requested documentation, prior to normal O&M manual submittals, to CxA.
   3. Develop a quality control checkout documentation plan for all windows and submit to CxA as completed.
   4. Provide suitable access to the enclosure testing firm for selected areas including mobilized lift, scaffolding, power and water.
   5. Resolve deficiencies identified during AAMA and ASTM testing and retest as required to verify modified performance.
   6. Prepare O&M manuals according to the Specifications, including updating original sequences of operation to as-built conditions.
7. Provide training of the Owner’s operating personnel as specified.
8. Coordinate with material manufacturers to determine requirements to maintain the validity of warranties.
9. Refer to applicable quality assurance and commissioning sections as noted in Section 1.2 for additional responsibilities.

1.7 COMMISSIONING SCOPE
A. The following checked equipment shall be commissioned for this project.
   - Reference Division 01 Section “Facility Shell Performance Requirements”

<table>
<thead>
<tr>
<th>Building Area / Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below Grade Foundation Walls</td>
</tr>
<tr>
<td>Slab on Grade</td>
</tr>
<tr>
<td>Masonry Walls</td>
</tr>
<tr>
<td>Wall Assemblies</td>
</tr>
<tr>
<td>Windows</td>
</tr>
<tr>
<td>Storefronts</td>
</tr>
<tr>
<td>Curtain Walls</td>
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<tr>
<td>Louvers</td>
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<tr>
<td>Doors</td>
</tr>
<tr>
<td>Air Vapor Barrier</td>
</tr>
<tr>
<td>Insulation Thermal Barrier</td>
</tr>
<tr>
<td>Roof Systems</td>
</tr>
<tr>
<td>Joint Sealants</td>
</tr>
<tr>
<td>Expansion Joints</td>
</tr>
<tr>
<td>Whole Building</td>
</tr>
</tbody>
</table>

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 MEETINGS
A. Pre-Construction Scoping Meeting: The BECxP will schedule, plan and conduct a pre-construction scoping meeting with the entire commissioning team in attendance. The CM/GC will ensure all relevant Subcontractors attend. The BECxP will present an overview of the project’s commissioning process and the commissioning team members will be identified and their responsibilities reviewed.

B. Miscellaneous Meetings: Other meetings will be planned and conducted by the BECxP as construction progresses. Each contractor is required to attend all meetings related to commissioning (pre-construction, construction progress, commissioning meetings, etc.) and to have personnel requested by BECxP in attendance to facilitate quality control and coordinate commissioning efforts. Contractors are to provide a review of project progress, a report on the status of issues, commissioning tasks and scheduling for future commissioning tasks.

C. Warranty Review Meeting: Within 10 months of substantial completion and prior to completion of the warranty period, BECxP will coordinate and facilitate a review meeting. The intent of the meeting will be to review the project design, construction, turnover, operation and warranty issues. Contractor is required to have key project personnel in attendance and participating in the review for the purposes of making future project delivery improvements.

D. The BECxP will distribute meeting minutes to all parties.
3.2 REPORTING
   A. The CM/GC shall include the BECxP on all OAC construction meeting minutes distribution.
   B. The CM/GC shall include the BECxP on all Requests For Information (RFI) and Change Order Requests (COR) related to commissioned equipment and systems.
   C. The BECxP will regularly communicate with all members of the commissioning team, apprising them of commissioning progress and scheduling changes through memos, progress reports, etc.
   D. The CM/GC will respond to the BECxP’s deficiency record with resolution updates
   E. The CM/GC will provide documentation as required for the BECxP to compile a final Commissioning Report which summarizes all of the tasks, findings, and documentation of the commissioning process. The report addresses the actual performance of the building systems in reference to the design intent and contract documents. The report includes a summary of commissioning activities, contact and warranty information, completed construction verification checklists, functional performance testing records, diagnostic monitoring results, identified deficiencies, recommendations for warranty review meeting and ongoing commissioning effort.

3.3 SUBMITTALS
   A. Refer to Division 01 General Requirements and Section "Submittals" and relevant Division sections for requirements.
   B. The CM/GC shall provide the BECxP submittals related to the commissioned equipment to review for conformance to the Construction Documents as it relates to the commissioning process. The review is intended primarily to aid in the development of functional performance test procedures.
   C. The CM/GC shall respond to request for additional information from the BECxP as needed to facilitate the commissioning process.
   D. The BECxP may request additional design and operations narrative from the design team and Controls Contractor regarding sequences of operations.

3.4 CONSTRUCTION VERIFICATION CHECKLISTS
   The following procedures apply to all equipment to be commissioned, according to Section 1.7, Commissioning Scope.
   A. Construction Verification Checklists:
      1. The construction verification checklists are a formalized means to provide individual workers the criteria for a successful installation, adherence to the construction documents and to easily track construction progress.
      2. Each assembly, component, equipment, system and interface to be commissioned shall be verified by the installer at the site while work is underway and documented on the construction verification checklists. The contractor is responsible for successfully completing installations, documenting this on the construction verification checklist forms and correcting all deficiencies.
      3. Construction verification checklists are developed by the BECxP for all major equipment and systems being commissioned. The checklist documents all equipment components are installed and functional and confirms the as-built status of the equipment or system. These checklists also assist in confirming that the systems are complete and operational, so that the functional performance testing can be scheduled.
      4. Construction verification checklists will be electronic and available via a web-based program. It is the contractor’s responsibility to have an electronic means of entering this data from on site.
      5. Construction verification checklists shall be filled out and signed by the installing subcontractor for each piece of equipment. Only individuals who have completed or witnessed the line item task shall complete and sign the checklists
6. Contractor shall periodically review the construction verification checklist schedule with the CxP allowing advance notice of activities of 5 business days so that the BECxP may witness as deemed necessary.

7. Calibration of all sensors shall be included as part of the construction verification checklists performed by the Contractors

B. Deficiencies, Non-Conformance, and Approval in Checklists and Startup:

1. The Subcontractors shall clearly list any items of the start-up and construction verification procedures not successfully completed at the bottom of the form or on an attached sheet. The procedures form and any outstanding deficiencies are provided to the BECxP within two days of test completion.

2. The BECxP will verify the accuracy of the completed start-up forms and construction checklists compared with actual field installation and recommends approval to the OPM.

3. If BECxP identifies more than a 10% discrepancy rate during confirmation of construction verification checklists, the contractor shall correct all deficiencies and revalidate all items covered by that checklist and resubmit new checklists.

4. The cost of reconfirmation of construction verification checklists due to equipment or construction deficiencies is the responsibility of the contractor and subject to deductive change order at owner's/construction manager’s discretion. Correction of deficiencies and revalidation are the responsibility of the contractor and are not subject to time extensions or delay claims.

3.5 FUNCTIONAL PERFORMANCE TESTING

A. Functional performance testing for each system in the commissioning scope shall be executed by the sub-contractor responsible for the startup and operational checkout of the system.

B. The following procedures apply to all equipment to be commissioned, according to Section 1.7, Commissioning Scope. This sub-section applies to all commissioning functional performance testing for all divisions.

C. Objectives and Scope: The objective of functional performance testing is to demonstrate that each system is operating according to the documented design intent and Construction Documents. Functional performance testing comprises a full range of tests to verify that all components, equipment, systems, and interfaces between systems operate correctly. This includes all operating modes, interlocks, control sequences, and responses to emergency conditions. All verification procedures are directed, witnessed, and documented by the CxP.

D. Development of Test Procedures: The BECxP develops specific test procedures and forms to verify and document proper operation of each piece of equipment and system. Prior to execution, the CxP provides the test procedures to the Sub(s) who review the tests for feasibility, safety, equipment and warranty protection. The BECxP may submit the tests to the A/E team for review.

E. Test Methods:

1. Setup: Each test procedure is performed under conditions that simulate normal operating conditions as closely as possible. The Sub executing the test provides all necessary system modifications to produce the specified conditions (flows, pressures, temperatures, etc) necessary to execute the test. At completion of the test, the Sub returns all affected building equipment and systems to their pre-test conditions.

2. Sampling: The BECxP shall establish sampling protocol with approval of the OPM, and at the time of testing select sample test locations for identical components. Where simulation of conditions or altering of setpoints or values is required to achieve an operating or failure mode for testing, the contractor must receive BECxP approval. If, after three attempts at testing the specified sample percentage, failures are still present, then all remaining units are tested at the contractors’ expense.

3. Locations: Performance testing locations to be determined by A/E and BECxP.

F. Coordination and Scheduling: Every effort will be made to expedite the testing process and minimize unnecessary delays, while not compromising the integrity of the procedures.
G. Contractor shall coordinate functional performance testing with BECxP, the construction manager, and the owner and notify them 5 business days prior to testing so that they may witness and document the test results. All contractors involved with specific assemblies, components, equipment, systems and interfaces shall have qualified installers and technicians present at the same time working together to perform testing and demonstrate correct performance through all operating and failure modes and compliance with contract documents and manufacturer’s recommendations.

H. With Owner and CM oversight, the BECxP is responsible for witnessing functional performance testing and recording the results and deficiencies. The following sequential priorities are followed:

1. Equipment is not “temporarily” started (for heating or cooling), until pre-start checklist items and all manufacturers’ pre-start procedures are completed and moisture, dust and other environmental and building integrity issues have been addressed.
2. Functional performance testing does not begin until construction verification, start-up, controls verification of installation (all sequences and points), and TAB is completed for a given system.
3. The controls system and equipment it controls are not functionally tested until all points have been calibrated and construction verification checklists are completed.

I. Contractors are responsible for completing and coordinating their work with all trades prior to testing, preplanning testing procedures, insuring necessary staff and resources are on hand and expediting testing.

J. Problem Solving: The BECxP may recommend solutions to deficiencies identified during functional testing. However, the burden of responsibility to solve, correct and retest deficiencies is with the CM/GC, Subcontractors and A/E.

3.6 ADHESION TESTS:

A. Arrange for field tests to take place with joint-sealant and adhered membrane manufacturer’s technical representative present. Field test sealant joints and self-adhering membranes for adhesion to substrates as follows:

B. Test each type of sealant/membrane in each installation at every substrate indicated.


D. For joints between dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

E. For sealants that fail adhesively, retest until satisfactory adhesion is obtained. Do not use sealants that fail to adhere to joint substrates during testing.

3.7 FENESTRATION FIELD WATER TESTS:

A. Test installed fenestration systems according to AAMA 501.2 “Field Check of Metal Storefronts, Curtain Walls and Sloped Glazing Systems For Water Leakage,” and ASTM E-1105: Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls, and Doors by Uniform or Cyclic Static Air Pressure Differential

B. Complete testing prior to installation of interior insulation and gypsum board.

C. Contractor to provide powered scaffold, hose, water supply, communication system and manpower to perform tests.
D. Contractor will work with the Test Engineer and CxA to determine necessity for additional test methods and for field chamber tests based upon evaluation of initial test results. The BECxP will interpret marginal results and adjust the test procedures as appropriate.

E. Contractor to perform out-of-sequence work as required facilitating system tests.

3.8 FENESTRATION FIELD AIR AND WATER LEAKAGE TESTS:


B. Complete testing prior to installation of interior insulation, gypsum wall board and interior finishes or systems that may impede the completion of the tests.

C. Test specimen to include the perimeter material substrate and the perimeter seals.

D. Contractor to provide powered scaffold, hose, water supply, communication and manpower to perform tests.

E. Contractor will work with the Test Engineer and BECxP to determine necessity for additional test methods and for field chamber tests based upon evaluation of initial test results. The CxP will interpret marginal results and re-write the test procedures as appropriate.

F. Contractor to perform out-of-sequence work as required facilitating system tests. Contractor to install all air seals / dams concealed within the mullions to facilitate air tests at curtain wall assemblies.

3.9 AIR BARRIER FIELD AIR LEAKAGE TESTS:


B. Complete testing prior to installation of interior insulation, gypsum wall board and interior finishes.

C. Test specimen to include the perimeter material substrate and the perimeter seals.

D. Provide powered scaffold, water, electric supply, communication and manpower to perform tests.

E. Contractor will work with the Test Engineer and CxA to determine necessity for revised test methods and for field chamber tests based upon evaluation of initial test results. The BECxP will interpret marginal results and adjust the test procedures as appropriate.

F. Contractor to perform out-of-sequence work as required facilitating system tests.

3.10 ROOF AND WATERPROOFING FIELD WATER AND AIR LEAKAGE TESTS:

A. Test installed roofing systems and interfaces with adjacent substrates using high- or low-voltage electronic leak detection and ASTM C1153 Standard Practice for Location of Wet Insulation in Roofing Systems Using Infrared Imaging and Capacitance.


C. Test installed horizontal waterproofing systems and interfaces with adjacent substrates according to ASTM D5957 Guide for Floor Testing Horizontal Waterproofing Installations.
D. Complete testing prior to installation of interior insulation, gypsum wall board and interior ceiling finishes.

E. Contractor will work with the Test Engineer and BECxP to determine necessity for revised or supplemental test methods. The BECxP will interpret marginal results and adjust the test procedures as appropriate.

3.11 CONCRETE MOISTURE TESTS:

A. Test installed concrete that will serve as a substrate to coating systems, roofing materials, and associated flashings for moisture according to ASTMD4263 Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.

3.12 Test requirements listed below apply as appropriate to the materials, components, and systems specified in each Technical Sections (Divisions 03-10).

A. Number of test locations to be 5% of the total area of system but no less than 1.

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Location / Component</th>
<th>Testing Standard</th>
<th>Criteria</th>
<th>Schedule / Number of Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Air Leakage Testing</td>
<td>Aluminum Storefront</td>
<td>ASTM E783</td>
<td>&lt;0.09 cfm/sq.ft at 6.24 lbf/sq.ft. minimum</td>
<td>Mock-Up and 90% completion.</td>
</tr>
<tr>
<td></td>
<td>Curtain Wall</td>
<td>ASTM E783</td>
<td>&lt;0.09 cfm/sq.ft at 6.24 lbf/sq.ft. minimum</td>
<td>Mock-Up and 90% completion.</td>
</tr>
<tr>
<td></td>
<td>Punch Window</td>
<td>ASTM E783</td>
<td>&lt;0.09 cfm/sq.ft at 6.24 lbf/sq.ft. minimum</td>
<td>Mock-Up and 90% completion.</td>
</tr>
<tr>
<td></td>
<td>Air Barrier Transitions to adjacent systems, field of AB Penetrations</td>
<td>ASTM E783</td>
<td>0.04 cfm/sq. ft at 1.57 lbf/sq. ft</td>
<td>10%, 20% and 50% completion / 3 tests</td>
</tr>
<tr>
<td></td>
<td>Curtain Wall and window perimeter sealant tests</td>
<td>ASTM E1186</td>
<td>No sign of visible leakage Sealant continuity using smoke test</td>
<td>90% completion</td>
</tr>
<tr>
<td></td>
<td>Air Barrier Transitions to adjacent systems, field of AB Penetrations</td>
<td>ASTM E1186</td>
<td>No sign of visible leakage Sealant continuity using smoke test</td>
<td>Mock-up and 50% completion.</td>
</tr>
<tr>
<td></td>
<td>Canopy and miscellaneous soffits</td>
<td>ASTM E1186</td>
<td>No sign of visible leakage</td>
<td>100% prior to cladding, including cladding attachments location)</td>
</tr>
<tr>
<td></td>
<td>Vertical and</td>
<td>ASTM E1186</td>
<td></td>
<td>Completion of</td>
</tr>
<tr>
<td>Field Water Leakage Testing</td>
<td>Curtain Wall (min chamber size to be determined)</td>
<td>ASTM E1105</td>
<td>No water leaks at 2/3 specified design pressure or 20% of wind load)</td>
<td>Mock-Up and 90% completion.</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------------</td>
<td>-----------</td>
<td>----------------------------------------------------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>Curtain Wall and AB interface (min chamber size to be determined)</td>
<td>ASTM E1105</td>
<td>No water leaks at 2/3 specified design pressure or 20% of wind load)</td>
<td>Mock-Up and 90% completion.</td>
<td></td>
</tr>
<tr>
<td>Punch Window</td>
<td>ASTM E1105</td>
<td>No water leaks</td>
<td>Mock-Up and 90% completion.</td>
<td></td>
</tr>
<tr>
<td>Windows</td>
<td>ASTM E1105</td>
<td>No water leaks</td>
<td>Mock-Up and 90% completion.</td>
<td></td>
</tr>
<tr>
<td>Air Barrier with Metal Panel Attachments in place (minimum area to be determined)</td>
<td>ASTM E1105</td>
<td>No water leaks at zero pressure differential / 30 minute duration</td>
<td>10% and 50% completion / 2 locations each – 4 total</td>
<td></td>
</tr>
<tr>
<td>Louver – Perimeter of Louver and AB interface</td>
<td>AAMA 501.2</td>
<td>No water leaks</td>
<td>90% completion / 2 locations</td>
<td></td>
</tr>
<tr>
<td>Storefront (minimum chamber size to be determined)</td>
<td>ASTM E1105</td>
<td>No water leaks at 2/3 specified design pressure or 20% of wind load)</td>
<td>Mock-Up and 90% completion.</td>
<td></td>
</tr>
<tr>
<td>Expansion Joints</td>
<td>AAMA 501.2</td>
<td>No water leaks</td>
<td>100% completion / 3 locations</td>
<td></td>
</tr>
<tr>
<td>Roofing Membrane – Transition to Adjacent System</td>
<td>ASTM E1105</td>
<td>No water leaks</td>
<td>10 locations throughout construction</td>
<td></td>
</tr>
<tr>
<td>Adhesion Testing</td>
<td>Air Barrier to transition membrane to fenestration adhesion</td>
<td>ASTM C1521</td>
<td>Manufacturer’s Product Data</td>
<td>10 locations throughout construction</td>
</tr>
<tr>
<td>Joint sealants to</td>
<td>ASTM C1193</td>
<td>Manufacturer’s</td>
<td>10 locations</td>
<td></td>
</tr>
<tr>
<td>Substrate</td>
<td>Product Data</td>
<td>throughout construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>--------------</td>
<td>------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joint sealants to substrate</td>
<td>ASTM C794</td>
<td>Manufacturer's Product Data</td>
<td>10 locations throughout construction</td>
<td></td>
</tr>
<tr>
<td>Coatings</td>
<td>ASTM D4541</td>
<td>Manufacturer's Product Data</td>
<td>10 locations throughout construction</td>
<td></td>
</tr>
<tr>
<td><strong>Thermography Imaging</strong></td>
<td>Roofing Systems</td>
<td>ASTM C1153</td>
<td>Review with BECx Team</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Flood Testing</strong></td>
<td>Roofing Horizontal Waterproofing</td>
<td>ASTM D5957</td>
<td>No leaks</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Whole Building Air Leakage Testing</strong></td>
<td>Whole building</td>
<td>ASTM E1827 or ASTM E729</td>
<td>0.25 cfm@75 Pascal for above grade enclosure</td>
<td>Complete construction</td>
</tr>
<tr>
<td><strong>Concrete Moisture Testing</strong></td>
<td>Concrete surfaces used for substrates for coatings, roofing and associated flashing</td>
<td>ASTM D4263</td>
<td>Manufacturer's Product Data</td>
<td>Sample per standard</td>
</tr>
</tbody>
</table>

3.13 DOCUMENTATION, NON-CONFORMANCE, AND APPROVAL OF TESTS

A. Documentation:

1. The BECxP witnesses and documents the results of all functional performance tests using forms developed for that purpose. Prior to testing, these forms are provided to the OPM for review and approval.

B. Non-Conformance:

1. The BECxP records the results of the functional test on the procedure or test form. All deficiencies identified during the verification testing are documented on a standard Issues Log form and reported to the project manager, contractors, and sub-contractors. The deficiency report includes all details of the components or systems found to be non-compliant with the parameters of the test plans. The report details the adjustments or alterations required to correct system operation and identifies the responsible party.

2. Corrections of minor deficiencies identified may be made during the tests at the discretion of the BECxP. In such cases the deficiency and resolution will be documented on the procedure form.

3. Deficiencies that cannot be corrected during testing will be documented on the Issues Log and subject to retest. Retesting will continue until no deficiencies remain or by Owner's request.

4. Retesting is required when testing cannot be successfully completed. Deficiencies requiring include:
   a. Incomplete work and/or coordination with others.
   b. Inadequate preparation of systems for testing.
   c. Inadequate preplanning.
   d. Inadequate staff, equipment, tools or resources for testing.
   e. Material, equipment or construction deficiencies.
   f. Incomplete or failed test due to reasons under the Contractor's responsibility.
5. If there is a dispute about a deficiency or who is responsible:
   a. The deficiency is documented on the Issues Log and a copy given to the OPM and CM/GC.
   b. Resolutions are made at the lowest management level possible. Additional parties are brought into the discussions as needed. Final interpretive authority is with the A/E team. Final acceptance authority is with the Project Manager. The BECxP documents the resolution process.
   c. Once the interpretation and resolution have been decided, the appropriate party corrects the deficiency and notifies the CxP that the equipment is ready to be retested.
   d. The BECxP reschedules the test and the test is repeated until satisfactory performance is achieved.

C. Cost of Retesting:
   1. The cost of retesting is the responsibility of the contractor and subject to deductive change order. Correction of deficiencies and retesting are the responsibility of the contractor and are not subject to time extensions or delay claims.

D. Approval:
   1. The BECxP makes formal approval of the functional performance test after review. The CxP recommends acceptance of each test to the OPM. The OPM gives final approval on each test.

3.14 OWNER’S TRAINING
A. Refer to Division 01 General Requirements and Section "Demonstration and Training" and relevant Division sections for requirements.
B. The Contractor is responsible for developing a cohesive training plan for all Divisions and Sections of work where training is specified. See technical sections for specified minimum training hours for each component and system.
C. The CM/GC shall provide the BECxP a preliminary training plan and schedule related to the commissioned equipment to review and finalize incorporating comments received. The plan should include agendas including topics and objectives to be covered for each section, the instructor's name and contact information, the anticipated duration and schedule for each session, a formal training record listing of attendees and a training evaluation form. Develop the training schedule including number of hours for each component or system in coordination with the BECxP and CM that complies with the owner’s and BECxP’s personnel availability.
D. The BECxP shall provide each trainee with a Training Evaluation Form and at completion of training collect forms for review. Based on evaluations and OPM training review, contractor shall repeat training sessions which were determined were inadequate or incomplete.

3.15 O&M DATA and CLOSEOUT SUBMITTALS
A. Refer to Division 01 General Requirements and Section "Closeout Submittals" and relevant Division sections for requirements.
B. The CM/GC shall provide the BECxP closeout submittals related to the commissioned equipment to review and compile into a Recommissioning Systems Manual as required.

3.16 DEFERRED TESTING
A. Unforeseen Deferred Tests: If any test cannot be completed due to the building structure, required occupancy condition, or other deficiency, the functional testing may be delayed upon approval of the OPM. These tests are conducted in the same manner as the seasonal tests as soon as possible.
B. Seasonal Testing: Seasonal variation in operations or control strategies may require additional testing during the opposite season to verify performance of the HVAC system and controls. During the warranty period, seasonal testing and other deferred testing is completed as required to fully test all sequences of operation. The BECxP coordinates these activities. Tests are executed and documented, with deficiencies corrected by the appropriate Subcontractors. Any final adjustments to the Operation and Maintenance manuals and as-builds due to the testing are also completed.

END OF SECTION 019119
M. A. MORTENSON COMPANY
SUBCONTRACT AGREEMENT

THIS SUBCONTRACT AGREEMENT ("Agreement") is entered into effective October 2, 2020, by
and between M. A. Mortenson Company ("Mortenson") and Payne & Dolan, Inc., N3 W23650 Badinger
Road, Waukesha, WI 53188 ("Subcontractor"). This Agreement includes the Subcontract Standard Terms
and Conditions ("Standard Terms and Conditions"), the Indemnity Clause ("Indemnity Clause") and the
Subcontract Supplementary Terms and Conditions ("Supplementary Terms and Conditions"), all attached
hereto ("Attachments"), and the following Exhibits ("Exhibits"): 

Exhibit E - Safety Program Requirements
Exhibit F - Collective Bargaining Agreements
Exhibit G - Quality Program Requirements
Exhibit I - Electronic Closeout Documentation
Exhibit J - Tax Exempt Purchases
Exhibit K - Construction Waste Recycling Requirements

In consideration of their mutual promises herein, Subcontractor and Mortenson agree as follows:

1. PROJECT. Mortenson has entered into a contract dated October 2, 2020 (the
"Contract") with Froedtert Health, Inc., ("Owner") to perform labor and furnish material for the
construction of CFAC Front Entrance, located at 9200 West Wisconsin Avenue, Milwaukee, WI
53226 ("Project"), pursuant to Drawings, Specifications, General Conditions, Supplementary
General Conditions, Special Conditions, and Addenda prepared by Cannon Design ("Architect"),
and made a part of the Contract. The Contract Documents ("Contract Documents") are this
Agreement, the Contract and its exhibits, Drawings, Specifications, General Conditions, Supplementary
General Conditions, Special Conditions, and Addenda, including the following:

2. SCOPE OF WORK. Subcontractor shall furnish and pay for all supervision, labor,
materials, tools, equipment, services, scaffolds, appliances and all other items necessary to fully
perform the Agreement, consistent with the provisions of the Contract Documents, including
completion of all of the following (the "Work"):

4.5" Asphalt Patch: Based off approximately 140 5Y (9'x140')

- Construct a 4.5" asphalt pavement consisting of commercial grade asphalt.
- Asphalt pavement constructed in two lifts.
- Restripe new asphalt similar to existing.

Base Price: $10,910.00
(Saturday paving before 9am)

Base Price: $14,870.00
(Saturday paving after 9am)

NOTES:
1. Removals, sawing, fees, bonds, permits and traffic control by others.
2. Base course to be provided by others to within +/- 0/1'. Base course must be suitable for asphalt paving,
subject to proof roll.
3. If instructed to pave over soft/unsuitable base course, areas shall not be covered under warranty. Mortenson
also agrees to pay for any additional asphalt material needed.
4. Asphalt patch to be constructed over an area of previous asphalt/base/substrate settlement. Mortenson
acknowledges Payne and Dolan will not be held responsible for further settlement after patch is constructed.
5. Proposal is priced for Saturday/Sunday as stated work with drive area closed to traffic.
6. Pricing assumes acceptance of P&D CG D2 46 08 05 in lieu of CG 2010, CG 2037.
7. No asphalt paving between November 1st and May 15th.

3. SUBCONTRACT PRICE. The Subcontract Price is Fourteen Thousand Eight
Hundred Seventy Dollars and 00/100 ($14,870.00)
4. **TIME OF COMPLETION.** Subcontractor shall prosecute and complete the Work in accordance with the following schedules and time limits:

Work to be completed prior to October 31, 2020 as scheduled with Mortenson.

5. **RETAINAGE.** Mortenson shall retain an amount from each application for payment such that zero percent (0%) of the total value of Work performed is withheld. Retainage shall be held by Mortenson until released as provided in this Agreement.

6. **SITE-SPECIFIC SAFETY PROGRAMS.** Subcontractor agrees to provide all documents and conduct or participate in all site-specific safety programs related to elimination of accidents and injuries at the site, including but not limited to the following:

[See EXHIBIT E - SITE-SPECIFIC SAFETY PROGRAMS]

7. **PAYROLL MARKUPS.** For Work performed on the basis of actual field cost pursuant to Paragraph 12.4.1.(a) of the Standard Terms and Conditions, the maximum allowable payroll markups shall be [5]% for field labor and [10]% for fabrication shop labor.

8. **INSURANCE:**
   a. Commercial General Liability insurance limits shall be $5,000,000 unless otherwise indicated here $2,000,000
   b. Professional Liability/Errors & Omissions coverage
      ___ Is required
      X ___ Is not required
   c. Pollution Liability coverage
      ___ Is required
      X ___ Is not required

9. **PAYMENT AND PERFORMANCE BONDS.**

   X ___ Performance and Payment Bonds are not required.

   ___ Performance and Payment Bonds are required, in full conformance with the requirements of Article 18 of the Terms and Conditions.

10. **Entire Agreement.** This Agreement constitutes the entire agreement between the parties hereto and is effective on the date set forth above. No oral representations or other agreements have been made by Mortenson except as stated in this Agreement. This Agreement may not be changed in any way except as herein provided, and no provision hereof may be waived by Mortenson except in writing signed by a duly authorized officer or agent.

IN WITNESS WHEREOF, Subcontractor and Mortenson herein execute this Agreement as set forth above.

PAYNE & DOLAN, INC. M. A. MORTENSON COMPANY

By _____________________________ By _____________________________

Printed Name __________________________ Printed Name __________________________

Its __________________________ Its __________________________

Mortenson Subcontract Agreement Revised November 3, 2015
Subcontract Supplementary Terms and Conditions

Attached to and forming a part of the Agreement between Payne & Dolan, Inc. and Mortenson, effective as of October 2, 2020.

1. The Subcontract Standard Terms and Conditions are amended as follows:

   a. Subcontractor shall familiarize itself with the Contract Documents. The Agreement is subject to the terms and conditions of, and specifically incorporates the provisions of the Contract Documents, as stated in Articles 1.2 and 1.3 of the Subcontract Agreement Standard Terms and Conditions. Mortenson’s identification in these Supplementary Terms and Conditions of particular provisions in the Contract Documents of which Subcontractor should take notice shall in no way diminish or otherwise limit the application of Article 1.3 of the Subcontract Agreement Standard Terms and Conditions as to any other provision in the Contract Documents. Subcontractor shall preserve and protect the rights of the Owner, Architect and Mortenson under the Contract Documents with respect to the Work performed by the Subcontractor and not prejudice such rights. Subcontractor shall enter into agreements with its subcontractors and suppliers consistent with the requirements of the Agreement and the Contract Documents.

   b. Subcontractor expressly agrees to be bound to Mortenson under its Agreement with Mortenson with respect to its Work in the same manner as Mortenson is bound to Owner under the prime contract entered into between Mortenson and Owner (the “Contract”) and the Contract Documents. The Contract, including all attachments, addenda, modifications, documents and exhibits thereto, shall be deemed expressly incorporated herein by reference and Subcontractor shall assume toward Mortenson the same duties, obligations, and responsibilities that Mortenson assumes toward the Owner under the terms and provisions of the Contract. The intent of the parties is that Subcontractor shall be under the same obligations to Mortenson and bound by the same terms, conditions, and procedures that govern Mortenson’s relationship with the Owner as it relates to the Work. Subcontractor acknowledges that it has been provided a copy of the Contract Documents.

   c. To the extent Mortenson is unable to recover damages or to obtain time extensions for delays, disruptions, or damages as a result of Subcontractor’s failure to timely provide notice of claims required by the Agreement or the Contract Documents, Subcontractor shall have no right of, and waives, any recovery against Mortenson.

   d. Terms and conditions of the agreement between Owner and Mortenson, for which Subcontractor binds itself to Mortenson, specifically include but are not limited to the following:

   e. Terms of the Agreement:

   § 6.11 Accounting Records

   § 6.11.1 The Construction Manager shall keep full and detailed records and accounts related to the cost of the Work and exercise such controls as may be necessary for proper financial management under this Agreement and to substantiate all costs incurred. The accounting and control systems shall be satisfactory to the Owner. The Owner and Owner’s auditors shall, during regular business hours and upon reasonable notice, be afforded access to, and shall be permitted to audit and copy, the Construction Manager’s records and accounts, including complete documentation supporting accounting entries, books, correspondence, instructions, drawings, receipts, subcontracts, Subcontractor’s proposals, purchase orders, vouchers, memoranda and other data relating to this Agreement, applicable to amounts of reimbursement requested by Construction Manager (“Records”). The rates established by the parties in connection with any Cost of the Work furnished on a unit basis, as established in the IPSO, any exhibits attached to this Agreement, or in Article 6 for such things, including, but not limited to, personnel rates, field rates, tools, equipment and insurance shall not be subject to audit and adjustment, and the audit of such items of the Cost of the Work shall be limited to a determination of the quantities of the units for which payment has been made or is requested. Additionally, if the parties agree that any portion of the Work will be provided by Construction Manager on a lump sum basis as opposed to a Cost of the Work basis, costs related to such lump sum Work shall not be subject to audit and adjustment.
Any other Construction Manager’s Records which may have a bearing on matters of interest to the Owner in connection with this Agreement to the extent necessary to adequately permit evaluation and verification of: a) Construction Manager compliance with Contract requirements, b) compliance with Owner's business ethics policies, and c) compliance with the Contract Documents for Change Orders, invoices or claims submitted by the Construction Manager or Subcontractors shall be made available. Such Records shall include but not be limited to: (hard copy, as well as computer readable data if it can be made available): time sheets; cancelled checks; subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, etc.); original estimates; estimating work sheets; correspondence; change order files (including documentation covering negotiated settlements); back-charge logs, written policies and procedures; purchase orders, leases, contracts, meeting minutes, notes, daily diaries, superintendent reports, drawings, receipts, vouchers and memoranda; and any and all other agreements and/or sources of information and matters that may pertain to Construction Manager’s compliance with the Contract Documents.

§ 6.11.2 Upon reasonable notice, the Records shall be open to inspection and subject to audit and/or reproduction during normal business working hours. An Owner’s representative or an outside representative engaged by Owner may perform such audits. The Owner or its designee may conduct such audits or inspections throughout the term of this Agreement for a period of six years after final payment or longer if required by Applicable Law.

§ 6.11.3 Construction Manager shall insert into its contracts with its first-tier Subcontractors and first-tier suppliers the obligation to comply with the provisions of this Section 6.11. Construction Manager shall similarly require its first-tier Subcontractors and first-tier suppliers to include in its subcontracts or purchase agreements a flow-down of these audit provisions. Construction Manager will cooperate fully and will cause related parties, and will endeavor to require all of Construction Manager’s first-tier Subcontractors and first-tier suppliers whose full payment at the Project is based upon a cost-of-the-work or time-and-materials basis, to cooperate fully in furnishing or in making available to Owner from time to time whenever requested in an expeditious manner any and all information, materials and data. Notwithstanding anything to the contrary, Owner agrees that the audit of any first-tier Subcontractor, first-tier supplier or any other Sub-subcontractor or sub-supplier at the Project shall be limited to a review of: (a) any portions of such entity’s payments that were made on a cost-of-the-work basis or a time-and-materials basis (specifically excluding the right to audit any lump sum portions of payment or the make-up of any agreed upon unit prices); or (b) the total amount and any costs of any nature related to any claims asserted by any such entity that have not been converted to a lump sum amount and included in a change order and that is over and above that entity’s original contract sum

§ 6.11.4 Owner’s authorized representative or designee shall have reasonable access to the Contractor's facilities, shall be allowed to interview all current or former employees to discuss matters pertinent to the performance of this Agreement and shall be provided adequate and appropriate work space, in order to conduct audits in compliance with this Section.

§ 6.11.5 If an audit inspection or examination in accordance with this Section discloses overpricing which arise out of the negligence (but not including mere unintentional mathematical errors) or intentional overbilling by the Construction Manager to the Owner in excess of one-half of one percent (.5%) of the total billings under an IPSO, the reasonable actual cost of the Owner's audit shall be reimbursed to the Owner by the Construction Manager; provided, however, that any such reimbursement for such audit shall not exceed the amount of established overbillings. Any adjustments and/or payments which must be made as a result of any such audit or inspection of the Construction Manager’s Applications for Payment, invoices and/or Records shall be made within a reasonable amount of time (not to exceed 60 days) from presentation of Owner's findings to Construction Manager.

§ 13.3 INELIGIBLE PERSONS
The Construction Manager hereby represents that neither it nor any of the Subcontractors working on this Project, their direct or beneficial owners, officers, directors, members, employees or any entity in which the Agreement has a direct or beneficial ownership interest is either now, or ever has been, an Ineligible Person, which is defined as an individual or entity who: (a) is currently excluded, debarred, suspended, or otherwise ineligible to participate in the Federal health care programs or in Federal procurement or no procurement programs; or (b) has been convicted of a criminal offense that falls within the ambit of 42 U.S.C. § 1320a-7(a), but has not yet been excluded, debarred, suspended, or otherwise declared ineligible. The Construction Manager shall notify Owner within three (3) calendar days of receiving notice that it or
any of the persons or entities identified above has become or will become an Ineligible Person, as defined above. In the event that Construction Manager becomes an Ineligible Person, this Agreement shall terminate upon the date Construction Manager becomes an Ineligible Person, notwithstanding any other provision of this Agreement. In the event that any of the persons or entities identified above becomes an Ineligible Person, Construction Manager agrees to remove and prevent any such person from performing services under this Agreement, and to inform Owner of the steps it has taken to do so. If the Owner determines in its discretion that Construction Manager’s continued relationship with any Ineligible Person materially impairs Construction Manager’s ability to satisfy the requirements of this Agreement, or impairs the Owner’s ability to bill for services that it provides, then Owner may terminate this Agreement immediately upon written notice to Construction Manager, notwithstanding any other provision of this Contract. The Construction Manager agrees to timely monitor all lists of Ineligible Persons during the course of this Contract. The Construction Manager shall not bill, and waives any payment for, any services rendered by a person or entity after it becomes an Ineligible Person and shall immediately return any funds for any such services that are paid by the Owner.

§ 13.4 NONDISCRIMINATION
In addition to any other requirement of law, Construction Manager shall not discriminate against any employee or applicant for employment because of race, color, national origin, age, sex or handicap in their performance of this Agreement, including, but not limited to, the following: employment upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training; including apprenticeships. Notices shall be posted in conspicuous places available for employees and applicants for employment setting forth the provisions of this nondiscrimination clause.

§ 13.5 COMPLIANCE
Construction Manager acknowledges that it will access and review Owner’s policies on detecting and preventing waste, fraud and abuse, which are available on Owner’s vendor webpage:
http://www.Froedtert.com/AboutUs/ForOurVendors/VendorInformation.htm; will comply with those policies in the performance of the Work for Owner and will make those policies available to its employees, agents and subcontractors.

f. General Conditions:
§ 5.3 SUBCONTRACTUAL RELATIONS
§ 5.3.1 By appropriate written agreement, the Contractor shall require each Subcontractor (and its respective Subcontractors), to the extent of the Work to be performed by a Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor’s Work, which the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by a Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to a Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with its Subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective Subcontractors.

§ 5.3.2 In addition to the foregoing, each such subcontract agreement shall, in any event: (a) require that such Work be performed in accordance with requirements of the Contract Documents; (b) waive all rights that the contracting parties may have had against one another or that the Subcontractor may have against the Owner for damages caused by fire or other perils covered by the property insurance described in the Contract Documents; (c) require a Subcontractor to carry and maintain liability insurance in accordance with the provisions of the Contract unless otherwise agreed to between the Owner and Contractor; (d) require a Subcontractor to furnish such insurance certificates as Owner may reasonably request; (e) require
§ 11.3.7 WAIVERS OF SUBROGATION
The Owner and Contractor waive all rights against (1) each other and any of their Subcontractors, Sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect’s consultants, separate contractors described in Article 6, if any, and any of their Subcontractors, Sub-subcontractors, agents and employees, for damages caused during the Project construction period by fire or other causes of loss to the extent THE DATE OF LOSS AND THE LOSS IS REPORTED DURING THE CONSTRUCTION PERIOD AND covered by THE BUILDER’S RISK property insurance obtained pursuant to this Section 11.3, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect’s consultants, separate contractors described in Article 6, if any, and the Subcontractors, Sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers, each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner’s property insurance shall be adjusted by the Owner and made payable to the Owner and any other insured, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate written agreements shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION
§ 12.2.2.1 In addition to the Contractor’s obligations under Section 3.5, if, within two years after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the two-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The two-year period for correction of Work shall be extended with respect to portions of Work first performed, or for correction of Work performed, after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work.

§ 13.8 DIVERSITY PLAN
§ 13.8.1 Contractor shall prepare for the Owner’s approval, in accordance with Owner’s “Supplier Diversity Program Policy,” a written plan as to how Contractor will (a) include the participation of minority-, women-and small veteran-owned business enterprises (MWVBE’s) on the Project, (b) identify, attract, qualify and build interest for the Project to local MWVBE’s, and (c) monitor monthly participation by MWVBE’s and provide monthly written reports to the Owner (a “Diversity Plan”). Contractor shall also implement and monitor the Diversity Plan for the Project and shall, if required by Owner, engage the services of a third-party consultant to assist with the administration of the Diversity Plan. Contractor shall provide the Diversity Plan to Owner for Owner’s approval within 15 days after execution of the Contract. The Owner’s “Supplier Diversity Program Policy” is available on Owner’s vendor webpage, http://www.froedtert.com/AboutUs/ForOurVendors/SupplierDiversityProgram.htm.

§ 13.9 MEDICARE REPORTING AND ACCESS REQUIREMENT
§ 13.9.1 Until the expiration of four years after the furnishing of the services pursuant to the Contract, Contractor shall make available, upon written request to the Secretary of the U.S. Department of Health and Social Services, or upon request to the Comptroller General, or any of their duly authorized representatives, this contract and any books, documents and records of Contractor that are necessary to certify the nature
and extent of the costs related to this contract, and, if Contractor carries out any of the duties of the Contract through a subcontract, with a value of or cost of $10,000 or more over a 12-month period, with a related organization or individual, until the expiration of four years after the furnishing of such services pursuant to such subcontract, the related organization shall make available, upon written request of the Secretary or authorized representatives, the subcontract and any books, documents and records of such organization that are necessary to verify the nature and extent of such costs. (This Section shall be of no force or effect if not required by law.)

§ 13.10 COMPLIANCE/STANDARDS AND MANNER OF PERFORMANCE

§ 13.10.1 Contractor warrants and represents that all Services will be provided in accordance with generally accepted professional standards; in compliance with applicable state and federal laws and regulations, including without limitation the Health Insurance Portability and Accountability Act of 1996 (“HIPAA”), the False Claims Act and state laws pertaining to false claims and statements and, to the extent applicable, with the requirements of The Joint Commission, Department of Health and Human Services, the Centers for Medicare and Medicaid Services, and any other federal, state or local government agency; and consistent with the terms of the Contract. Contractor acknowledges and agrees that it will access and review Owner's policies for detecting and preventing waste, fraud and abuse, which are available on Owner’s vendor webpage, http://www.froedtert.com/AboutUs/ForOurVendors/VendorInformation.htm; will comply with those policies in the performance of Services for Owner; and will make those policies available to its employees and agents.

§ 13.11 LICENSURE/CERTIFICATION

§ 13.11.1 Contractor warrants and represents that all of its personnel performing Services under the Contract who are required to be licensed or certified in order to perform such Services shall be appropriately licensed and certified by the State of Wisconsin or any relevant subdivisions thereof and Contractor agrees to provide current copies of all licenses and certifications upon request during the term of the Contract.

§ 13.12 OSHA COMPLIANCE

§ 13.12.1 Contractor agrees to take such safety precautions as are customary in the health care industry and specifically agrees to comply with all aspects of the Occupational Safety Health Administration Regulations and Standards, including but not limited to, rules pertaining to blood borne pathogens and hazardous communication, and to cooperate fully with Owner in enforcing such standards and regulations for all services performed on Owner’s premises. Accordingly, Contractor acknowledges independent responsibility for training and vaccinating all of its employees, independent contractors and other agents, including but not limited to training in the use of appropriate personal protective equipment and complying with the engineering and work practice controls and post-exposure evaluation and follow up procedures established by Owner, that relate to the occupational exposure to blood or other potentially infectious materials.

§ 13.13 DISCOUNTS

§ 13.13.1 Owner may need to report rebates and discounts as a part of its cost for purposes of federal and/or state healthcare programs, including for purposes of 42 C.F.R. § 1001.952(h). Contractor agrees to provide Owner with supporting information and reports, to the extent reasonably requested by Owner, to assist Owner in preparing the cost reports that it is obligated to submit.

2. The Subcontract Standard Terms and Conditions are further modified as follows:

a. DISCOUNTS, REBATES AND REFUNDS - Pursuant to § 6.3.1 of the Agreement between Owner and Mortenson, cash discounts obtained on payments made by the Subcontractor shall accrue to the Owner if (1) before making the payment, the Subcontractor included them in an Application for Payment and received payment therefore from the Owner (through Mortenson), or (2) the Owner (through Mortenson) has deposited funds with the Subcontractor with which to make payments; otherwise, cash discounts shall accrue to the Subcontractor. Trade discounts, rebates, refunds and amounts received from sales of surplus materials and equipment shall accrue to the Owner, and the Subcontractor shall make provisions so that they can be secured.

b. Pursuant to § 6.3.2 of the Agreement between Owner and Mortenson, amounts which accrue to the Owner in accordance with the provisions in the preceding paragraph, shall be credited to the Owner (through Mortenson) as a deduction from the Cost of the Work.
c. ACCOUNTING RECORDS – Pursuant to § 6.4.1 of the Agreement between Owner and Mortenson, the Subcontractor shall keep full and detailed accounts and exercise such controls as may be necessary for proper financial management under this Contract; the accounting and control systems shall be satisfactory to Mortenson and the Owner. Mortenson, the Owner and their collective accountants shall be afforded access to the Subcontractor's records, books, correspondence, instructions, drawings, receipts, subcontracts, purchase orders, vouchers, memoranda and other data relating to this Project, and the Subcontractor shall preserve these for a period of three years after final payment, or for such longer period as may be required by law.

d. Article 3 of the Standard Terms and Conditions is deleted and replaced with the following:

> For the full and satisfactory performance of the Agreement, in compliance with the provisions of this Agreement, Subcontractor shall be paid the Cost of the Work plus the Subcontractor's Fee as defined in Exhibit B to this Agreement. The sum of Subcontractor’s Cost of the Work and the Subcontractor’s Fee is guaranteed by Subcontractor not to exceed the Subcontractor's Guaranteed Maximum Price, subject to additions and deductions by changes in the Work as provided in this Agreement. The Guaranteed Maximum Price established by Subcontractor for its Work may be changed only in accordance with the provisions of this Agreement.

e. Replace the term “Subcontract Price” with “Guaranteed Maximum Price” in the following locations of the Standard Terms and Conditions:

> Article 4, Article 5, Article 7, Article 12, Article 14, Article 18.

f. Insert the following language at the end of Paragraph 7.2 of the Subcontract Standard Terms and Conditions with the following:

> Each Application for Payment shall be based upon the most recent schedule of values submitted by the Subcontractor in accordance with this Agreement. The schedule of values shall allocate Subcontractor's Guaranteed Maximum Price among the various portions of the Work, except that the Subcontractor's Fee shall be shown as a single separate item. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy and the Cost of the Work as Mortenson may require. This schedule, unless objected to by Mortenson, shall be used as a basis for reviewing the Subcontractor's Applications for Payment.

g. Insert the following language at the end of Paragraph 7.3 of the Subcontract Standard Terms and Conditions with the following:

> Not later than the 20th day of each month, Subcontractor shall submit its application for payment on forms provided by Mortenson. With each Application for Payment, the Subcontractor shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached and any other evidence required by the Owner or Mortenson to demonstrate that cash disbursements already made by the Subcontractor on account of the Cost of the Work equal or exceed (1) progress payments already received by the Subcontractor; less (2) that portion of those payments attributable to the Subcontractor's Fee; plus (3) payrolls for the period covered by the present Application for Payment.

h. Replace Subparagraph 12.4.2 of the Subcontract Standard Terms and Conditions with the following:

> In calculating adjustments to the Guaranteed Maximum Price, the terms "cost" and "costs" as used in this Article 12 shall mean the Cost of the Work as defined in Exhibit B of this Agreement, and the term "allowance for overhead, supervision and profit" shall mean the Subcontractor's Fee as defined in Subparagraph 1.1.2 of Exhibit B of this Agreement. Notwithstanding the foregoing, the maximum aggregate allowance payable to Subcontractor and its subcontractors shall not exceed the lesser of (a) 15% or (b) the mark-up permitted in the Contract Documents for changed or extra Work less Mortenson's mark-up on such Work.
i. Insert the following language at the beginning of Paragraph 15.1 of the Subcontract Standard Terms and Conditions with the following:

Prior to execution by both parties of the Guaranteed Maximum Price Change Order establishing the Guaranteed Maximum Price, Mortenson may terminate this Agreement at any time without cause.
3. **Subcontractor agrees to comply with the following Project site work rules and working conditions:**

   a. Subcontractor specifically acknowledges that all changes shall be valid only if signed by Mortenson’s Project Manager. Signatures from any other Mortenson team member shall be to validate completion of work only.
   
   b. Subcontractor understands that this project is Tobacco Free and its employees shall comply at all times. This includes the entire Froedtert Health campus.
   
   c. Subcontractor acknowledges that all employees must obtain an identification badge from Froedtert Security department. Badges must be worn at all times per Froedtert policy.
   
   d. Working hours for building trades shall be from 6:00 a.m. to 2:30 p.m., Monday through Friday unless otherwise directed by Mortenson or overtime is required to maintain project schedule.
   
   e. Subcontractor understands that parking will not be available for contractors on-site. All contractors are responsible for their own parking costs. Subcontractor employees are required to park at the Wisconsin Lutheran College Athletic Complex, Raabe Stadium, Neumann Family Fields, Warrior Field. A shuttle service will be provided during the following hours Monday-Friday: From Raabe Stadium (Parking Lot), Times: 0510, 0540, 0610 and 0640: From Froedtert, Times: 1440, 1510, 1540 and 1610. Parking on the streets and in the neighborhoods adjacent to the MRMC ground is prohibited.
   
   f. Subcontractor shall coordinate all deliveries to the site with Mortenson and understands that deliveries are required to be during off-peak hours and sized accordingly to fit within the existing elevators. Peak hours are defined to be 8:00 a.m. to 5:00 p.m. All costs associated with, unloading, traffic control, off-peak delivery, including overtime, are included in the subcontract price. All deliveries will be to the project site F.O.B.
   
   g. Subcontractors are responsible for their own flagging, traffic control, and street use/closure permits as required for their Work.
   
   h. Subcontractor will need to arrange for off-site storage of material and equipment. Current project extents will not allow for extended storage of any items within one week of delivery. Unused items will be removed from the project extents, at the subcontractor cost, if unused or unattended for longer than one week.
   
   i. All materials must be stored on moveable cards/racks or provide adequate amount of pallet jacks for things such as drywall, ceiling tile, carpet tile. No material is to be stored on the floor unless otherwise approved by Mortenson.
   
   j. GC/CM encourages the practice of kitting and labeling material per work area, in lieu of stockpiled material.
   
   k. Subcontractor specifically includes supplemental hoisting and handling equipment as necessary to complete the Work.
   
   l. All delivery personnel shall abide by Mortenson project safety requirements including but not limited to the wearing of hardhats, safety glasses, work boots, long pants, shirts with sleeves and a high-visibility vest when outside of the delivery vehicle.
   
   m. Subcontractor shall be responsible to ensure that access and egress routes are kept clear and passable at all times, and work must be arranged to permit immediate access by fire fighting equipment. This includes but is not limited to maintaining access to the area around fire hydrants and designated active standpipes at all times.
   
   n. Subcontractors shall remove snow and ice for the protection and execution of their work.
   
   o. Temporary Barricades. Subcontractor responsible for creating the hazard at perimeter floor slabs, shaft openings and openings at roof (i.e. steel, concrete and shoring subcontractor) shall furnish and install all necessary temporary barricades
until such time as they are removed to install other work. Replacement and maintenance of these barricades is by the subcontractor removing or damaging same. Upon completion of the roof structure, all other protection and safety barricades, devices, covers, etc., including all roof openings, shall be provided by each Subcontractor as it relates to the safe conduct of its work.

p. Site Fence & Security. Mortenson shall provide and maintain the temporary site fence and/or secure entrance to the project site. If Subcontractor removes a portion of the perimeter protection to perform work, Subcontractor shall replace fence to its original condition.

q. Subcontractor shall provide all required wash stations and drinking water facilities for its employees.

r. Subcontractor shall provide own source of water if required for their scope of work.

s. Subcontractor acknowledges that there will be limited 120-volt power available in selected locations determined by Mortenson. Task lighting, extension cords, light bulbs, and other means for power distribution and lighting is subcontractor’s responsibility.

t. All temp power cords and extension cords will be hung up off the floor. Mortenson will provide a temp power plan and hooks in order to hang cords.

u. All temporary lighting shall be LED and hardwired. The use of halogen lighting and any lighting plugged into turtles, outlets, etc. is not allowed.

v. Temporary Heating. Heating requirements during construction are divided into two classes:

a) All heating required during construction period prior to enclosure of building, classified as “Cold Weather Protection”. Such heat shall be furnished by Subcontractor requiring it. Use heating units of types approved by Architect and/or Mortenson and conforming to safety codes. Keep equipment and surroundings in a clean and safe condition.

b) Building shall be considered as enclosed when it has such protection at doorways, windows, and other openings which provide a reasonable heat retention. After enclosure, the HVAC Subcontractor shall provide temporary heating until such time as permanent HVAC systems are operable.

c) HVAC and Electrical Subcontractors shall expedite completion of permanent heating and cooling systems for use during construction period.

w. Should the Subcontractor use Mortenson equipment, such as tools, scaffold, ladders, hoisting equipment, etc., they shall assume the liability for damage or injury resulting from use of such equipment by their personnel. A waiver shall be signed and executed in writing with Mortenson’s jobsite personnel prior to any use. Major equipment owned or leased by Mortenson may be made available for rental to Subcontractors with the approval of the Project Superintendent. Rental rates for equipment shall be agreed upon in writing with Mortenson’s jobsite personnel prior to its use.

x. In consideration of the willingness of Mortenson to allow the Subcontractor and its employees to use Mortenson’s equipment, Subcontractor, through its authorized undersigned representative, hereby agrees:

a) To waive all claims for the loss or damage to Subcontractor’s property arising out of or resulting from the use of Mortenson’s equipment by Subcontractor; and

b) To indemnify and hold Mortenson harmless against all claims, damages and losses (including without limitation, legal fees and disbursements) for injury to persons or damage to property arising out of or resulting from Subcontractor’s use of Mortenson’s equipment.

y. Mortenson shall furnish fire extinguishers in accordance with OSHA requirements. All Subcontractors shall furnish ABC fire extinguishers at their gang boxes and hot work areas.

z. Subcontractor shall exercise extreme care to maintain and exercise fire safety precautions. This shall include providing sufficient fire fighting devices, watchmen, standby helpers or other precautions during construction, in use of temporary heat, welding, brazing, sweating, testing or other phases of work.
aa. Subcontractor, on a daily basis, shall clean all streets, areas, hallways, and storage spaces and/or sidewalks dirtied as a result of its operations.

bb. Clean-up. Each Subcontractor shall:
   a) Allocate last 30 minutes of the day to cleaning work areas (all workers).
   b) Deposit debris in dumpsters designated by Mortenson after first reducing such debris to minimum volume, e.g., all cardboard boxes are to be opened and flattened, all dunnage to be disassembled, etc.
   c) Comply with recycling per the specifications and State and Federal laws and codes. Recycled materials shall be separated by the Subcontractor and deposited in receptacles designated by Mortenson.
   d) Provide one laborer for the sole purpose of clean-up of areas as directed by Mortenson for a period of four (4) hours per week for the duration the Subcontractor is performing work on the project site. For contractors working over 400 labor hours per week, provide an additional four (4) hours of labor for each additional 400 labor hours. This requirement shall not replace the Subcontractor’s responsibility to clean-up after its own operations.
   e) Remove from the site waste materials provided by the Subcontractor that could be considered hazardous material.
   f) Remove from the site waste materials of suitable size and shape or weight that make use of the provided dumpster type box unreasonable.
   g) Subcontractor specifically includes required sweeping compound, brooms, shovels and gondolas/trash carts to perform daily clean-up.
   h) All cut stations deemed necessary by Trade Contractor are required to have a trash can so that no debris hits the floor and all material can be hauled off.
   i) Contractor agrees to weekly joint project inspection with the GC/CM of all work areas to evaluate project cleanliness and adherence to agreed upon housekeeping standards.
   j) Should any Contractor fail to comply with project clean-up requirements, such clean-up shall be performed by Mortenson in the most expeditious manner available and the cost thereof shall be charged back to the negligent party.

cc. Subcontractor shall provide dust control as required to minimize impact on adjacent areas and spaces

dd. Subcontractor specifically includes fans to facilitate air circulation as required to complete their work within the scheduled durations.

ee. Subcontractor shall be responsible for repairs to existing streets and sidewalks damaged as a result of its operations.

ff. Subcontractor will be responsible for final clean up of the items installed by the Subcontractor. All equipment provided by the Subcontractor will be wiped down to a dust free condition and shall only use cleaning materials compatible with the surface being cleaned as recommended by the manufacturer of the material or equipment.

gg. Subcontractor shall include all protection for equipment and material (installed or stored) until the Work has been punch-listed and accepted by the Owner and Mortenson. Subcontractor specifically agrees to protect ladders and lifts on finished floors and around finished walls and surfaces. This includes, but is not limited to setting down cardboard/masonite and wrapping legs of ladders.

hh. Subcontractor is fully responsible for meeting all building codes that apply to this project even if the Contract Documents do not reference them.

ii. Subcontractor specifically agrees there will be no price escalation during the project.

jj. Subcontractor specifically agrees to include all state and local fees, permits, delivery charges, inspections and testing necessary for a complete installation.

kk. Subcontractor agrees to be responsible for coordination with all related trades.

ll. Subcontractor shall be responsible for all hard copies of Construction Documents and updates as needed. Mortenson will only distribute electronic files.

mm. Subcontractor includes premium time, mobilizations, overtime, weekend and shift work to support all activities included with this work scope in accordance with the construction schedule herein.

nn. Subcontractor is responsible for all hired sub-contractors that have been taken on to
perform the Work associated with their contract. Subcontractor is responsible for an on-site presence at all times when any work associated with their subcontract is being undertaken. Subcontractor understands there shall be one controlling contractor with a single point of contact provided.

oo. Subcontractor to protect adjacent surfaces from work being performed, including Subcontractor's own work, adjacent new work, and adjacent existing work.

pp. Subcontractor specifically agrees to accelerate or expedite the completion of mock-ups identified to become the representative standard of quality for this project.

qq. All layout and elevation control must be from 2 benchmarks and 2 sets of intersecting grid lines. Layout to be completed by a Total Station when the conditions allow, and referenced to the BIM Coordinated Model.

rr. Subcontractor includes field verification of existing conditions prior to ordering materials. Subcontractor shall carefully examine the existing field conditions that may affect its Work and shall promptly notify Mortenson in writing of any deficiencies, discrepancies, ambiguities or errors before proceeding with the affected Work.

ss. Subcontractor shall review the critical dimensions and elevations of its work and verify the previous work as to its relationship to Subcontractor’s work. Subcontractor shall promptly submit a written statement to Mortenson/WELBRO noting any discrepancies or unacceptable conditions as it relates to Subcontractor’s work. Do not attach to or cover any material that is not properly furnished and installed.

tt. Subcontractor includes any backing, blocking or additional supports required for its Work if not shown specifically on the plans.

uu. Subcontractor specifically agrees to utilize gas or electric welders, whichever is required due to project conditions and as deemed necessary by Mortenson.

vv. Subcontractor will provide all saw cutting or coring required for this scope.

ww. Subcontractor acknowledges that the warranty periods as well as extended warranties will commence at Substantial Completion; included are any costs associated with covering the warranties from equipment startup to support construction and testing, and the time that Substantial Completion is issued. No warranty will end prior to the expiration of one-year after Substantial Completion is issued. Warranties extended beyond one year shall extend to their designated duration after Substantial Completion is issued.

xx. Any use of the permanent building systems or equipment prior to their final turn-over and acceptance by the Owner in no way relieves Subcontractor of any guarantees on equipment. This specifically includes use by the Owner prior to Substantial Completion. Prior to final turn-over, any systems which have been used must be properly cleaned to the appropriate clean protocol and/or refurbished at the proper protocol level as required to maintain equipment manufacturer’s warranties. Please note this will also include light ballasts.

yy. Subcontractor recognizes that the project will be using “InfoCenter” to manage the warranty process. The Subcontractor agrees to use this program for all warranty issues. Training will be provided by Mortenson.

zz. Subcontractor acknowledges their estimating and billing efforts will be required to align with the tax segregation needs of the Owner. Additional breakouts and accounting efforts to provide the Owner with the correct and accurate information shall be included.

aaa. Subcontractor further agrees to participate in collaborative scheduling meetings with Mortenson to detail work scope activities.

bbb. Mortenson shall periodically update the schedule and display same at the jobsite. Each Subcontractor/Subcontractor shall be responsible to familiarize itself with the schedule and how it will affect or modify its operations, including its coordination with the activities of other Subcontractor/Subcontractors. Subcontractor/Subcontractors shall notify Mortenson within five (5) days of any inability to comply with the schedule. Otherwise, the revised schedule shall be deemed accepted by all parties and becomes the schedule for the Subcontractor/Subcontractor.

ccc. Schedule Coordination via Last Planner System

a) This project will utilize the Last Planner System construction principals in planning
and implementation of the Work. This will include a milestone schedule, collaboratively created phase schedule, "make-ready" look-ahead plans, weekly work plans, and a method for measuring, recording, and improving planning reliability.

b) Trade partner and their appropriate sub tiers shall participate in Pull Planning sessions with each new phase of work with the purpose of creating a collaborative phase schedule and identifying constraints for each activity of work. Individuals who understand how the work will be performed shall be directly involved in the planning process.

c) The schedule developed in these Pull Planning sessions will be used to create the 6-week look ahead schedule. The look-ahead schedule will be reviewed at the weekly coordination meeting to identify constraints (issues that would prevent the work from being performed as planned). It is every contractor's responsibility to actively identify and resolve constraints prior to the Work.

d) Trade Contractor specifically agrees to attend the GC/CM's weekly and daily Trade Contractor Coordination Meetings for the duration the Trade Contractor or its employees, sub-Trade Contractors, suppliers, vendors, or agents are onsite. Trade Contractors Project Manager shall attend a minimum of 2 meetings per month as requested by the GCM. Trade Contractor shall submit, electronically, its 1-week look ahead planner to the Mortenson representative 24 hours in advance of that meeting.

e) Every contractor shall report variations from the plan for tracking planning reliability and assessing root cause of variations for purposes of continuously improving planning reliability.

1. Subcontractor shall respond within 24 hours to all requests by Mortenson to increase manpower when an activity is determined by Mortenson to be behind the project schedule.

2. Subcontractor shall be prepared to assist the team in pursuing creative approaches to reduce the total cost of Architectural/Construction Services.

3. Subcontractor shall attend Mortenson's Weekly Contractor's Coordination Meetings for two weeks prior to their start of work and for the duration of the project while the Subcontractor is on site.

4. Subcontractor includes Foreman attendance at daily Plan of the Day (POD) meetings.

h) Subcontractor understands that the Owner has required utilization of subcontractors from the local Milwaukee community, Emerging Businesses and Disadvantaged/Minority firms.

i) Subcontractor shall furnish an insurance certificate to Mortenson no later than one (1) week prior to commencing work at the job-site. The insurance certificate shall be written on an ACORD Form 2S5, no substitutes will be accepted.

j) Subcontractor acknowledges that Mortenson has the authority to require the removal of any employee of the Subcontractor from the job-site. Removal from the site may be for repeated (2) failures to observe safe work practices or a single blatant safety violation or any other reason deemed significant by Mortenson.

k) Subcontractor shall utilize the Mortenson designated, web-based, document control software package, Procore, for exchanges such as: submittals, RFIs, RFPs, quality inspections, non-compliance reports. Alternatively if the web-based system is not implemented, Subcontractor acknowledges that the Project may utilize a web-based submittal process. Subcontractor will be required at a minimum to provide to Mortenson all submittals into an .pdf document format or to upload the submittal document directly to the submittal website location. All electronic submittals to include Subcontractors review and approval stamp prior to submission to Mortenson. Subcontractor acknowledges a limited number of hard copies of the submittal to be provided upon the request of Mortenson. Format for electronic copies of project documentation shall be .pdf unless noted otherwise. Any documents not available in an electronic format shall be scanned, saved in .pdf format by Subcontractor. ALL PDF'S SHALL BE SUBMITTED IN UNSECURED FORMAT.

1. Subcontractor's authored Requests For Information (RFI's) are to be provided with at
least one proposed, cost-effective solution; a cost impact (with order of magnitude for costs) of ADD, DEDUCT or NO COST; and an identified "drop-dead" date for required response, without impacting the schedule. In typical cases, RFI's are to be discussed with Mortenson and/or the Engineer prior to submission, so as to allow the RFI to be confirming direction, as was previously discussed with the Engineer and/or Mortenson.

Within ten days after award of Contract/LOI, the Subcontractor shall submit copies of the following documents. No work shall be commenced until these documents have been received and approved.

a) Insurance forms  
b) Bonds (if applicable)  
c) Progress Schedule  
d) Schedule of Values  
e) Major Material Suppliers or third-tier Subcontractors  
f) Signed Safety Statement  
g) Site Specific Safety Plan  
h) OSHA required MSDS  
i) Itemized list of equipment  
j) M/WBE participation and contracting plan

Back charges will only be considered valid if they are mutually agreed upon ahead of time. During the course of the project, it is realized that some unproductive time will be experienced. If either party believes that the other party is causing an excessive amount of unproductive time, methods for improvement are to be discussed and solutions implemented. Back charges, should they occur, will be resolved at a direct cost plus 5% total mark-up.

IN WITNESS WHEREOF, Subcontractor and Mortenson herein acknowledge these Supplementary Terms and Conditions as set forth above.

PAYNE & DOLAN, INC.  
M. A. MORTENSON COMPANY

By __________________________  
By __________________________

Ashley Frank  

Its __________________________  
Its Project Manager _________________________
Exhibit E – Safety Program Requirements

Attached to and forming a part of the Agreement between Payne & Dolan, Inc. and Mortenson, effective as of October 2, 2020.

At Subcontractor’s cost, Subcontractor shall have a safety program for the Work that includes the safety requirements contained in the below published safety programs, all of which are incorporated herein by reference:

- Mortenson Mobile Crane Training Manual
- Mortenson Forklift Training Program Manual
- Mortenson Disruption Avoidance Training Manual

Subcontractor agrees to perform the safety obligations in the above referenced manuals and agrees to perform such obligations with respect to its Work in the same manner that the manual references safety steps to be taken by, or the safety obligations of, Mortenson. In addition, Subcontractor agrees to abide by any additional safety programs at the Project which are made available to Subcontractor. Subcontractor agrees that it shall obligate its subcontractors and suppliers to adhere to the requirements of Article 11 of the Subcontract Agreement Standard Terms and Conditions and this Exhibit E.

I. Requirements On All Mortenson Projects

A. Zero Injury Manual

1. To the extent the Zero Injury Manual imposes requirements and policies applicable to Mortenson employees, then Subcontractor agrees to require its employees to adhere the same requirements of such policies. Subcontractor’s attention is drawn to the below listed requirements detailed in the Zero Injury Manual. Identification by Mortenson of these requirements shall in no way diminish or otherwise limit application of the above listed manuals to Subcontractor’s Work or Article 1.3 of the Subcontract Agreement Standard Terms and Conditions.

   a) Subcontractor shall provide a written site-specific safety program related to the Work, as detailed in Section 1 of the Zero Injury Manual, before the start of Work which shall address each item contained in Section 1 of the Zero Injury Manual.

   b) Subcontractor shall provide a written job hazard analysis (“JHA”), as detailed in Section 12 of the Zero Injury Manual, for each portion of the Work.

   c) Subcontractor shall adhere to the Hazard Communication program at the Project, the requirements for which are detailed in Section 25 of the Zero Injury Manual.
d) Subcontractor shall complete daily written pre-task plans for each item of Work, or more frequently as conditions at the Project change or require. The pre-task planning process is detailed in Section 12 of the Zero Injury Manual.

e) Subcontractor shall ensure its employees adhere to the hand protection requirements detailed in Section 27B of the Zero Injury Manual while performing work at the Project.

f) Subcontractor shall promptly conduct post-accident investigations for any accidents that occur during completion of the Work and investigations of near-miss incidents related to the Work. In this provision, an accident is any incident that results in any injury to an employee of Subcontractor or any property damage caused by actions performed during completion of the Work. A near-miss is any incident that has all the attributes of an accident but, by mere chance, injury to a Subcontractor employee or property damage was avoided. Subcontractor’s investigations shall be consistent with the requirements of Section 4 of the Zero Injury Manual and a written report on the investigation shall be provided to Mortenson.

g) All Subcontractor employees are required to wear eye protection, a high-visibility vest, long pants, a sturdy working boot and a hard hat at all times while at the Project. Section 27A and 27B of the Zero Injury Manual addresses additional requirements for Subcontractor’s employees regarding personal protective equipment.

h) Pursuant to the requirements Section 36 of the Zero Injury Manual, Subcontractor shall (i) conduct a risk assessment of expected onsite activities related to falling objects; and (ii) develop a site specific falling object prevention and protection plan. Further requirements on protecting against falling objects are contained in Sections 36 the Zero Injury Manual.

i) Subcontractor acknowledges the requirement for positive fall restraint and fall protection for all fall hazards over six feet. Subcontractor acknowledges the requirement for positive fall restraint for its personnel in aerial lifts. Further details on fall protection that govern the Work are contained in Sections 10 and 11 of the Zero Injury Manual.

B. Subcontractor On-Site Safety Professionals

1. Subcontractor shall provide on-site safety professionals at the Project if required pursuant to Section 3 of the Zero Injury Manual.

2. Unless a more stringent requirement for use of an on-site safety professional is listed below in Section II (if applicable), Section 3 of the Zero Injury Manual requires that if Subcontractor, at any time, has 50 craft workers or more on the project site (including the craft workers of any of its subcontractors and suppliers of any tier), then Subcontractor must have a project-specific safety professional on site part-time when the workforce is below 50 craft workers and full-time when the workforce reaches or exceeds 50 workers. Additional Subcontractor safety personnel are also required on a proportional basis if the number of craft workers reaches or exceeds 60 craft workers.

3. Refer to Section 3 of the Zero Injury Manual for additional details.

C. Return to Work/Injury Case Management Plan
Subcontractor shall submit to Mortenson a written site-specific return to work/injury case management plan which shall detail Subcontractor’s goals and policies on returning employees to work following an injury. Subcontractor’s policy may include offering light duty or transitional work following an injury (if such work or duty is possible given the nature of the injury). Mortenson may object to the plan if, in its reasonable opinion, the plan does not establish reasonable actions or goals on returning employees to work or light duty following an injury. Submission of the plan to Mortenson by Subcontractor shall not be deemed to be agreement or assent by Mortenson to any portion or part of the plan.

D. Written Silica Protection Policy

Subcontractor shall implement a silica protection plan for the Work which shall meet or exceed all laws and regulations (including applicable OSHA regulations) related to the protection of its employees against exposure to silica levels in excess of levels permitted by laws and regulations (including applicable OSHA regulations).

E. Drug- and Alcohol-Free Workplace

1. Subcontractor agrees to implement and maintain a drug- and alcohol-free workplace program at the Project applicable to all Subcontractor employees, subcontractors and suppliers performing Work at the Project site. Subject to applicable law and collective bargaining agreements, Subcontractor’s program shall be no less stringent that Mortenson’s Drug- and Alcohol-Free Workplace Policy, and shall comply with any additional requirements of Owner or Mortenson for the Project.

2. Specifically, subject to applicable law and collective bargaining agreements, Subcontractor’s drug- and alcohol-free workplace program shall provide that:

   - Subcontractor’s employees shall not perform Work or be present at the Project site while under the influence of drugs, alcohol or an intoxicating substance.
   - Subcontractor’s employees shall not use or possess any illegal drugs or alcohol at the Project site.
   - Subcontractor shall comply with U.S. Department of Transportation (“DOT”) drug and alcohol regulations with respect to all employees covered by such DOT regulations.

3. Subcontractor’s drug- and alcohol-free workplace program shall include, subject to applicable law and collective bargaining agreements, pre-employment testing, testing following an accident or reasonably significant near miss, reasonable suspicion testing, and unannounced or random testing. Subcontractor shall immediately investigate any allegation of a Subcontractor employee performing work while under the influence of drugs, alcohol or an intoxicating substance, or using or possessing alcohol or an illegal drug at the Project site, and shall take all appropriate precautions to ensure the safe performance of the work during such investigation.

4. Subcontractor shall immediately remove from the Project site any Subcontractor employee who is found to be in violation of Subcontractor’s drug- and alcohol-free workplace program, this Exhibit E, or other requirements. The return of such employee to the Project site shall be subject to compliance with the requirements a “last chance” program and any Owner requirements or approvals.
5. In this Section E, terms are defined as follows (even if not capitalized):

   a) **Drug** means: A controlled substance, as defined in Schedules I through V of Section 202 of the Controlled Substances Act, 21 U.S.C. § 812, including cocaine, opiates, marijuana, amphetamines, phencyclidine (PCP), barbiturates, benzodiazepines, propoxyphene, methadone and methaqualone.

   b) **Illegal Drug** means any drug (including synthetic drugs) the use or possession of which is illegal under federal, state, or local law, as well as prescription medication which is used in a manner inconsistent with the prescription or for which the individual does not have a valid prescription issued by a licensed health care professional. Because federal law does not recognize state law exceptions for legal recreational or medical use of marijuana, the term “illegal drug” includes marijuana, even if state law allows such recreational or medical use.

   c) **Intoxicating substance** means: Drug(s) or alcohol or any substance, the use of which, impairs work behavior or performance of work obligations at the Project in a manner to be unsafe.

   d) **Under the influence of drugs, alcohol or an intoxicating substance** means: (1) the presence of alcohol in the individual’s system that equals or exceeds a blood alcohol content of .04 percent; (2) presence of any detectable amount of an Illegal Drug or its metabolites demonstrated by a confirmed positive drug test result; (3) behavior, performance, appearance, speech, or bodily odors that lead a supervisor or manager to reasonably suspect that the team member is impaired by alcohol or an intoxicating substance, or is using alcohol or an intoxicating substance during working time or on Project.

   e) **Accident** means: An incident at the Project that involves: 1) personal injury to workers or others which necessitates treatment by a medical professional, or results in lost work time; or 2) damage to property at the Project. and in either case where there is a reasonable basis to believe drug or alcohol use could have contributed to the incident.

   f) **Reasonably significant near miss** means: An incident that has all the attributes of an accident but, except that no harm was caused to persons or property.

   g) **Reasonable suspicion** means: A basis for forming a belief based on specific facts and rational inferences drawn from those facts that lead a supervisor or manager to reasonably suspect that an employee is under the influence of drugs, alcohol or an intoxicating substance while at the Project or while performing the Work. Reasonable suspicion may be based on specific, contemporaneous, articulable observations by a Mortenson supervisor concerning the appearance, behavior, speech or body odors of a team member, and may include indications of the chronic and withdrawal effects of controlled substances.

F. **Training**

1. Subcontractor agrees that each of its employees at the Project or completing the Work shall attend three orientation training sessions provided by Mortenson (Orientation 1 [also known as first-day, first-hour which shall be completed before performing any work]...
at the Project], Orientation 2 and Orientation 3). Orientation 2 and Orientation 3 shall be completed as soon as reasonably practicable after Orientation 1 and as detailed in the Zero Injury Manual.

2. Additionally, Subcontractor agrees that all its superintendents, foremen and Project supervisors, including members of its leadership that are overseeing any part of the Work, shall attend Mortenson’s “Committed At The Top Zero Injury Program” training sessions.

3. Subcontractor shall conduct daily safety meetings or daily toolbox safety talks at the Project for all Subcontractor’s employees at the Project to discuss safely performing any specific items of Work anticipated during the day of the meeting and reminding employees to perform all Work in a safe manner.

G. **Safety Teams**

Subcontractor acknowledges that a project safety committee will be created at the Project. Subcontractor’s highest level employee who regularly works at the Project-site shall be a member of the committee and attend committee meetings.

H. **Safety Audits and Inspections**

Subcontractor shall conduct and document regular safety program audits and daily safety inspections to determine if the Work is being performed in a safe manner. The written results of such inspections must be submitted to Mortenson at least weekly.

I. **Stretch-and-Bend**

Subcontractor agrees and acknowledges that each of its employees at the Project (regardless as to position) shall participate in the daily Mortenson-led morning stretching program at the time established by Mortenson.

J. **Housekeeping**

Subcontractor shall create and submit to Mortenson a housekeeping management plan that addresses adequate and sufficient daily clean-up, material storage and electrical cord management.

K. **Use of Equipment**

A. Subcontractor shall permit only those of its employees qualified by training or experience to operate equipment and machinery. Subcontractor must train each of its affected employees in the manner required by applicable law and regulation.

B. All boom-type aerial work platforms used in performance of the Work or at the Project must be equipped with secondary anti-crush guarding that is provided by the Original Equipment Manufacturer (OEM) or approved by the OEM and installed by a qualified technician.

II. **Additional Project Requirements**
A. **Safety Incentive Program.** Subcontractor shall create a written recognition and reward program which shall encourage reporting of safety issues and near misses. The program shall not be implemented in a manner to discourage any Subcontractor employee from reporting any injury.

B. **Infection Control Requirements.** If requested by Mortenson, Subcontractor shall adhere to the infection control procedures established for the Project by Mortenson or Owner as detailed in writing to the Subcontractor prior to the start of Work.

C. **Safety Toe Boots.** Subcontractor shall require employees to wear safety-toe boots if such protective equipment is required for the task performed or identified as required in the JHA or site safety plan.

D. **Eye Protection.** All craft workers and team members must utilize shielded, foam-lined or sealed safety glasses 100% of the time while on site.

IN WITNESS WHEREOF, Subcontractor and Mortenson herein acknowledge this Exhibit E as set forth above.

PAYNE & DOLAN, INC.  
M. A. MORTENSON COMPANY

By ____________________________  
By ____________________________

Ashley Frank

Its ____________________________  
Its Project Manager ____________________________
Exhibit F – Collective Bargaining Agreements

Attached to and forming a part of the Agreement between Payne & Dolan, Inc. and Mortenson, effective as of October 2, 2020.

Subcontractor acknowledges that Mortenson is signatory to certain collective bargaining agreements with trade unions (the Unions) as listed below. Subcontractor further acknowledges that Mortenson is required by such agreements to perform all work that is within the scope and jurisdiction of the collective bargaining agreements, only with workers who are members of one or more of the Unions, including work performed at the Project site by subcontractors. Subcontractor agrees that to the extent the Work at the Project site falls within the scope and jurisdiction of one or more of the collective bargaining agreements, Subcontractor shall comply with and adhere to all of Mortenson’s obligations with respect to such agreements.

Mortenson is signatory to the following collective bargaining agreements:

[Milwaukee Example list]
1. **Carpenters** - Milwaukee & Southern Wisconsin District Council of Carpenters, United Brotherhood of Carpenters and Joiners of America

2. **Laborers** - Wisconsin laborers’ District Council of Laborers

3. **Operating Engineers** – International Union of Operating Engineers, Local 139 – Area 1 and Area 2

4. **Plasterers and Cement Masons** - Plasters and Cement Masons International Association, Local 599 Area 558

IN WITNESS WHEREOF, Subcontractor and Mortenson herein execute this Exhibit F to the Subcontract Agreement as set forth above.

PAYNE & DOLAN, INC. M. A. MORTENSON COMPANY

By ___________________________ By ___________________________

Ashley Frank

Its ___________________________ Its Project Manager ___________________________
The Quality Program Requirements set forth in this Exhibit F are designed to further the goals of performing the Work correctly the first time, planning and coordinating the Work, eliminating errors, eliminating rework, maintaining efficient trade flow, and avoiding unnecessary delays. Accordingly, the Quality Program Requirements necessarily require close coordination with Mortenson.

1) Subcontractor shall designate a quality representative (the “Quality Representative”) with responsibility to manage on behalf of Subcontractor all aspects of the quality process described in this Exhibit G.

2) Subcontractor shall participate in a preconstruction meeting with Mortenson at a time scheduled by Mortenson. The Quality Representative, among other Subcontractor personnel, shall attend the preconstruction meeting, as one of the purposes of the meeting will be to review the quality requirements for the Work under the Contract Documents.

3) A Definable Feature of the Work (sometimes referred to as a DFW) is defined as a task which is separate and distinct from other tasks, and has the same control requirements and work crews. For purposes of this Exhibit G, the Definable Features of the Work are:

4) Subcontractor shall, within 7 calendar days of execution of the Agreement (unless required earlier by the construction schedule), submit to Mortenson a site-specific Quality Management Plan covering all of the Work, including Work to be performed by subcontractors and suppliers at any tier to Subcontractor. The plan shall include the following:

   a) An organizational chart of Subcontractor personnel assigned to the Project with roles and responsibilities, including the identity of the Quality Representative.
   b) Identification of individuals responsible for performance of inspection of various aspects of the Work.
   c) The name, qualifications, duties and responsibilities of each person assigned to a quality control function.
   d) A description of subcontractor's procedure for ensuring that the most current drawing updates, specification updates, requests for information, changes to the Contract Documents, and requirements of approved shop drawings will be processed, tracked and communicated to both office and field team members and will be incorporated into the as-built documents.
   e) A log to identify and track all testing required by the Contract Documents and applicable codes.
   f) A complete list of closeout deliverables required under the Contract Documents, including operation and maintenance manuals, warranties, guarantees, and extra stock materials.
   g) Checklists for all inspections required by the Quality Management Plan.
If Mortenson provides comments on the Quality Management Plan, Subcontractor shall address Mortenson’s comment and resubmit the Quality Management Plan to Mortenson.

5) Subcontractor shall participate in a phase planning meeting with Mortenson and other subcontractors for the purpose of determining appropriate trade flow and further development of schedule details.

6) In collaboration with Mortenson, Subcontractor shall develop an integrated work plan for each Definable Feature of the Work describing how the Work (including Work performed by its subcontractors and suppliers at any tier to Subcontractor) will be installed. The integrated work plan shall outline requirements for the following:

   a) Safety
   b) Quality
   c) Site utilization and access
   d) Schedule and work sequences (including where the work will start and what direction the work will proceed)
   e) Manpower and other resources
   f) Utilities needed for performance of the Work
   g) Equipment needed for performance of the Work
   h) Establishing conformity of materials with the Contract Documents and approved shop drawings
   i) Material handling
   j) Industry standards, references and best practices
   k) Installation processes.

The integrated work plan for each Definable Feature of the Work shall be submitted to Mortenson at least one week prior to the Preparatory Meeting. If Mortenson provides comments on the integrated work plan, Subcontractor shall address Mortenson’s comments and resubmit the integrated work plan to Mortenson. Subcontractor shall train its installation crews on the content of the IWP and perform the Work in accordance with the IWP. If any modifications to the IWP are required as a result of changed or unforeseen conditions, a revised IWP shall be submitted to and reviewed with Mortenson prior to commencement of the Work affected by the changed or unforeseen conditions, unless otherwise directed by Mortenson in writing.

For each Definable Feature of the Work, Subcontractor shall participate in a pre-preparatory meeting and a preparatory meeting (the “Preparatory Meeting”) to be scheduled by Mortenson prior to commencement of the applicable Work. The Quality Representative and the foreman or superintendent directly responsible for the installation of the applicable Work shall participate in the pre-preparatory meeting and the Preparatory Meeting. The purpose of the Preparatory Meeting will be to review the following in order to determine whether the installation is ready to proceed:
a) requirements of the drawings and specifications;
b) verification that all submittals have been submitted and approved;
c) required inspections and testing;
d) the Integrated Work Plan;
e) status of completion of predecessor activities;
f) delivery status of required materials and availability of required labor; and
g) other matters related to the installation of the work.

7) Subcontractor shall schedule the preparation and submission of all submittals related to each Definable Feature of the Work to allow approval of such submittals prior to the Preparatory Meeting.

8) If during the Preparatory Meeting it is determined that Subcontractor is not ready to proceed with the installation of the DFW, Subcontractor shall participate in additional Preparatory Meetings until it is determined that Subcontractor is adequately prepared to commence with the applicable Work.

9) Subcontractor shall participate in and/or perform the following quality inspections of the work (which may be at the Project site or at another location), at a minimum:

a) An inspection of each mock up that may be required by the Subcontract or Contract Documents.

b) For each Definable Feature of the Work, an initial inspection (the "Initial Inspection") shall be conducted jointly by Mortenson and Subcontractor upon the completion of the installation of the first portion of the Work. The purpose of the Initial Inspection is to verify that the installation process is consistent with the requirements of the integrated work plan and that the work conforms to the Contract Documents. If the installation process is not consistent with the integrated work plan, Subcontractor shall modify its installation process to conform to the integrated work plan or appropriately modify its integrated work plan. If the Work does not conform to the requirements of the Contract Documents, Subcontractor shall correct the Work immediately and in all cases before performing any additional Work.

c) If any modifications are required to be made to the to the IWP as a result of the Initial Inspection, Subcontractor shall submit the modified plan to Mortenson for Mortenson’s review and comment prior to continuing with the installation.

d) Follow up inspections, to be performed by Subcontractor for each Definable Feature of Work as follows:
   i) An inspection upon receipt of each delivery of equipment or materials that will be incorporated into the Work to ensure that the equipment or materials conform to the requirements of the Contract Documents.
   ii) On-going inspections shall be performed periodically as the Work progresses, at least in definable areas determined by Mortenson (for example, by room, area, elevation, or other) or at a frequency determined by Mortenson.
   iii) Cover-up inspections, before any in-wall work is covered up and made inaccessible by the successor trades. Cover-up Inspections shall be conducted and all work identified as deficient shall be corrected before the Work is made inaccessible.
   iv) A pre-final inspection, when Subcontractor believes that all Work is complete.
v) A final inspection, after all non-conforming work previously identified has been corrected and Subcontractor believes the Work is complete, in order to verify that the Work is complete and acceptable.

e) For each inspection described above, Subcontractor shall use checklists and other quality control documents that may be required in the integrated work plan or the Contract Documents or that are jointly developed by Subcontractor and Mortenson.

10) Nothing in this Exhibit F shall be deemed to diminish in any way Subcontractor’s responsibility for its means and methods, the quality and safety of the Work, performance of the Work as required by the construction schedule, or Subcontractor’s compliance in all respects with the Contract Documents. Subcontractor retains sole responsibility for all such matters.

11) Subcontractor shall maintain at the Project site and make available to Mortenson upon request any industry references, standards, best practices, or installation guidelines that are referenced by the Contract Documents or that directly pertain to the installation or acceptance of the Work.

12) Subcontractor shall ensure that all tools and devices used for measuring installed Work are in good and operable condition and are precise enough to accurately measure the Work within specified tolerances. Measuring devices that are required to be calibrated shall be properly marked and the date of their calibration shall be displayed. Upon request by Mortenson, Subcontractor shall furnish documentation of calibration.

13) Subcontractor shall maintain current as-built drawings (and building information models if such models are used by Subcontractor) as the Work progresses, and shall, at any time upon request, make them available for review by Mortenson or submit them to Mortenson.

14) Unless they can demonstrate that they have already done so, the Quality Representative and all of Subcontractor’s foremen shall participate in Mortenson’s three-phase inspection training prior to the commencement of Work on site (or, if their involvement on the Project begins after commencement of the Work on site, within ___ weeks after their involvement with the Project begins).

15) In addition to the activities required above, the Quality Representative shall also:

[TBD]

IN WITNESS WHEREOF, Subcontractor and Mortenson herein acknowledge this Exhibit G as set forth above.

PAYNE & DOLAN, INC. M. A. MORTENSON COMPANY

By ___________________________ By ___________________________
Ashley Frank

Its ___________________________ Its Project Manager ________________________
Attached to and forming a part of the Agreement between Payne & Dolan, Inc. and Mortenson, effective as of October 2, 2020.

1. The following requirements for submission of electronic project documentation are in addition to any requirements set forth elsewhere in the contract documents and are part of the scope of work herein.

2. Format for electronic copies of project documentation shall be .pdf unless noted otherwise; either PDF Normal (searchable text) or Searchable Image PDF (converted text) - PDF Normal is the best and preferred format. Image Only PDF (scanned without searchable text) will NOT be accepted. Each individual document shall be provided as an individual electronic file and shall be submitted in Unsecured Format. Multiple page or section documents shall be fully book-marked and indexed to correspond appropriately with the document layout. All electronic files shall be submitted by CD with accompanying transmittal and posted to the designated FTP site unless directed otherwise by Mortenson.

3. Submittals
   i. In addition to any requirements called out in the project specifications, Subcontractor shall provide electronic copies of the following project documents for all portions of the work by Subcontractor. Documentation that is not available electronically or that includes handwritten notes shall be scanned, saved in a .pdf format by the Subcontractor and submitted.
      a) Operation and maintenance manuals (O&Ms)
      b) Manufacturer’s instructions (e.g. cleaning, repair)
      c) Product Information and cut sheets for permanently installed materials and components (e.g. plumbing fixtures, electrical fixtures, valves, sealants, expansion joints)
      d) Shop drawings for custom built equipment or equipment skids.
      e) MSDS Sheets for all materials and chemicals that remain after construction (e.g. fuels, lubricants, refrigerants, treatment chemicals, touch up paint).
      f) Wiring diagrams and sequences of operation for control systems.
   ii. Electronic operations and maintenance information should be submitted 120 days prior to substantial completion or as set forth in the project schedule.
      a) Electronic files shall be named as follows (TO BE DETERMINED)

4. Subcontractor Engineered and/or Designed Work
   i. Subcontractor shall provide electronic copies of all documentation for all engineered or designed work by the subcontractor with professional engineer’s stamp as required on appropriate documentation. Such documentation includes, but is not limited to;
      a) Final Design Calculations
      b) As-built Drawings and Specifications
      c) Component selection criteria and component information

5. Equipment Data Spreadsheet
i. Subcontractor shall completely fill out an electronic spreadsheet capturing pertinent data for all equipment furnished or installed as part of the scope of work herein, specifically including, but not limited to, mechanical, electrical, controls, plumbing, process, fire protection, fire alarm, security, and other facility equipment.

ii. **Equipment Data Sheet** shall be submitted in an Excel format provided by Mortenson.

### 6. Maintenance Activities & Frequency

i. Subcontractor shall provide Microsoft Excel spreadsheet filled out complete with all inspection, routine/periodic maintenance, preventative maintenance, and parts replacement activities, including recommended frequency for any equipment or element of work furnished or installed by the Subcontractor that requires such service, maintenance, inspection, etc.

ii. **Maintenance Tasking Sheet** shall be submitted in an Excel format provided by Mortenson.

### 7. As-Built Drawings

i. Subcontractor shall provide .pdf and CAD As-Built drawings to Mortenson prior to substantial completion. If necessary, Subcontractor is to provide a CD containing all As-Built drawings to Mortenson prior to final completion that includes any modifications and/or updates from prior submission. These submissions shall include an As-Built drawing manifest filled out by the Subcontractor in an Excel format provided by Mortenson.

ii. As-Built drawings must be submitted in .pdf format as specified in Section 2 above, and in CAD format interoperable with .dwg or other agreed upon format.

### 8. Final Start Up, Test and Balance, and Commissioning Reports

i. Subcontractor shall provide electronic copies of all start up, performance, test and balance and commissioning reports for any portion of the Work by the subcontractor. Reports shall be filled out complete and include the signatures of the highest necessary approving/witnessing authority having jurisdiction.

ii. Such documentation shall be submitted as required by the Contract Documents and may include, but is not limited to:

   a) Operational Test Reports
   b) Performance Test Reports
   c) Test and Balance Report
   d) Commissioning Report
   e) Vibration and/or Noise Tests
   f) Calibration and/or Alignment Reports

### 9. Certificates and Permits

i. Subcontractor shall provide electronic copies of all certificates and permits that are effective post-construction for any element of the Work installed by the subcontractor. Certificates and permits shall be filled out complete and include signature of the highest necessary certifying authority or authority having jurisdiction. Certificates and permits required to be electronically submitted are those required to be submitted by the Contract Documents, applicable codes, and/or the authority having jurisdiction and may include, but are not limited to:

   a) Manufacturers Installation certifications
b) Certificates of Compliance / Final Certifications  
c) Building Permits / Occupancy Permits  
d) Elevator Permits  
e) Generator Permits  
f) Emissions Permits  
10. Warranty Spreadsheet

i. In addition to individual electronic files of warranties required above, Subcontractor shall provide the warranty related information for all equipment and components furnished or installed as part of the scope of work herein. Such warranty information shall be submitted in an Excel format and may include;

a) Equipment or component Tag/ID number (e.g. AHU-02)  
b) Primary Equipment or component to which warranty applies (e.g. Air Handler)  
c) Description of specific piece of equipment under warranty/warranty identifier (e.g. motor)  
d) Component type (e.g. motor)  
e) Manufacturer and contact information  
f) Supplier and contact information  
g) Escalation procedures and contacts. All warranties to include a primary and secondary contact at a minimum. Identify preferred contact method for each level of escalation (name, phone, email)  
h) Emergency contact (name, phone, email)  
i) Installing contractor and contact information  
j) Warranty duration, commencement date and expiration date  
k) Warranty void or cautionary information  
l) Identify equipment that may be referred to in multiple ways (e.g., serial number vs. room & position)  

11. Insurance Certificates

i. Subcontractor shall provide electronic copies of all Insurance Certificates in effect after Substantial Completion and as required by the Contract Documents.  

IN WITNESS WHEREOF, Subcontractor and Mortenson herein execute this Exhibit I to the Subcontract Agreement as set forth above.

PAYNE & DOLAN, INC.                      M. A. MORTENSON COMPANY

By ___________________________________         By ______________________________

Ashley Frank

Its ___________________________________         Its Project Manager __________________________

Exhibit H – Electronic Closeout Documentation  
10/07/2010
Exhibit J – Tax Exempt Purchases

Attached to and forming a part of the Agreement between Payne & Dolan, Inc. and Mortenson, effective as of October 2, 2020.

1. The Owner has represented that it is a non-profit entity holding a Wisconsin Sales and Use Tax Exemption Certificate. Based on the Tax Exemption Certificate, the Subcontractor/Supplier will purchase all materials and equipment that will become a component of the Project on a sales tax-exempt basis as permitted by Wis. Stats. §77.54(9m) (2013-2014), as the same may be amended or renumbered from time to time (“Tax-Exempt Items”). The Subcontract/Purchase Price (“Price”) does not include sales or use tax for materials or equipment that will be incorporated or become a component of the Project. Notwithstanding the foregoing, Subcontractor/Supplier shall pay and include in the Price all applicable sales and use taxes on materials and equipment that are temporary or not incorporated into the Project. Subcontractor shall promptly notify the Contractor of any actual or threatened imposition or assessment of a sales or use tax on materials or equipment to be incorporated into the Project.

2. The Owner’s Tax Exemption Certificate is attached as Exhibit 1 to this Exhibit J.

3. For real property purchases meeting the requirements of paragraph 1, this Subcontractor agrees to use the Wisconsin Sales and Use Tax Exemption attached as Exhibit 2.

4. For personal property purchases meeting the requirements of paragraph 1, this Subcontractor agrees to use the Resale - Wisconsin Sales and Use Tax Exemption attached as Exhibit 3.

IN WITNESS WHEREOF, Subcontractor and Mortenson herein execute this Exhibit J to the Subcontract Agreement as set forth above.

PAYNE & DOLAN, INC.  M. A. MORTENSON COMPANY

By _______________________________  By _______________________________
Ashley Frank

Its _______________________________  Its Project Manager ____________________
Exhibit K – Construction Waste Recycling Requirements

Attached to and forming a part of the Agreement between Payne & Dolan, Inc. and Mortenson, effective as of October 2, 2020.

Construction Waste Recycling Requirements

Construction waste reduction and recycling is a priority on this project. All contractors shall abide by the requirements stated below. Our goal is to minimize the environmental impact of the construction project and reduce our waste by 75%. To reach this goal, all contractors shall reduce waste wherever possible, ensure that all reusable materials are reused, and recycle all recyclable materials.

All contractors shall use dumpsters provided by Mortenson. All waste and recyclables leaving the site will do so only in containers provided by and controlled by Mortenson or its assigns. In doing this, we will be able to keep track of all the material landfilled or recycled by the project in order to provide needed documentation. Subcontractors are required to deliver trash and recyclables to dumpsters and ensure all materials are placed in the appropriate dumpsters. If Subcontractor contaminates a dumpster Mortenson may remove contamination and charge costs to contractor.

A. Bottles and Cans. Separate plastic, glass, aluminum and steel containers, bottles, jars and cans into small recycling bins. Place separated recyclables into the dumpster by job site trailer. Recyclable containers need to be empty. Bottles and cans will be sorted off site and recycled. A detailed list of acceptable items will be posted in the trailers and on each container.

B. Cardboard and Office Paper. Cardboard includes flattened, clean cardboard and boxboard. Separate cardboard (staples are OK), office paper, plans, newspaper and other clean paper in designated containers located on the job site for recycling. Waxed cardboard, tissue, paper plates or towels, pizza boxes, mortar and cement bags, and cardboard that is more than half covered with paint, mud or other contaminants should be disposed of as trash. Please remove any plastic or Styrofoam attached to cardboard before recycling. Cardboard and paper will be sorted, bundled, and sold to be made into new paper products.

C. Concrete and Masonry. Brick, concrete masonry units, and concrete (with minimal rebar) shall be separated and placed into a separate dumpster for recycling. Wet concrete may not be placed into dumpsters. The concrete and brick will be hauled to a recycler, crushed, and made into new concrete or as general construction gravel for roadbeds and fill. Trees, branches and other organic matter cannot be placed in this dumpster.

D. Drywall/Gypsum Wallboard. Scrap drywall from construction, including Type X drywall, must be kept completely free of contaminants and placed in a separate dumpster for recycling. Scrap drywall will be used locally as a soil amendment. All nails and screws must be removed before placing in the recycling dumpster. Painted drywall, high-fiberglass board, moisture-resistant board and other specialty wallboard must be disposed of as trash.

E. Scrap Metal. Separate scrap metal and place in a separate dumpster(s) for recycling, including cutoffs, wire scraps, clean material cans, and painted metal. Place aluminum
cans in the bin for cans & bottles, not the scrap metal container. Metal will be hauled to a local metal recycler for processing and recycling into new metal.

F. **Unpainted, Untreated Wood.** Unpainted, untreated scrap wood will be separated both for reuse and recycling. Wood includes packaging wood (e.g. from windows), pallets, clean dimensional wood, heavy wood beams, plywood, OSB and particle board. Dimensional lumber over 4’ in good condition will be stockpiled in a separate location for reuse when short-length pieces are needed. Scrap wood not reused will be placed in a separate dumpster for recycling. Nails that are in the scrap wood may be included, but all other materials such as pieces of metal, cardboard or other materials is prohibited. The small scrap wood not reused will be chipped, dyed and used as landscaping mulch.

G. **Trash.** Trash includes treated wood, insulation, mortar and cement bags, moisture-resistant and specialty wallboard, food scraps and other non-recyclable items. No recyclables or hazardous waste may be placed in the trash dumpster.

H. **Packaging.** Confirm that the correct amount of material is delivered to the site to help reduce waste. Specify minimal and recyclable packaging when ordering materials. Find out if returnable packaging is available. Return reusable or recyclable packing materials to the supplier (e.g. wood pallets, spools for electrical wire, etc.) If returnable packaging is not available, request recyclable packaging.

I. **Other.**
   - Minimizing waste is our first priority – for example, returning reusable items (e.g. pallets or unused products) to the material supplier. Our second priority is to reuse – for example, storing reusable products to reuse on future projects. Our third priority is to recycle.
   - Containers will be serviced when the site superintendent calls in. Clear access must be made to the containers and any locked containers must be unlocked.
   - If a container that is designated for a specific recyclable item is contaminated, the entire load will be dumped as trash. Subcontractors responsible will be charged. Please help us avoid this.
   - If you are generating a large quantity of an item that is not being reused or recycled, please inform Mortenson. Your ideas are needed and appreciated to come up with markets for these materials. We want to know of other ways to reduce waste. Notify the site superintendent with suggestions.

IN WITNESS WHEREOF, Subcontractor and Mortenson herein execute this Exhibit K to the Subcontract Agreement as set forth above.

PAYNE & DOLAN, INC.                               M. A. MORTENSON COMPANY

By ___________________________                      By ___________________________
Ashley Frank

Its ___________________________                      Its Project Manager ___________________________