5.4 When natural lighting is inadequate for work in a Confined Space, appropriate auxiliary lighting is used as required.

5.5 When power tools or equipment are used in a Confined Space, the following shall be observed:
   5.5.1 Electric power tools are not used in potentially flammable atmospheres
   5.5.2 Electric power tools used in wet Confined Spaces are equipped with a ground fault circuit interrupter

5.6 If a known delay in work activity of one week or longer is encountered, the job supervisor notifies the Safety Officer or designee.

5.7 If additional ventilation equipment is required to meet the acceptable environmental conditions, the Confined Space air is monitored continuously by equipment set-up by the Industrial Hygienist.

Exceptions
None

Primary Sources
29 CFR 1910.146

Secondary Materials
CONFINED SPACE ENTRY PERMIT
Construction Safety Requirements

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Document Created: November 2006

Subsequent Review Date(s): March 2014

Approver Name(s): Laura Kaiser

Effective Date: September 2014

Next Scheduled Review Date: June 2017

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2.1.3.10 Proxy Access Procedure (March 2017)

Purpose
This procedure describes how authorized individuals are given access to controlled areas.

Scope
IHC Health Services, Inc., SelectHealth, Inc.

Definitions
Proxy Access - Access that is encoded on an Intermountain identification badge allowing access through controlled doors at a Facility.

Authorized Staff - Intermountain employees, volunteers, Contingent Workforce, third or fourth year medical students and medical residents or fellows.

Contingent Workforce - Individuals who provide services to Intermountain in one of many forms of a non-permanent relationship which may include contracted or non-contracted individuals and other arrangements which share the similar fundamental nature of a non-permanent relationship.

Supplier Representative - An individual representing a company providing products or services to Intermountain (e.g., patient service and product providers, physician or clinician service and product providers, and technical, maintenance, inspection, delivery, and construction personnel).

Independent Provider - Licensed Independent Practitioners (LIPs) and Advance Practice Clinicians (APCs) not employed by Intermountain Healthcare.

Facility - Property, buildings or areas owned or leased by Intermountain Healthcare.

Controlled Area - Locked areas which require proxy access to open.

Security Sensitive Area - Defined per facility and must include at a minimum, NICU, pediatric inpatient units, labor and delivery units, mom and baby units, pharmacies, PBX operator areas, security staff areas, data storage areas, health information areas, inpatient psychiatric units, emergency departments, operating rooms, and cashier areas.

AccessWeb - A web-based tool that allows managers to view access, request access, and approve access to for their employees.

Code Team - A specially trained medical emergency team.

Procedure

1  Controlled Areas

1.1 Proxy Access is encoded in an identification badge based on the Facility Access Classification table.

1.2 Human Resources (HR) or Security personnel in each Facility enable Proxy Access for Authorized Staff and Contingent Workforce.

   1.2.1 Contingent Workforce must meet the screening and education requirements established in the Facility Access Contingent Workforce Procedure before Proxy Access is considered.

1.3 The Supplier Access Program Manager is responsible for Supplier Representative access control.

   1.3.1 Supplier Representatives must meet the registration requirements established in the Facility Access Supplier Procedure before Proxy Access is considered.

   1.3.2 Supplier Representatives are not given Proxy Access when escorted and supervised access can be reasonably facilitated and are never given Proxy Access for departments that are staffed 24/7.

   1.3.3 Supply Chain Organization (SCO) personnel in each Facility initiate Proxy Access for Supplier Representatives.

       An AccessWeb request is submitted for approval from the supplier's contract manager (SCO personnel). The Facility's Security Director or Manager or the Facilities Management Director must grant approval when Supplier Representatives request Proxy Access.

   1.3.4 Proxy Access to Controlled Areas may be enabled on a case-by-case basis, for example:

       Construction workers requiring access to a construction area inside a facility.

       External consultants and research personnel requiring access to Controlled Areas to perform their work.

       Maintenance personnel requiring access to Controlled Areas to set up furniture or equipment.

1.4 The Medical Staff Office in each Facility is responsible for Independent Provider access control.

   1.4.1 Independent Providers must meet the screening and education requirements established by Intermountain before Proxy Access is considered.

   1.4.2 HR or Security personnel in each Facility enable Proxy Access for Independent Providers.

2  Security Sensitive Areas

2.1 A manager may request Proxy Access to Security Sensitive Areas.

   2.1.1 An AccessWeb request for Proxy Access to a Security Sensitive Area is submitted to the Security Sensitive Area manager to approve.
2.1.2 Upon receiving the required approval from the Security Sensitive Area manager, Security personnel enable Proxy Access to the secure area.

2.2 Proxy Access to emergency departments and operating room areas may be enabled using facility defined access groups instead of AccessWeb.

2.3 Except for pharmacy access, Security and Engineering personnel are not required to receive approval from the Security Sensitive Area manager.

2.4 Facilities may enable Proxy Access to Security Sensitive Areas for Code Team members who respond to emergencies.

3 Disabling Proxy Access

3.1 Human Resources provides Security with a daily list of all employee transfers and terminations. Proxy Access is disabled by Security personnel according to this report.

3.1.1 Human Resources notifies Security when a hostile termination may occur. Proxy Access is disabled, in this situation, during the termination interview.

3.2 SCO personnel notify Security personnel when Supplier Representatives are no longer employed by a supplier. Security personnel disable Supplier Representative Proxy Access when applicable.

Exceptions

Exceptions to this procedure must be approved by the Facility Access Steering Committee.

Primary Sources

None

Secondary Materials

Facility Access Classification Table
Facility Access Supplier Procedure
Access Control Retail Pharmacy Procedure
Access Control Pharmacy Procedure
Access Control SCC Procedure
Access Control Data Area Procedure
Security Sensitive Area Proxy Access Request Instructions

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Approver Name(s): Rob Allen
Effective Date: March 2017
Next Scheduled Review Date: February 2020

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Reasonable efforts will be made to keep employees informed of policy changes; however, Intermountain Healthcare reserves the right in its sole discretion to amend, replace, and/or terminate this policy at any time.

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Contact Intermountain Healthcare’s Legal Department for questions.
## THIRD PARTY ACCESS REQUEST FORM

This form should be used to request third party access to approved Intermountain Healthcare Information Systems. Type the requested information in each section and obtain the required signatures. All request forms must be submitted to Cybersecurity at ISSA@me.com. Failure to properly fill out this form completely and accurately may result in a delay in processing your request.

<table>
<thead>
<tr>
<th>Date</th>
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<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Company Name</th>
<th>Contact Name</th>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Address (Street, City and State)</th>
<th>Zip Code</th>
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<tr>
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<table>
<thead>
<tr>
<th>Primary phone number</th>
<th>Other phone number</th>
<th>Email address</th>
</tr>
</thead>
<tbody>
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<td></td>
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</tbody>
</table>

**NOTE:** The above stated company (Intermountain Healthcare) will notify Intermountain Healthcare and change any passwords or access codes into Intermountain’s corporate computer systems upon the termination of the CONTRACT NAME or other employees associated with the remote access process.

### REQUESTOR INFORMATION

<table>
<thead>
<tr>
<th>Name (Last, First, MI)</th>
<th>Date of Birth</th>
<th>Position Title</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Preferred Name</th>
<th>Intermountain User ID</th>
<th>Intermountain Email Address</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary Facility</th>
<th>US Based/Offshore Facility</th>
<th>Office Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Department/Business Unit</th>
<th>Department Manager</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Job Duties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Justification for Access to Intermountain Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

### ACCESS REQUEST:

***For Bulk Access Request, please see page 2***

**Required Access Period (check one)**

- [ ] Continuous
- [ ] Limited period from dates ______ to _______

**Method of Access:**

- [ ] Secure Access – VPN
- [ ] Direct Access VDI

<table>
<thead>
<tr>
<th>Secure Access Group Name</th>
<th>VDI Post</th>
<th>Active Directory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TYPE of access required (i.e., authority needed):**

<table>
<thead>
<tr>
<th>SYSTEMS to be accessed (including Host IP Address, protocols and ports used, etc.):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Before granting a User access to any system, the administrator is required to ensure the User exists in the Master User Directory, confirm the username, and if applicable, confirm the User’s department.

Does Intermountain have a signed Business Associated Agreement (BAA) with the 3rd Party?

- [ ] Yes
- [ ] No
<table>
<thead>
<tr>
<th>Does Intermountain already have a support agreement with the appropriate confidentiality agreement signed and submitted?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INTERMOUNTAIN CONTACT:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermountain Healthcare Steward</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact Phone(s)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*NOTE: The Intermountain steward is personally responsible for the access of the individual(s) on Intermountain systems. The Intermountain Steward will be listed as the manager for the individual(s) in the access directory.*

**ACKNOWLEDGEMENT and AGREEMENT:**

Access to Intermountain Healthcare's computer systems is monitored and reviewed on a regular basis. Intermountain reserves the right to cancel access without notification to all entities at any time if it feels there's a possible security breach or risk that requires immediate disconnection. Further, all access to Intermountain's computer systems is bound to the current confidentiality and appropriate usage policies in effect.

As the intermountain steward you are responsible for the access of the individual's listed on this form. The Intermountain steward is required to perform an annual review of all 3rd party access and attest that it is correct. As the Intermountain steward you are responsible for the removal of the user's access in when the 3rd party no longer requires access.

By signing this request, approvers affirm that the applicant's job duties meet the requirement for granting access to Intermountain Healthcare Information Systems and Data and agree to immediately contact Cybersecurity if a) the applicant separates from the organization, b) the applicant's job duties no longer require access to specified systems, or c) there is any reason to revoke or modify the access granted through this request.

---

**Vendor Contract Name**

**Vendor Contract Signature**

**Intermountain Healthcare Steward Name**

**Intermountain Healthcare Steward Signature**

**Date of Approval**

---

**FOR CYBERSECURITY USE ONLY:**

<table>
<thead>
<tr>
<th>Access approved?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>If no, state reason for denial:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Security/Access Concerns:

<table>
<thead>
<tr>
<th>Date Processed</th>
<th>Processed By</th>
</tr>
</thead>
<tbody>
<tr>
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</table>
2.1.5 INTERMOUNTAIN HEALTHCARE ACCESS AND CONFIDENTIALITY AGREEMENT FORM

INTERMOUNTAIN HEALTHCARE ACCESS AND CONFIDENTIALITY AGREEMENT

SECTION 1.0 PURPOSE AND DEFINITION

1.1 Purpose of this Agreement. Federal and state laws, as well as Intermountain’s policies, protect Confidential Information, assure that it remains confidential, and permit it to be used for appropriate purposes. These laws and policies assert that Confidential Information, which is sensitive and valuable, remains confidential. They also permit you to use Confidential Information only as necessary to accomplish legitimate and approved purposes. You may need access to Confidential Information because you have one of the following roles:
A. An Intermountain Worker member, which includes volunteers (a “Workforce Member”), or
B. An Intermountain-affiliated or Intermountain-credentialing Provider (a “Provider”), or
C. A vendor or agent of IHC Health Services, Inc. (a “Vendor” or “Agent”).

1.2 Definition. “Confidential Information” means data or information that is private and sensitive and is held by Intermountain in strict confidence. You may not access Confidential Information through or as communications, e-mails, documents, computer systems, or through the activities of Intermountain. Examples of Confidential Information include the following information that is maintained by, or obtained from, Intermountain:
A. An individual’s demographic, employment, or health information;
B. Peer-review information;
C. Intermountain’s business information, (e.g., financial and statistical records, strategic plans, internal reports, memos, contracts, peer-review information, proprietary computer programs, source code, proprietary technology, etc.); and
D. Intermountain’s or a third-party’s information (e.g., computer programs, client and vendor proprietary information, source code, proprietary technology, etc.).

SECTION 2.0 YOUR DUTIES UNDER THIS AGREEMENT

2.1 Principal Duties. To qualify to access or use Confidential Information, you will comply with the laws and Intermountain’s policies governing Confidential Information. Your principal duties regarding Confidential Information include, but are not limited to, the following:
A. Safeguard the privacy and security of Confidential Information;
B. Use Confidential Information only as needed to perform your legitimate and Intermountain-approved responsibilities. This means, among other things, that you will:
   (1) Access Confidential Information for which you have no legitimate need to know;
   (2) Disclose, copy, release, sell, lease, alter, destroy any Confidential Information except as properly authorized within the scope of your legitimate and Intermountain-approved responsibilities;
   (3) Possess, transfer, sell, or disclose your access code or any other authorization that allows you to access Confidential Information. This means, among other things, that you will:
   (1) Accept responsibility for all activities undertaken using your access code and other authorizations;
   (2) Report any suspicion or knowledge that you have that your access code, authorization, or any Confidential Information has been misused or disclosed without Intermountain’s permission. Report this suspicion or knowledge to the Intermountain Compliance Hotline at 1-800-442-4845, or, if you are a member of Intermountain’s Workforce, to your supervisor or facility compliance coordinator;
D. Not remove Confidential Information from Intermountain’s facilities unless necessary for your legitimate and Intermountain-approved responsibilities (If removal of Confidential Information from an Intermountain facility is necessary, you will use reasonable and appropriate physical and technical safeguards—such as encrypting electronic Confidential Information);
E. Report activities by any individual or entity that you suspect may compromise the confidentiality of Confidential Information (To the extent permitted by law, Intermountain will hold in confidence reports that are made in good faith about suspect activities, as well as the names of the individuals reporting the activities);
F. Not use or share Confidential Information after termination of your role (including the requirement to sign this Agreement. For example, if you are a Workforce Member, when you leave Intermountain’s employment, if you are a Provider, when you lose your privileges at an Intermountain facility or your privileges to access Confidential Information, and if you are a Vendor or Agent, when you finish your assignment or project with Intermountain or when your company stops doing business with Intermountain, whichever is first); and
G. Claim no right or ownership interest in any Confidential Information referred to in this Agreement.

SECTION 3.0 VIOLATION OF DUTY – CHANGE OF STATUS

3.1 Responsibility. You are responsible for your compliance with this Agreement.
3.2 Discipline. If you violate any provision of this Agreement, you will be subject to discipline, including but not limited to, the following:
A. If you are a Workforce Member, to dismissal as a member of Intermountain’s Workforce, loss of employment with Intermountain, and any other appropriate legal or other remedies;
B. If you are a Workforce Member, a Provider, or an Agent, to discipline, including revocation of your ability to access or use Confidential Information, and legal liability;
3.3 Relief. Any violation by you of any provision of this Agreement will cause irreparable injury to Intermountain that would not be adequately compensable in money damages alone or through other legal remedies, and will entitle Intermountain to the following:
A. If you are a Workforce Member, or an Agent, to the termination of your rights under this Agreement, and Intermountain may seek other remedies, and
3.4. Authority. Intermountain may terminate your access to Confidential Information if your status as a Workforce Member, Provider, or Agent changes, if Intermountain determines that it is in the best interests of Intermountain’s mission, or if you violate any provision of this Agreement.

SECTION 4.0 Continuing Obligations. Your obligations under this Agreement continue after termination of your status as a Workforce Member, Provider, Vendor, or Agent.

Printed Name:________________________

Signature:________________________

Date:________________________

IHCPOD546 / 10-10
2.1.6 IDENTIFICATION BADGE PROCEDURE (APRIL 2015)

Purpose
This procedure provides instruction for issuing identification badges to workforce and supplier representatives.

Scope
*IHC Health Services, Inc.*

Definitions
- **Workforce** - Employees, Volunteers, and Contingent Workers performing services at an Intermountain operating unit, service area, or facility.
- **Employee** - Individuals employed by Intermountain to perform functions relevant to facility operations in return for compensation.
- **Volunteer** - Individuals donating time or services to Intermountain for public service, religious, or humanitarian objectives.
- **Contingent Worker** - Individuals who provide services to Intermountain in one of many forms of a non-permanent relationship which may include contracted or non-contracted individuals and other arrangements which share the similar fundamental nature of a non-permanent relationship.
- **Student** - Individuals enrolled in a professional or technical training program nationally or regionally recognized and accredited appropriate to their field of study.
- **Supplier Representative** - Individuals who represent a company providing products or services to Intermountain Healthcare.
- **Proxy Access** - Access encoded on an identification badge allowing access through controlled doors.
- **Controlled Area** - Locked areas which require proxy access to open.
- **Security Sensitive Area** - As defined per facility and must include at a minimum, Newborn ICU, pediatric inpatient units, labor and delivery units, mom and baby units, pharmacies, PBX operator areas, security staff areas, data storage areas, health information areas, inpatient psychiatric units, and cashier areas.

Procedure
1 Identification
   1.1 Workforce is required to wear an Intermountain identification badge (ID badge) at all times while on duty *(Professional Appearance Policy)*.
   1.2 Employees with a Secondary Job or Dual Assignment
      1.2.1 If an Employee has a secondary job code, their ID badge title should reflect their primary job assignment. However, if their secondary job assignment involves patient care activities or working in a patient facing environment, their ID badge title should reflect this assignment rather than their primary assignment. If the secondary job involves pediatric transport (pink badge), the badge and badge title should be the most restrictive, which in most cases would be a pink badge with associated title.
      1.2.2 If an Employee has a dual assignment, one of which includes patient care activities, the badge title should reflect the clinical role. In the case of a Patient Care Technician / Health Unit Coordinator dual role, the badge title should specify Patient Care Technician.
   1.3 Conditions when an Employee can have two badges:
      1.3.1 They have a non-Intermountain worker assignment requiring a horizontal badge (supplier, student, instructor)
      1.3.2 They are also an Intermountain Volunteer
      1.3.3 They also work at SelectHealth
      1.3.4 Their work assignments are significantly divergent, such as to confuse patients and other caregivers
   1.4 Employees cannot wear or use their ID badge for any reason other than the job for which they were hired.
      1.4.1 Employees who are also students, instructors, or contracted with Intermountain to perform other duties are not considered Employees while functioning in these secondary roles and must wear the ID badge applicable to the secondary role they are performing.
   1.5 Hospital or clinic Employees who forget their ID badge have these options:
1.5.1 Travel home to retrieve their ID badge if their work assignment and travel time allows. Department manager approval is needed. Employees are not compensated for this travel time.

1.5.2 Receive a one-day sticker badge to wear as a temporary alternative. The sticker badge must clearly identify the Employee’s clinical role/job title or department name as appropriate to work assignment; the Employee’s name; licensure abbreviation (if appropriate); and current date (multiple dates are not allowed). Employees are not provided with independent proxy access.

1.6 Workforce must not loan their badge to anyone or wear a badge that doesn’t belong to them. Workforce who misuse an ID badge are subject to disciplinary action up to and including termination.

1.7 Facilities may require others to wear Intermountain issued identification upon entering for security purposes.

2 ID Badge Production

2.1 Creating an ID badge is the responsibility of the Human Resources (HR) or Security department as designated by the facility.

2.2 An ID badge requisition is completed by the Workforce member and Department Manager to identify the individual and ID badge type and submitted to HR or Security.

2.3 Supplier Representatives receive paper sticker ID badges upon check-in at supplier kiosks. Supplier Representatives must complete annual registration requirements in order to receive a paper ID badge.

2.3.1 In rare instances, when a plastic badge is warranted for a Supplier Representative, an ID badge requisition must be completed by the department manager and submitted to facility Supply Chain personnel for approval prior to HR or Security issuing the badge.

2.4 ID badge equipment maintenance is the responsibility of the facility or region under the direction of Information Systems.

2.5 System-wide equipment and supply upgrades are coordinated through Information Systems.

3 ID Badge Design

3.1 ID badge designs are described in the ID badge manual.

3.2 ID Badge Orientation

3.2.1 Employee and Volunteer ID badges are vertical with a recent photo, name, department, and clinical title (when applicable) and feature the Intermountain Healthcare logo.

3.2.2 Contingent Worker ID badges are horizontal with no logo and feature the name and company, and a termination date of no more than 12 consecutive months from the date of issue.

3.2.3 Supplier Representative ID badges are horizontal with no logo and feature the name and company, and an expiration date of no more than 12 consecutive months from the date of issue.

3.2.4 Student ID badges are horizontal with no logo and feature the name and learning institution, and an expiration date of no more than 1 semester from the date of issue.

3.3 Wave Design and Color

3.3.1 ID badges, whether vertical or horizontal, have a blue or pink wave design intended to draw attention to the worker’s role or department name. Most badges have a blue wave design.

3.3.2 ID badges with a pink wave design are reserved for Employees or Contingent Workers authorized to provide infant or pediatric transport services. Pink wave ID badges are generally reserved for clinical roles; however a non-clinical Employee, who has been properly trained and approved to participate in infant or pediatric transport activities, may have a pink badge.

3.4 Barcodes

3.4.1 Barcodes are applied to Employee and Volunteer ID badges to track working hours in the payroll system. Volunteers are not compensated, but their hours are tracked for reporting purposes.

3.4.2 Barcodes are applied to physician ID badges to record education hours offered by Intermountain through a continuing medical education (CME) tracking system.

3.4.3 Barcodes may be applied to Contingent Worker badges if needed to perform services for Intermountain.

3.4.4 Barcodes are not applied to Supplier Representative and Student ID badges.

4 Proxy Access

4.1 Access to Controlled Areas may be encoded in the ID badge of Employees, Volunteers, and Contingent Worker who require access to perform their duties per the Proxy Access Procedure.

4.2 With few exceptions, Supplier Representatives and Students are not provided with Proxy Access or access to Security Sensitive Areas.

5 ID Badge Collection
5.1 Employees and Volunteers

5.1.1 Either HR personnel or department managers or supervisors are responsible to collect ID badges from Workforce who are transferring from one department or facility to another, or are terminating employment with Intermountain.

5.1.2 Facility Security or HR (as appropriate) facilitate ID badge collection and destruction with department managers.

5.2 Contingent Worker

5.2.1 Department managers or supervisors are responsible to collect ID badges from Contingent Worker upon completion of the work assignment.

5.2.2 The employer must notify the Intermountain department manager within thirty (30) days when a worker has been terminated from employment.

5.2.3 The employer should collect the ID badge from the worker and return it to the Intermountain department manager.

5.3 Supplier Representatives

5.3.1 Facility personnel are responsible to collect expired Supplier Representative ID badges (paper or plastic).

5.3.2 Supplier Representatives who are issued plastic ID badges and are terminated from employment by the supplier are expected to return the ID badge to the Supply Chain Organization within 30 days.

5.4 Students

5.4.1 The Student, school representative, or Intermountain department manager is responsible to return the Student ID badge upon completion of learning experience to the region/facility Student Programs office, HR or Security departments.

6 Lost or Stolen ID Badges

6.1 Lost or stolen ID badges must be reported immediately to the facility HR or Security department.

6.2 Any fee associated with replacing an ID badge is allocated to the individual. Replacement fees are determined per facility.

Exceptions

Exceptions to this procedure are subject to review and administrative approval by the Vice president of Human Resources.

Primary Sources

None

Secondary Materials

Identification Badge Requisition
Proxy Access Procedure
LAB Employee Testing ID Usage
Identification Badge Manual

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Document Created: January 2006

Subsequent Review Date(s): December 2014

Approver Name(s): Harlan Hammond

Effective Date: April 2015

Next Scheduled Review Date: December 2017

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Intermountain Healthcare is an At-Will Employer. The terms of this policy do not, either directly or indirectly, constitute any form of employment contract or other binding agreement between any employee and Intermountain.

Contact Intermountain Healthcare’s Legal Department for questions.
## 2.1.7 WORKER VERIFICATION FORM

**Worker Verification**
The following must be completed by agency/employer prior to temporary work assignment

<table>
<thead>
<tr>
<th>Licensure/certification (including food-handlers permit)</th>
<th>□ Yes □ N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare Provider or Professional Rescuer CPR</td>
<td>□ Yes □ N/A</td>
</tr>
<tr>
<td>Orientation Packet Completed (attached)</td>
<td>□ Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>✓ Required</th>
<th>Completion Date</th>
<th>Verified By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine Drug Screen (SAM 5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Criminal Background Check, including Sex Offender Check. BCI and Fingerprint if needed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCI and Fingerprint (if needed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OIG Check</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two-Step TB Skin Test or one-time Blood Test</td>
<td>Step 1</td>
<td></td>
</tr>
<tr>
<td>If positive test result, documentation of normal CXR provided by healthcare provider</td>
<td>Step 2</td>
<td></td>
</tr>
<tr>
<td>Annual /Current Flu Vaccine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mumps, Mumps and Rubella (MMR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two vaccines given at recommended intervals or laboratory evidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tdap vaccine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella (Chicken Pox)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two vaccines given at recommended intervals, or written verification of disease by healthcare provider, or laboratory evidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not required, but strongly recommended if assignment may involve exposure, or potential exposure, to blood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three vaccinations and reactive tier or laboratory evidence</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IHC HR1015 © Intermountain Health Care, Inc. (2013)
2.1.8 CONSTRUCTION RECORD DRAWINGS

The contractor is responsible for keeping up-to-date as-built drawing documentation of changes made to the contract drawings. These are to be returned to the architect for implementation into a final CAD set of record drawings for the owner.

INTERMOUNTAIN HEALTHCARE
RECORD DRAWING REQUIREMENTS

PROJECT CONTRACT NAME: ____________________________________________

ARCHITECTURAL FIRM: _______________________________ ARCH. PROJECT NO: _________

CONTRACTOR:....................................................................................

Record Drawings are required per the Owner / Architect contract agreement and shall consist of AutoCAD files (.dwg), BIM files (i.e. REVIT [.rvt], etc.), PDF (.pdf) files, Sheet Index (.xls), Renderings/Photos and Specifications as outlined below. Drawing files shall be separated into individual files with all external references (refs) and attached files (i.e. images, special fonts, pen settings, etc.) bound to each separate drawing. The AutoCAD, BIM and PDF files can be included under each discipline below in separate folders. Naming of these files shall be sequential and as outlined on the Architects Drawing Index. The file names shall not include any special characters and/or symbols (i.e. \ / : * ? " < > | & , %, ~, @, etc.). By submitting Record Drawings to the Owner, Architect has verified that all content is functional and readable.

RECORD DRAWING SHEET INDEX
□ Provide an Excel File (.xls) of complete drawing index.

RECORD DRAWING DISCIPLINES

ARCHITECTURAL
□ AUTOCAD (.dwg)
□ REVIT (.rvt)
□ PDF (.pdf)

CIVIL
□

LANDSCAPE
□

STRUCTURAL
□

PLUMBING
□

MECHANICAL
□

ELECTRICAL
□

INSTRUMENTATION
□

MEP
□

MEP SUPPORT
□

MEP SUPPORT ACCESS
□

RECORD SPECIFICATIONS
□ Separate into Divisions / Sections with T.O.C. (.pdf)

RENDERINGS | PHOTOS
□

REVIEWED BY: _______________________________ DATE REVIEWED: _______________________________

SIGNATURE: _______________________________

*This document is to be included in Division 1 specifications and kept with the Record Drawing file.
2.2 Lien Waiver Forms

**CONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT**

<table>
<thead>
<tr>
<th>TO:</th>
<th>HIC HEALTH SERVICES, INC.</th>
<th>(“Owner”)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FROM:</td>
<td></td>
<td>(“Contractor”)</td>
</tr>
<tr>
<td>PROPERTY NAME:</td>
<td></td>
<td>(“Property”)</td>
</tr>
<tr>
<td>PROPERTY LOCATION:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONTRACT DATE:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INVOICE DATE/NUMBER:</td>
<td></td>
<td>(“Invoice”)</td>
</tr>
<tr>
<td>INVOICE PERIOD:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAYMENT AMOUNT:</td>
<td>$</td>
<td>(“Payment Amount”)</td>
</tr>
<tr>
<td>CONTRACT AMOUNTS:</td>
<td>Original Contract Sum:</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td>Plus (Less) Approved Change Orders:</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td>Adjusted Contract Sum:</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td>Less Total Payments Received to Date (including this invoice):</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td>Outstanding Adjusted Contract Sum:</td>
<td>$</td>
</tr>
</tbody>
</table>

Under this Conditional Waiver and Release, Contractor releases Owner and the Property from, and waives, any notice of lien or right under Utah law (see Utah Code Ann., Title 38, Chapter 1a, Preconstruction and Construction Liens, and Utah Code Ann., Title 14, Contractors’ Bonds, or Section 63G-6a-1103) related to payment rights the Contractor has on the Property once:

1. Contractor endorses a check in the Payment Amount payable to Contractor or provides valid wire transfer or direct deposit instructions; and
2. The check is paid by the depository institution on which it is drawn or the wired or direct-deposited funds in the Payment Amount are deposited into Contractor’s designated account.

This Conditional Waiver and Release applies to the progress payment for the work, materials, equipment, or combination of work, materials, and equipment furnished by Contractor to the Property or to Owner covered by the invoice. This Conditional Waiver and Release does not apply to any retention withheld; any items, modifications, or changes pending approval; disputed items and claims; or items furnished or invoiced after the Invoice Period.

Contractor warrants that it either has already paid, or will promptly use the Payment Amount received to pay in full all of Contractor’s laborers, subcontractors, materialmen, and suppliers for all work, materials, equipment, or combination of work, materials, and equipment under the Invoice. Contractor has not assigned any lien or right to perfect a lien against the Property and has the right, power, and authority to execute this Conditional Waiver and Release.

____________________, a __________________

By:________________________
Print Name:________________________
Title:________________________

STATE OF UTAH

COUNTY OF __________

On the _____ day of __________, 20__, this instrument was acknowledged before me by ______________, the _______ (title) of ______________, a ______________.

________________________
Public Notary
## WAIVER AND RELEASE UPON FINAL PAYMENT

<table>
<thead>
<tr>
<th>TO:</th>
<th>IHC HEALTH SERVICES, INC.</th>
<th>(“Owner”)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FROM:</td>
<td>(“Contractor”)</td>
<td></td>
</tr>
<tr>
<td>PROPERTY NAME:</td>
<td>(“Property”)</td>
<td></td>
</tr>
<tr>
<td>PROPERTY LOCATION:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONTRACT DATE:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INVOICE DATE/NUMBER:</td>
<td>(“Invoice”)</td>
<td></td>
</tr>
<tr>
<td>INVOICE PERIOD:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL PAYMENT AMOUNT:</td>
<td>$</td>
<td>(“Payment Amount”)</td>
</tr>
<tr>
<td>CONTRACT AMOUNTS:</td>
<td>Original Contract Sum:</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td>Plus (Less) Approved Change Orders:</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td>Adjusted Contract Sum:</td>
<td>$</td>
</tr>
</tbody>
</table>

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1. Contractor endorses a check in the Payment Amount payable to Contractor or provides valid wire transfer or direct deposit instructions; and
2. The check is paid by the depository institution on which it is drawn or the wired or direct-deposited funds in the Payment Amount are deposited into Contractor’s designated account.

This Waiver and Release applies to the final payment for the work, materials, equipment, or combination of work, materials, and equipment furnished by Contractor to the Property or to Owner.

Contractor warrants that it either has already paid, or will promptly use the Payment Amount received to pay in full all of Contractor’s laborers, subcontractors, materialmen, and suppliers for all work, materials, equipment, or combination of work, materials, and equipment under the Invoice. Contractor has not assigned any lien or right to perfect a lien against the Property and has the right, power, and authority to execute this Waiver and Release.

________________________, a __________________________

By: ______________________________
Print Name: ______________________________
Title: ______________________________

STATE OF UTAH )
COUNTY OF __________ )

On the _____ day of ____________, 20__, this instrument was acknowledged before me by ____________, the ____________, (title) of ____________, a ____________.

______________________________
Public Notary
3 Specification Divisions

DIVISION 00- PROCUREMENT AND CONTRACTING REQUIREMENTS

00 1115 – INVITATION TO BID
A. Invitations to Bid are provided by Intermountain Health on a project specific basis.

00 2113 – INSTRUCTIONS TO BIDDERS
A. Intermountain specific Instructions to Bidders shall be included, which contain modifications to bidding requirements for tax exemption

00 3100 – AVAILABLE PROJECT INFORMATION
PART 1 GENERAL
1.1 SUMMARY
A. This Section references other information relevant to the construction of this Project that is available project information.
B. At the request of the Owner, the information identified below represents services that have been provided by others, not as an Architect’s Consultant, regarding conditions that affect this Project that are beyond the responsibilities of the Architect and Architect’s Consultants. Reference to such information herein is solely for the convenience of the Owner. Architect makes no representation, express or implied, as to the accuracy or validity of the information.
C. Bidders are expected to examine the site and the information available from the Owner to determine for themselves the conditions to be encountered.
D. If conditions other than those indicated in the information available from the Owner are encountered before or during construction, notify the Owner before work continues.

1.2 GEOTECHNICAL REPORT
A. The Owner’s Geotechnical Consultant has made subsurface borings at the Project site, has performed an investigation of the geotechnical conditions, and has prepared a report of the investigation that contains specific requirements of the Contractor.
B. A copy is attached.
C. The information was obtained for use in preparing the foundation design, but is indicative only of the soil conditions where the borings are taken.

1.3 INFECTION CONTROL RISK ASSESSMENT REPORT
A. The Owner’s Risk Assessment Consultant has assessed the environmental impact of the work on the existing, adjacent healthcare functions, and has prepared an Infection Control Risk Assessment (ICRA) report that includes specific requirements of the Contractor.
B. Copies will be provided by the Owner.
C. The ICRA establishes strategic infection control provisions and requirements for the purpose of controlling the dissemination of airborne micro-organism contaminants encountered or generated during the construction process through the use of containment protocols and environmental monitoring.

1.4 ENVIRONMENTAL STUDY AND ASSESSMENT REPORT
A. The Owner’s Environmental Consultant has assessed the impact on the surrounding environment, and has prepared a report that contains specific requirements of the Contractor.
B. Copies will be provided by the Owner
1.5 TAX EXEMPTION STATUS INFORMATION
   A. This Project qualifies for exemption from taxes, and the Owner will provide a letter for documentation.

PART 2 - PRODUCTS (NOT USED)
PART 3 - EXECUTION (NOT USED)

00 3132 – GEOTECHNICAL DATA
PART 1 – GENERAL
1.1 SUMMARY
   B. Geotechnical Investigation, job #1150220, was prepared by AGEC Applied Geotechnical Engineering Consultants, Inc., 600 West Sandy Parkway, Sandy, Utah 84070.
   C. Geotechnical investigation is intended to supplement rather than serve in lieu of Contractors’ own investigations and is not a warranty of existing conditions. Neither the Owner nor the Architect warrant that conditions other than those outlined in the Assessment will not be encountered. Contractor is responsible for all requirements and provisions either outlined or detailed in the Contract Documents.
   D. It is required that Bidders read and familiarize themselves with the Geotechnical Study and visit the site.

1.2 REPORT
   B. The report is dated ____________.

PART 2 – PRODUCTS (NOT USED)
PART 3 – EXECUTION (NOT USED)

00 4100 – BID FORM
   o All bids shall be received by Mary Ann Shumway at corporate, unless agreed otherwise before bidding. Bid forms are provided in the project specifications.

00 5200 – AGREEMENT FORM

PART 2 -
   o No specific requirements for this section. Agreement form shall be noted as required by Project Manager for the specific project.

00 6100 – BONDS
PART 1 - GENERAL
1.1 SUMMARY
   B. The Contractor shall, prior to the execution of the Contract, furnish bonds covering the faithful performance of the Contract and the payment of all obligations arising thereunder in the amount of 100 percent of the Contract Sum covering 100 percent performance and 100 percent payment, and with such sureties secured through the Contractor’s usual sources as may be agreeable to the parties.
   C. The Contractor shall deliver the required bonds to the Owner not later than the date of execution of the Contract, or if the Work is commenced prior thereto in response to a letter of intent, the Contractor shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.
   D. The Contractor shall require the Attorney-In-Fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of his Power of Attorney.

Select below for non-Texas projects.
   E. Surety’s Standard Performance Bond and Labor and Material Payment Bond, will be the forms used as Performance and Labor and Material Payment Bonds for this Project.

Select below for Texas projects.
   F. Surety’s Standard Performance Bond and Labor and Material Payment Bond, meeting requirements of the Texas Property Code, will be the forms used as Performance and Labor and Material Payment Bonds for this Project.
00 7200 - GENERAL CONDITIONS
PART 1 - GENERAL
1.1 GENERAL
The PART 2 - (NOT USED)
PART 3 - (NOT USED)

00 7300 - SUPPLEMENTARY CONDITIONS
PART 1 - GENERAL
1.1 GENERAL
A. The Supplementary Conditions modify, change, delete from or add to the General Conditions and shall apply to each and every Section of the Work as though written in full therein.
B. The following paragraphs and subparagraphs take precedence over the General Conditions. Where any part of the General Conditions is modified or deleted by the Supplementary Conditions, the unaltered provisions remain in effect.
C. Correlation and Intent of the Contract Documents:
   1. Sections of Division 01 - General Requirements govern the execution of all sections of the specifications.
   2. Summary paragraphs placed at the beginning of the Sections present a brief indication of the principal Work included in that Section, but do not limit Work to subject mentioned nor purport to itemize Work that may be included.
   3. The Relation of Specifications and Drawings shall be equal authority and priority. Should they disagree in themselves, or with each other, bids shall be based on the most expensive combination of quality and quantity of work indicated. The appropriate Work, in the event of the above mentioned disagreements, shall be determined by the Architect.
   4. Should the Drawings disagree themselves, figures shall govern over scaled measurements, large scaled Drawings shall govern over small scale Drawings, the greater quantity of work or materials shall be furnished and performed; the descriptive writings shall govern over legends indicating material or conditions and the Agreement takes precedence over all other Contract Documents.
   5. Failure to report a conflict in the Contract Documents shall be deemed evidence that the Contractor has elected to proceed in the more expensive manner.
   6. Instructions, directions and requirements as specified shall be considered to be followed by the phrase "unless otherwise specified or indicated".
1.2 INTERPRETATION
A. In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.
1.3 INFORMATIONAL SUBMITTALS
A. Informational submittals may be so identified in the Contract Documents.
1.4 PROFESSIONAL CERTIFICATION
A. When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Architect shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

PART 2 - (NOT USED)
PART 3 - (NOT USED)
DIVISION 01 – GENERAL REQUIREMENTS

01 1000 - SUMMARY
PART 1 - GENERAL
1.1 SUMMARY
A. Section Includes:
   1. Project information.
   2. Phased construction.
   3. Work by Owner.
   4. Work under separate contracts.
   5. Future work.
   6. Purchase contracts.
   7. Owner-furnished, Owner-Installed (OFOI) products.
   8. Owner-furnished, Contractor-installed (OFCI) products.
   9. Worker conduct and appearance - work rules.
   11. Access to site.
   12. Coordination with occupants.
   13. Work restrictions.
   15. Miscellaneous provisions.

1.1 PROJECT INFORMATION
A. Project Identification:
   1. Project Location:

B. Owner: Intermountain Healthcare

C. Architect:
   1. Architect’s Consultants: The Architect has retained the following design professionals who have
      prepared designated portions of the Contract Documents:
      2. Refer to the cover sheet for consultant information

D. Other Owner Consultants: The Owner has retained the following design professionals who have prepared
   designated portions of the Contract Documents:

E. Contractor:

F. Construction Manager:
   1. Construction Manager has been engaged for this Project to serve as an advisor to Owner and to
      provide assistance in administering the Contract for Construction between Owner and Contractor,
      according to a separate contract between Owner and Construction Manager.
   2. Construction Manager for this Project is Project's constructor. In Divisions 01 through 33 Sections,
      the terms "Construction Manager" and "Contractor" are synonymous.

G. Project Web Site: A project Web site administered by Owner will be used for purposes of managing
   communication and documents during the construction stage.
   3. See Division 01 Section "Project Management and Coordination" for requirements for establishing,
      administering, and using the Project Web site.

1.2 PHASED CONSTRUCTION
A. The Work shall be conducted in multiple phases as indicated on the drawings, with each phase
   substantially complete and ready for occupancy before commencement of subsequent phases.

B. Before commencing Work of each phase, submit an updated copy of Contractor’s construction schedule
   showing the sequence, commencement and completion dates, and move-out and -in dates of Owner's
   personnel for all phases of the Work.
1.3 WORK UNDER SEPARATE CONTRACTS
A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

B. Concurrent Work: Owner will award separate contract(s) for the following construction operations at Project site. Those operations will be conducted simultaneously with work under this Contract.
1. Interior Signage

1.4 PURCHASE CONTRACTS
A. General: Owner has negotiated purchase contracts with suppliers of material and equipment to be incorporated into the Work. Owner will assign these purchase contracts to Contractor. Include costs for purchasing, receiving, handling, storage if required, and installation of material and equipment in the Contract Sum, unless otherwise indicated.
1. Contractor’s responsibilities are same as if Contractor had negotiated purchase contracts, including responsibility to renegotiate purchase and to execute final purchasing agreements.

B. Purchase Contracts Information:
1. Resilient Flooring See Division Section 09 6500
   a. Purchase Contract Firm and Representative: Mannington
   b. Purchase Contract Scope: Resilient Flooring
   c. Purchase Status: Price negotiated by Owner, to be incorporated in the Contract Sum by Contractor.

1.5 OWNER-FURNISHED, OWNER-INSTALLED (OFOI) PRODUCT
A. The specific product is not in this contract, and actual installation of the product will be made by the Owner.

B. Products will be indicated as follows:
1. Product prefixed with "Space for"
2. N.I.C.
3. Owner Furnished - Owner Installed
4. Product noted as "Future"

C. Roughing-in for Owner Furnished, Owner Installed Product is provided by applicable Sections governing the type of work. Obtain rough-in requirements from Owner.

1.6 OWNER-FURNISHED, CONTRACTOR-INSTALLED (OFCI) PRODUCT
A. Install products indicated as follows:
1. Owner Furnished, Contractor Installed”.
2. “Reuse”.
3. “Relocate.”

B. Provide labor, transportation, materials, tools, appliances and utilities necessary for the following:
1. Relocated Products:
   a. Removing installed product from the Owner’s existing facility, as required.
   b. Transportation of product from Owner’s facility to the job site.
2. Receiving and storage of Owner furnished, Contractor installed product, as required.
3. Providing materials and components for the product as necessary to install in an operating condition, but not including repairing of existing damages to the product.
4. Modification of product only as specified under the particular item.
5. Installation of product in this project, complete and in operating condition, including the adjusting and calibration of the product as necessary for proper operation.
6. Testing of product.
7. Paying of fees, licenses, and taxes in conjunction with the installation of the product.
8. Roughing-in and final utility connections for the Owner furnished, Contractor installed product remains the work of Sections governing the specific utility.
1.7 WORKER CONDUCT AND APPEARANCE - WORK RULES
   A. General: The conduct and appearance of each worker at the jobsite is of paramount importance. The Owner reserves the right to require any worker to be reassigned to work outside the Owner's property.
   1. Privacy: Where applicable, conduct work of the Contract with the maximum effort to maintain the privacy of the Owner’s operations, staff, and clientele. Do not permit workers to peer into other areas of the building visible from the work area. Invasion of privacy is a major infraction of the work rules.
   2. Conduct and Demeanor: Construction workers shall treat other construction workers, Owner's staff, clientele, and visitors (as applicable) professionally with respect and courtesy.
   3. Physical Appearance: Require each worker to dress appropriately in a clean, neat, and professional manner.
   4. Radios and Television: The use of entertainment devices including personal devices with headphones or earphones is prohibited at all times. Control the volume of communication radios and loudspeakers to avoid creating a nuisance.
   5. Tobacco Products: The use of tobacco products is prohibited.
   7. Loud Conduct: Screaming, yelling, and unnecessary loud conduct is prohibited.
   8. Physical Actions: Running, horseplay, fighting, and other unprofessional conduct is prohibited. Fighting is a major infraction of the work rules.
   9. Stealing: Stealing of any material, objects, furnishings, equipment, fixtures, supplies, clothing, or other items is prohibited and a major infraction.
   10. Sexual Harassment: All forms of physical and verbal sexual harassment including, without limitation: touching; whistling; sexually explicit stories, jokes, drawings, photos, and representations; exhibitionism; and all other sexually oriented offensive behavior is prohibited.
   11. Roaming: Construction personnel shall not be allowed to roam, or wander about, the existing facilities.
   12. Eating: Construction personnel are granted use of the existing Dining Area for breakfast, lunch, or dinner.
   13. Parking: Construction personnel shall only park in designated areas reserved for construction parking.
   14. Penalties: First infraction of the work rules shall result in a verbal warning from the Owner. Second infractions shall result in being requested to leave the Owner’s property. Owner’s decision in such matters shall be final with no exceptions.
   B. Warnings and Dismissal: For minor infraction of the rules, the Owner may issue a warning. Only one warning will be allowed per worker, and a second infraction shall result in immediate dismissal of the worker from the Owner’s property. For major infractions such as invasion of privacy, the worker shall be dismissed immediately without warning and possibly subject to criminal prosecution.
   C. Notification of Workers: Clearly notify and educate each worker about these Work Rules and the requirements for worker conduct and appearance.

1.8 HEALTHCARE FACILITY RENOVATION WORK
   A. Interim Life Safety Measures (ILSM): The following Interim Life Safety Measures (ILSM) as established by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) shall be implemented, documented and enforced in and adjacent to all construction areas:
   1. Ensure that exits provide free and unobstructed egress. Personnel shall receive training, and the Hospital shall be notified if alternative exits must be designated. Buildings/areas under construction must maintain escape facilities for construction workers at all times. Means of egress in construction areas must be inspected daily.
   2. Ensure free and unobstructed access to emergency department/service and for emergency forces.
   3. Ensure that fire alarm, detection, and suppression systems are not impaired. A temporary, but equivalent, system shall be provided, and the Hospital shall be notified, when any fire system is impaired. Temporary systems must be inspected and tested monthly.
4. Ensure temporary construction partitions are smoke tight and built of non-combustible or limited combustible materials that will not contribute to the development or spread of fire.
5. Provide additional fire-fighting equipment and use training for personnel.
6. Prohibit smoking in or adjacent to all construction areas.
7. Develop and enforce storage, housekeeping, and debris-removal practices that reduce the flammable and combustible fire load of the building to lowest level necessary for daily operations.
8. Conduct a minimum of two fire drills per shift per quarter.
9. Increase hazard surveillance of buildings, grounds, and equipment with special attention to excavations, construction areas, construction storage, and field offices.
10. Train personnel, and notify the Hospital, when structural or compartmentation features of fire safety are compromised.
11. Conduct organization wide safety education programs to assure awareness of deficiencies, construction hazards, and these ILSM.

1.9 ACCESS TO SITE
A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor’s use of Project site is limited only by Owner’s right to perform work or to retain other contractors on portions of Project.
B. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
C. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
   1. Confine constructions operations to work in areas indicated on drawings.
   2. Allow for Owner occupancy of site and use by the public.
   3. Keep driveways and entrances serving premises clear and available to Owner, Owner’s employees, and emergency vehicles at all times.
   4. Do not use drives and entrances for parking or storage of materials.
   5. Schedule deliveries to minimize use of driveways and entrances.
   6. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
   7. Coordinate use of premises under direction of Owner.
   8. Assume full responsibility for the protection and safekeeping of Products under this Contract, stored on the site.
   9. Move any stored Products, under Contractor’s control, which interfere with operations of the Owner or separate contractor.
   10. Obtain and pay for the use of additional storage or work areas needed for operations.
D. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.10 COORDINATION WITH OCCUPANTS
A. Full Owner Occupancy: Owner will occupy site and existing and/or adjacent building(s), as applicable, during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner’s day-to-day operations. Maintain existing exits unless otherwise indicated.
   1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
   2. Notify Owner not less than 72 hours in advance of activities that will affect Owner’s operations.
B. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner’s operations. Maintain existing exits unless otherwise indicated.
1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.

2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

C. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.

2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.

3. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.

4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.

1.11 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of Monday through Friday, unless otherwise indicated, or agreed by the Owner

1. Weekend Hours: To be worked out with the Owner

2. Early Morning Hours: To be worked out with the Owner

3. Hours for Utility Shutdowns: To be worked out with the Owner

4. Hours for noisy activities: To be worked out with the Owner

C. On-Site Work Hours: Coordinate the limitations relative to working hours in the existing building with Owner.

D. Existing Utility Interruptions: Refer to Division 01 Section "Execution" for requirements.

E. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than 72 hours in advance of proposed disruptive operations.

2. Obtain Owner's written permission before proceeding with disruptive operations.

1.12 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.

2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.

3. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
   1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
   2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

01 2100 - ALLOWANCES
   - No specific requirements

01 2200 - UNIT PRICES
   - No specific requirements

01 2300 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY
   A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS
   A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
   1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
   2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES
   A. Documentation: Show compliance with requirements for accepted alternates and the following, as applicable:
      1. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate accepted alternates.
      2. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
      3. Samples, where applicable or requested.
      4. Certificates and qualification data, where applicable or requested.
      5. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
      6. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
      7. Detailed comparison of Contractor’s construction schedule using accepted alternates with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer’s letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
      8. Cost information, including change in the Contract Sum.
   B. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

C. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

D. Execute accepted alternates under the same conditions as other work of the Contract.

E. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

F. Acceptance of Alternates will be exercised at option of Owner in any order or combination.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. ALTERNATE NO. 1: Resilient flooring manufacturer’s and materials
   - Refer to Division 09 6500 Section ‘Resilient Flooring’ for materials.
   - Base bid: Sheet vinyl flooring from Johnsonite, IQ, naturals or Genflor, Mipolam, Symbioz
   - Deduct Alternate: Forbo, Marmoleum, Real
   - Add Alternate: Nora, Sentica
   - Intent is for the Owner to get prices for the base bid, and alternate prices for the deduct alternate manufacturer and the add alternate manufacturer.
   - Utilize the approximate same colors to match those indicated on sheet A9.50 for the Nora product. The colors noted in the right hand column shall be ignored (Mannington numbers).

01 2500 - SUBSTITUTION PROCEDURES
   - No specific requirements

01 2600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.2 SUMMARY
   - Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.3 MINOR CHANGES IN THE WORK
   - Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on Architect’s Form HKS-710 "Architect’s Supplemental Instructions"; copy attached at the end of this Section.

1.4 PROPOSAL REQUESTS
   - Owner-Initiated Proposed Change: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time using Architect’s Form HKS-709 “Proposed Change”; copy attached at the end of this Section. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposed Changes issued by Architect are not instructions either to stop work in progress or to execute the proposed change.

2. Within time specified in Proposed Change or with reasonable promptness, when not otherwise specified, after receipt of Proposed Change, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
   a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
   b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
   c. Include costs of labor and supervision directly attributable to the change.
d. Include an updated Contractor’s construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

e. Include updated Submittal Schedule showing effect of the change.

B. Contractor-Initiated Proposed Change: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect using Contractor’s Standard Form.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

4. Include costs of labor and supervision directly attributable to the change.

5. Include an updated Contractor’s construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

6. Include updated Submittal Schedule showing effect of the change.

7. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

1.5 ADMINISTRATIVE CHANGE ORDERS

A. Allowance Adjustment: If applicable, see Division 01 Section "Allowances" for administrative procedures for preparation of Proposed Change for adjusting the Contract Sum to reflect actual costs of allowances.

B. Unit-Price Adjustment: If applicable, see Division 01 Section "Unit Prices" for administrative procedures for preparation of Proposed Change for adjusting the Contract Sum to reflect measured scope of unit-price work.

C. Alternates: If applicable, see Division 01 Section "Alternates" for administrative procedures for preparation of Proposed Change for adjusting the Contract Sum to reflect measured scope of alternate work.

1.6 CHANGE ORDER PROCEDURES

A. On Owner’s approval of a Proposed Change, Architect will issue a Change Order for signatures of Owner and Contractor on Architects Form HKS-701 "Change Order"; copy attached at the end of this Section.

1.7 CONSTRUCTION CHANGE DIRECTIVE


1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)
01 2900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
   a. Application for Payment forms with continuation sheets.
   b. Submittal schedule.
   c. Accepted Alternates.

2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments; provide subschedules showing values coordinated with each phase of payment.

4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work; provide subschedules showing values coordinated with each element.

5. Subschedules for Separate Design Contracts: Where the Owner has retained design professionals under separate contracts who will each provide certification of payment requests, provide subschedules showing values coordinated with the scope of each design services contract as described in Division 01 Section "Summary."

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:
   a. Project name and location.
   b. Name of Architect.
   c. Architect's project number.
   d. Contractor's name and address.
   e. Date of submittal.

2. Arrange the schedule of values in tabular form, in format accepted by Architect, with separate columns to indicate the following for each item listed:
   a. Related Specification Section or Division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders.
   g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
      1) Labor.
      2) Materials.
      3) Equipment.


4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance or bonded warehousing.

6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

7. Allowances (If Applicable): Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances (if applicable), as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

8. Alternates (If Applicable): Provide a separate line item in the schedule of values for each accepted alternate.

9. Change Orders: Provide a separate line item in the schedule of values for each change order.

10. Separate Owner-Consultant Contracts: Provide a separate line item in the schedule of values for each separate Owner-Consultant related Work item.

11. Purchase Contracts: When applicable, provide a separate line item in the schedule of values for each purchase contract. Show line-item value of purchase contract. Indicate owner payments or deposits, if any, and balance to be paid by Contractor.

12. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor’s option.

13. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.3 ARCHITECTS COST DATA
   A. In addition to the Schedule of Values, submit itemized cost data reporting on Architect's Form HKS-757 "Project Cost Summary"; copy attached at the end of this Section. Initial submission shall be included with contractors first Application for Payment. Final updated submission shall be included with contractors final Application for Payment.

1.4 APPLICATIONS FOR PAYMENT
   A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
      1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

   B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
      1. If the Agreement does not state payment dates, establish dates at preconstruction conference.
      2. Submit draft, or pencil, copy of Application for Payment seven days prior to due date for review by Architect.

   C. Application for Payment Forms: Unless directed otherwise by Owner, use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

   D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
      1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Stored Materials: If accepted by Owner, include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
   1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
   2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
   3. Provide summary documentation for stored materials indicating the following:
      a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
      b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
      c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

F. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from General Contractor, subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
   1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
   2. When an application shows completion of an item, submit conditional final or full waivers.
   3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
   4. Waiver Delays: Submit each Application for Payment with Contractor's waiver of mechanic's lien for construction period covered by the application.
      a. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
   5. Waiver Forms: Submit executed waivers of lien on forms, acceptable to Owner.

H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
   1. List of subcontractors.
   2. Schedule of values.
   3. Contractor's construction schedule (preliminary if not final).
   4. Products list (preliminary if not final).
   5. Schedule of unit prices.
   6. Submittal schedule (preliminary if not final).
   7. List of Contractor's staff assignments.
   8. List of Contractor's principal consultants.
   11. Initial progress report.
   13. Certificates of insurance and insurance policies.

I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

2. When applicable, this application shall reflect Certificate(s) of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited to, the following:

1. Evidence of completion of Project closeout requirements.

2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.

3. Updated final statement, accounting for final changes to the Contract Sum.

4. AIA Document G706, "Contractor’s Affidavit of Payment of Debts and Claims."

5. AIA Document G706A, "Contractor’s Affidavit of Release of Liens."

6. AIA Document G707, "Consent of Surety to Final Payment."

7. Evidence that claims have been settled.

8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

9. If applicable, final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

01 3100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General coordination procedures.

2. Coordination drawings.

3. Requests for Information (RFIs).

4. Project Web site.

5. Project meetings.

1.2 DEFINITIONS

A. Project communications documents shall be defined as the following:

1. Letters.

2. Memoranda.

3. E-Mail Communications/Internet Communications/Project Management Software Communications.

4. RFI (Request for Information - Contractor).

5. RFI-A (Request for Information - Architect).

1.3 FORMAT

A. Letters and Memoranda: Submit in formats acceptable to the Architect.

B. E–Mail Communications/Internet Communications/Project Management Software Communications: Submit in forms and formats acceptable to and as approved by the Architect.

C. RFI (Request for Information - Contractor): Submit on forms furnished by the Architect, or on other forms as approved by the Architect. Unless otherwise approved use Architect’s Form HKS-750, "Request for Information"; copy attached at the end of this Section.
D. **RFI-A (Request for Information - Architect)**, will be submitted by Architect to Contractor on Architects standard form.

1.4 **PROJECT COMMUNICATIONS DOCUMENTS**

A. Letters and Memoranda documents shall be submitted in a timely manner so as to facilitate project delivery and coordination. Routing of communications shall be as established in the Contract, the Contract Documents and the Pre-Construction Conference. Communications documents shall be transmitted or forwarded in a manner consistent with the schedule and progress of the work.

B. E–Mail Communications, Internet Communications, and Project Management Software programs must be compatible with the Architect's and Owner’s computer systems and equipment. The responsibility for all costs for management of these systems, including, but not limited to, licensing, onsite training or other training necessary for the proper operation of such systems, shall be by the Contractor. The Contractor shall keep written records and hard file copies of all electronic communications. Failure of the Contractor to keep such records shall waive the Contractor's right to rely on such communications and such communications shall be deemed to have not taken place.

C. **RFI (Request for Information - Contractor)** shall be defined and limited to a request from the Contractor seeking interpretation or clarification of the requirements of the Contract Documents. Such requests shall comply with the following requirements:

1. RFI requests shall be submitted in a timely manner, well in advance of related work, and allow sufficient time for the resolution of issues relating to the request for interpretation or clarification. Contractor shall schedule the submission of RFI’s so as to moderate and manage the flow of RFI requests. RFI’s shall be submitted in a manner consistent with the schedule and progress of the work, and shall not be submitted in a sporadic and/or excessive manner.

2. RFI requests shall be numbered in a sequential manner and contain a detailed description of the areas of work requiring interpretation or clarification. Include drawing and specification references, sketches, technical data, brochures, or other supporting data as deemed necessary by the Architect, for the Architect to provide the interpretations and clarifications requested.
   a. The Contractor shall include a "Proposed Solution" to the issue requiring interpretation or clarification.

3. RFI’s submitted to the Contractor by Sub-Contractors, vendors, suppliers, or other parties to the work shall be reviewed by the Contractor prior to submission to the Architect. If the Architect deems that such RFI requests have not been adequately reviewed by the Contractor, such requests will be returned to the Contractor for further action. Sub-Contractor’s RFI shall contain a “Proposed Solution”.

4. RFI requests shall not contain submittals, substitutions requests, routine communications, correspondence, memos, claims, or any information required by other areas of the Contract Documents. RFI requests containing such information will be returned to the Contractor without action by the Architect.

5. RFI requests are limited to a request for interpretation or clarification of the requirements of the Contract Documents. Interpretations provided by the Architect shall not change the requirements of the Contract or the Contract Documents. If the Contractor determines that the Architect’s response to an RFI gives cause for a change in the Contract or the Contract Documents, the Contractor shall promptly, within 5 working days, give written notice to the Architect of request for adjustments. Requests for adjustments to the Contract shall be submitted in a manner consistent with the terms and conditions of the Contract Documents.

6. If the Architect, after review, determines that any RFI has been submitted in an incomplete manner, is unnecessary, or does not otherwise comply with the requirements of this Section, the RFI will be returned without action to the Contractor. The Contractor shall delete the original submittal date from the RFI log and enter a new submittal date at the time of re-submittal.
7. **RFI Log:** Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Use software log that is part of Project Web site. Software log with not less than the following:
   a. Project name.
   b. Name and address of Contractor.
   c. Name and address of Architect.
   d. RFI number including RFIs that were returned without action or withdrawn.
   e. RFI description.
   f. Date the RFI was submitted.
   g. Date Architect's response was received.

8. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.
   a. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

D. **RFI-A (Request for Information - Architect)** shall be defined as a request by the Architect for information relating to the obligations of the Contractor under the Contract.
   1. After receipt of an RFI-A the Contractor shall provide a written response to the Architect within 5 working days. Responses shall be thorough, complete and shall contain all information requested by the Architect.
   2. An RFI-A shall be limited to a request by the Architect for information related to the project. The RFI-A shall not be construed as authorizing or directing a change in the Contract or the Contract Documents.

E. **Revisions to Construction Documents:** Responses to requests for information (RFI) shall not serve as construction documents; and the Contractor shall not incorporate RFI responses into construction of the Project, unless such answers bear the seal and signature of a licensed design professional.

1.5 **INFORMATIONAL SUBMITTALS**

A. **Subcontract List:** Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
   1. Name, address, and telephone number of entity performing subcontract or supplying products.
   2. Number and title of related Specification Section(s) covered by subcontract.
   3. Drawing number and detail references, as appropriate, covered by subcontract.

B. **Key Personnel Names:** Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
   1. Post copies of list in project meeting room, in temporary field office, and Project Web site. Keep list current at all times.

1.6 **GENERAL COORDINATION PROCEDURES**

A. **Coordination:** Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
   1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
   2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.
B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
   1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
   1. Preparation of Contractor’s construction schedule.
   2. Preparation of the schedule of values.
   3. Installation and removal of temporary facilities and controls.
   4. Delivery and processing of submittals.
   5. Progress meetings.
   6. Preinstallation conferences.
   7. Project closeout activities.
   8. Startup and adjustment of systems.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1.7 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
   1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
      a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
      b. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
      c. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
      d. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
      e. Indicate required installation sequences.
      f. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
   1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.
   2. File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format.
   3. BIM File Incorporation: When applicable, develop coordination drawing files from Building Information Model (BIM) established for Project.
      a. Perform three-dimensional component conflict analysis as part of preparation of coordination drawings. Resolve component conflicts prior to submittal. Indicate where conflict resolution requires modification of design requirements by Architect.
   a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
   b. Digital Data Software Program: Drawings are available in Autodesk Revit and/or Autocad; and compatible with Microsoft Windows operating system.
   c. Contractor shall execute a data licensing agreement in the form of AIA Document C106.

1.8 PROJECT WEB SITE
A. Use Architect’s Project Web site implementing Architect’s electronic project management software system for purposes of managing project communication and documentation until Final Completion.
B. Contractor, subcontractors, and other parties granted access to Project Web site shall execute a data licensing agreement in the form of AIA Document C106.

1.9 PROJECT MEETINGS
A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within 3 days of the meeting.
4. Attendance: Document attendance of all participants.
B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction.
1. Conduct the conference to review responsibilities and personnel assignments.
2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, and coordination with adjacent activities. Prepare agenda appropriate to Work.
3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, at a time to be decided prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

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3. **Agenda:** Discuss items of significance that could affect or delay Project closeout, including the following:
   a. Preparation of record documents.
   b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
   c. Submittal of written warranties.
   d. If applicable, requirements for completing sustainable design documentation.
   e. Requirements for preparing operations and maintenance data.
   f. Requirements for delivery of material samples, attic stock, and spare parts.
   g. Requirements for demonstration and training.
   h. Preparation of Contractor's punch list.
   i. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
   j. Submittal procedures.
   k. If applicable, coordination of separate contracts.
   l. If applicable, Owner's partial occupancy requirements.
   m. Installation of Owner's furniture, fixtures, and equipment.
   n. Responsibility for removing temporary facilities and controls.

4. **Minutes:** Entity conducting meeting will record and distribute meeting minutes.

E. **Progress Meetings:** Conduct progress meetings at regular intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. **Attendees:**
   - In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

3. **Agenda:** Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
   a. **Contractor's Construction Schedule:** Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      1) Review schedule for next period.
   b. Review present and future needs of each entity present, including the following or as needed:
      1) Interface requirements.
      2) Sequence of operations.
      3) If applicable, resolution of BIM component conflicts.
      4) Status of submittals.
      5) If applicable, status of sustainable design documentation.
      6) Deliveries.
      7) Off-site fabrication.
      8) Access.
      9) Site utilization.
      10) Temporary facilities and controls.
      11) Work hours.
      12) Hazards and risks.
      13) Progress cleaning.
      14) Quality and work standards.
15) Status of correction of deficient items.
16) Field observations.
17) Status of RFIs.
18) Status of proposal requests.
19) Pending changes.
20) Status of Change Orders.
21) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
   a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

F. Coordination Meetings: Conduct Project coordination meetings on an as-needed basis. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
   1. Attendees: Each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
   2. Agenda: Review items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
      a. Review present and future needs of each contractor present, including the following:
         1) Interface requirements.
         2) Sequence of operations.
         3) If applicable, resolution of BIM component conflicts.
         4) Status of submittals.
         5) Deliveries.
         6) Off-site fabrication.
         7) Access.
         8) Site utilization.
         9) Temporary facilities and controls.
        10) Work hours.
        11) Hazards and risks.
        12) Progress cleaning.
        13) Quality and work standards.
        14) Change Orders.

PART 2 - PRODUCTS

1.1 ELECTRONIC PROJECT MANAGEMENT SOFTWARE

A. General: So as to expedite electronic review process, process all documents through a web-based software service. Sending documents via email, FTP or paper will not be accepted.
   1. Basis of Design (Product Standard):
         1) Website: www.NewformaProjectCloud.com
         2) E-mail: projectcloud@newforma.com
         3) Phone: (800) 303-4650

B. Performance Requirements:
   1. Project License:
      a. Cloud based (no hardware required).
      b. Unlimited user accounts.
      c. Functionality to support subcontractors, contractors, architects and consultants.
      d. Provide access to data for all project team members at no cost to the individual users.
2. Training and Support:
   a. Dedicated project training.
   b. Phone support.
3. Archive:
   a. Export all data to an offline archive at the completion of the project.
   b. Provide archive to architect, contractor and owner.
   c. Archive shall include all attachments, meta data, review comments and time stamp history.
4. Submittals and RFIs:
   a. Customizable logs and reporting accessible by all users.
   b. Logs shall automatically update as submittals and RFIs are processed.
   c. Automated routing of submittals and RFIs to design team based on trade.
   d. Automated email notifications when submittal or RFI has been assigned or returned to a user.
   e. Automated weekly email to design team users of overdue items.
   f. Automatic sequential numbering per spec section for submittals.
   g. Two sets of due dates - one overall due date and a consultant due date.
   h. Built-in web-based markup tools to support a concurrent review of submittal and RFI.
5. Submittal Register:
   a. Software vendor shall take specifications and build the required list of submittals and import into the software.
6. Drawing Management:
   a. Provide current set of drawings and specifications through a centralized index.
   b. Automated association of PDFs to the centralized index.
   c. Manage drawing revisions with customizable review states.
   d. Drawings shall be accessible offline via mobile devices.
7. File Sharing:
   a. Integrated file sharing tool (FTP) to transfer any miscellaneous files such as BIM and CAD files.
   b. Access permissions (view/edit) at a folder level.
8. Punch List and other Field Task Management:
   a. Unlimited customizable field task types including punch list.
   b. Locate and assign tasks from a mobile device.
   c. No additional fees to individual users to access mobile apps.
   d. Data shall be accessible offline on mobile devices.

PART 3 - EXECUTION (Not Used)

01 3200 - CONSTRUCTION PROGRESS DOCUMENTATION
A major topic of this Section involves the type of scheduling that is required of the Contractor. There are 2 types and they are:
   o Bar Chart (aka, Gantt) Scheduling: Require bar chart scheduling for relatively small, non-complex projects including medical office buildings, parking garages, schools, interiors-only, minor exterior addition, and other similar projects whose construction costs are often $20 million and under.
   o Critical Path Method (CPM) Scheduling: Require CPM scheduling for large, complex projects such as high rises, hospitals, hotels, condos, sports facilities, and similar large and complex projects whose construction costs often exceed $20 million.

PART 1 - GENERAL
1.1 SUMMARY
   A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work.

Normally delete below. Retain if appropriate. Ordinarily, photo documentation for most projects can be accommodated with the limited provisions contained within this Section.
B. Related Section:
   1. Provide Construction Photographs in accordance with Division 01 Section "Photographic Documentation".

1.2 DEFINITIONS
A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
   1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
   2. Predecessor Activity: An activity that precedes another activity in the network.
   3. Successor Activity: An activity that follows another activity in the network.

B. Major Area: A story of construction, a separate building, or a similar significant construction element.

C. Milestone: A key or critical point in time for reference or measurement.

 Retain the remaining paragraphs of this article for CPM scheduling. Delete those paragraphs for bar chart scheduling.

D. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

E. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

F. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.

G. Event: The starting or ending point of an activity.

H. Float: The measure of leeway in starting and completing an activity.
   1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
   2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
   3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

I. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

1.3 SUBMITTALS
A. Format for Submittals: Submit required submittals in the following format:
   1. PDF electronic file.

B. Startup construction schedule.

 Retain below for CPM scheduling. Delete for bar chart scheduling.

C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. Contractor’s Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

 Retain below for CPM scheduling. Delete for bar chart scheduling.

E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
   1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
   2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
   3. Total Float Report: List of all activities sorted in ascending order of total float.
   4. Earnings Report: Compilation of Contractor’s total earnings from the Notice to Proceed until most recent Application for Payment.
F. Construction Schedule Updating Reports: Submit with Applications for Payment.

G. Daily Construction Reports: Submit at weekly intervals.

H. Material Location Reports: Submit at monthly intervals.

I. Site Condition Reports: Submit at time of discovery of differing conditions.

J. Special Reports: Submit at time of unusual event.

1.4 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor’s construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from entities involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

1.1 CONTRACTOR’S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.
   1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
   1. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
   2. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor’s construction schedule with submittal schedule.
   3. Startup and Testing Time: Include no fewer than 7 days for startup and testing.
   4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect’s administrative procedures necessary for certification of Substantial Completion.
   5. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

NOTE: While there is no harm to do so, there is no need to edit the following paragraph and numerous sub-paragraphs. The use of the phrase ‘as applicable’ in the opening sentence should tell readers that not of these items apply to the project.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule (where applicable), and show how the sequence of the Work is affected.
   1. Phasing: Arrange list of activities on schedule by phase.
   2. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
   3. Products Ordered in Advance: Include a separate activity for each product.
   4. Owner-Furnished Products: Include a separate activity for each product.
   5. Work Restrictions: Show the effect of the following items on the schedule:
      a. Coordination with existing construction.
      b. Limitations of continued occupancies.
      c. Uninterruptible services.
      d. Partial occupancy before Substantial Completion.
      e. Use of premises restrictions.
      g. Seasonal variations.
      h. Environmental control.
6. **Work Stages:** Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
   a. Subcontract awards.
   b. Submittals.
   c. Purchases.
   d. Mockups.
   e. Fabrication.
   f. Sample testing.
   g. Deliveries.
   h. Installation.
   i. Tests and inspections.
   j. Adjusting.
   k. Curing.
   l. Building flush-out.
   m. Startup and placement into final use and operation.

7. **Construction Areas:** Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
   a. Structural completion.
   b. Temporary enclosure and space conditioning.
   c. Permanent space enclosure.
   d. Completion of mechanical installation.
   e. Completion of electrical installation.
   f. Substantial Completion.

8. **Other Constraints** include but are not limited to the following:
   a. Roads.
   b. Parking.
   c. Landscape.

D. **Milestones:** Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, punch list activities, Substantial Completion, and final completion.

E. **Recovery Schedule:** When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

F. **Computer Scheduling Software:** Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

1.2 **STARTUP CONSTRUCTION SCHEDULE**

Retain bar chart below as a start-up scheduling option for all projects.

A. **Bar-Chart Schedule:** Submit startup, horizontal, bar-chart-type construction schedule within 14 days of date established for the Notice of Award.

B. **Preparation:** Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

Retain below for CPM scheduling. Delete for bar chart scheduling.

C. **Startup Network Diagram** may be submitted in lieu of Bar-Chart Schedule.

Retain below for bar chart scheduling. Delete for CPM scheduling.

1.3 **CONTRACTOR’S CONSTRUCTION SCHEDULE (BAR CHART/GANTT CHART)**

A. **Bar Chart/Gantt Chart Schedule:** Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor’s construction schedule within 30 days of date established for the Notice to Proceed. Base
schedule on the startup construction schedule and additional information received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
   1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

Retain below for CPM scheduling. Delete for bar chart scheduling.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

A. General: Prepare network diagrams using AON (activity-on-node) format.

B. Startup Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. CPM Schedule: Prepare Contractor's construction schedule using a time-scaled CPM network analysis diagram for the Work.
   1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 30 days after date established for the Notice to Proceed.
      a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
   2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
   3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
   4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to coordinate with the Contract Time.

D. CPM Schedule Preparation: Prepare a skeleton network to identify probable critical paths.
   1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
      a. Preparation and processing of submittals.
      b. Purchase of materials.
      c. Delivery.
      d. Fabrication.
      e. Installation.
      f. Punch list and final completion.
   2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
   3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
   4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
      a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment, fragnet, to demonstrate the effect of the proposed change on the overall project schedule.

F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
   1. Contractor or subcontractor and the Work or activity.
   2. Description of activity.
3. Main events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
10. Dollar value of activity (coordinated with the schedule of values).

G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
5. Changes in the critical path.
6. Changes in total float or slack time.

H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
   a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
   b. Submit value summary printouts one week before each regularly scheduled progress meeting.

1.5 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. High and low temperatures and general weather conditions, including presence of rain or snow.
5. Accidents.
6. Meetings and significant decisions.
7. Unusual events (see special reports).
8. Stoppages, delays, shortages, and losses.
9. Meter readings and similar recordings.
10. Emergency procedures.
11. Orders and requests of authorities having jurisdiction.
12. Change Orders received and implemented.
13. Construction Change Directives received and implemented.
14. Services connected and disconnected.
15. Equipment or system tests and startups.
16. Partial completions and occupancies.
17. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported.
plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.

C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

1.6 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor’s personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

1.1 CONTRACTOR’S CONSTRUCTION SCHEDULE

Retain below for CPM scheduling. Delete for bar chart scheduling.

A. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.
   1. In-House Option: Owner may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
   2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.

B. Contractor’s Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
   1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
   2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
   3. As the Work progresses, indicate final completion percentage for each activity.

C. Distribution: Distribute copies of approved schedule to Architect-Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
   1. Post copies in Project meeting rooms and temporary field offices.
   2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

Normally retain below unless using separate section 01 3233 "Photographic Documentation". Most exterior projects can be accommodated with the limited provisions in this Section. Delete for interiors-only projects and for relatively small, minor exterior projects.

1.2 CONSTRUCTION PHOTOGRAPHS

A. Photographer: Engage a qualified professional commercial photographer to take electronic construction photographs.

B. Minimum Digital Camera Resolution: 1800 x 1200 dpi (dots per inch) @ 72 dpi resolution.


D. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.

E. Image File Naming Convention (separate by an underscore _):
   1. Project Job Number / Year-Month-Day / Image Number. file extension
F. Print Format: 8 in (200 mm) by 10 in (250 mm) smooth surface matte prints on single-weight commercial-grade stock, mounted on linen or card stock to allow a 1 in (25 mm) wide margin and enclosed back to back in clear plastic sleeves that are punched for standard 3-ring binder.

G. Print Identification: On back of each print, provide an applied label or rubber-stamped impression with the following information:
1. Name of Project.
2. Name and address of photographer.
4. Name of Contractor.
5. Date photograph was taken.
6. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

H. Preconstruction Photographs: Before starting construction, take 4 photographs of Project site and surrounding properties from different vantage points, as directed by Architect. Show existing conditions adjacent to property. Submit prints and CD ROMs with digital files as required under "Submittals" Article.

I. Periodic Construction Photographs: Take 4 photographs monthly, coinciding with cutoff date associated with each Application for Payment. Photographer shall select vantage points to best show status of construction and progress since last photographs were taken. Submit prints and CD ROMs with digital files as required under "Submittals" Article.
1. Field Office Prints: In addition to prints required to be submitted under "Submittals" Article, make and retain in field office at Project site available at all times for reference, one set of prints of periodic construction photographs. Identify photographs the same as for those submitted to Architect.

J. Final Completion Construction Photographs: Take 8 photographs after date of Substantial Completion for submission as Project Record Documents. Architect will direct photographer for desired vantage points. Submit prints and CD ROMs with digital files as required under "Submittals" Article.

01 3233 – PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL
1.3 SUMMARY
A. Section includes administrative and procedural requirements for the following:

   Edit list below to suit project requirements
   1. Preconstruction photographs.
   2. Periodic construction photographs.
   3. Final completion construction photographs.

1.4 INFORMATIONAL SUBMITTLS

Retain paragraph below if Contractor hires the photograph/video service. Delete the item below if Owner hires the photograph/video service.

A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph or video recording. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.

Retain photograph requirement below if applicable. If using, be sure to delete photo requirements in 01 3200 “Construction Progress Documentation” and reference this Section.

B. Digital Photographs: Submit image files within 3 days of taking photographs.
   1. Digital Camera: Minimum sensor resolution of 4 megapixels.
   2. Image File Naming Convention (separate by an underscore _):
      a. Project Job Number / Year-Month-Day / Image Number . file extension
   3. Identification: Provide the following information with each image description in file metadata tag:
      a. Name of Project.
      b. Date photograph was taken.
      c. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
d. Retain video recording requirement below if applicable.
Retain web-cam photo documentation requirement below if applicable.

PART 2 - PRODUCTS

1.1 PHOTOGRAPHIC MEDIA
Retain photograph requirement below if applicable.

A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of megapixels, and at an image resolution of not less than 4288 by 2848 pixels.

Retain video recording requirement below if applicable.

PART 3 - EXECUTION
Retain photograph requirement below if applicable.

1.1 CONSTRUCTION PHOTOGRAPHS

A. Photographer: Engage a qualified photographer to take construction photographs.

B. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
   1. Maintain key plan with each set of construction photographs that identifies each photographic location.

C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
   1. Date and Time: Include date and time in file name for each image.
   2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.

D. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
   1. Flag construction limits before taking construction photographs.
   2. Take a minimum of 20 photographs to show existing conditions adjacent to property before starting the Work.
   3. Take a minimum of 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
   4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

E. Periodic Construction Photographs: Take 20 photographs monthly, coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

F. Final Completion Construction Photographs: Take 20 color photographs after date of Substantial Completion for submission as project record documents. Architect will inform photographer of desired vantage points.
   1. Do not include date stamp unless directed otherwise by Architect.

G. Additional Photographs: Architect may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum.
   1. Three days’ notice will be given, where feasible.
   2. In emergency situations, take additional photographs within 24 hours of request.
   3. Circumstances that could require additional photographs include, but are not limited to, the following:
      a. Special events planned at Project site.
      b. Immediate follow-up when on-site events result in construction damage or losses.
      c. Photographs to be taken at fabrication locations away from Project site.
      d. Substantial Completion of a major phase or component of the Work.
      e. Extra record photographs at time of final acceptance.
      f. Owner’s request for special publicity photographs.
01 3300 - SUBMITTAL PROCEDURES
- Reference requirements back to project management coordination and use of Intermountain’s project tracking software

01 4000 - QUALITY REQUIREMENTS
PART 2 - GENERAL
1.2 SUMMARY
A. Section includes administrative and procedural requirements for quality assurance and quality control.
B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor’s other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 DEFINITIONS
A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
D. Product Testing: Tests and inspections that are performed by an NRTL (Nationally Recognized Testing Laboratories), an NVLAP (National Voluntary Laboratory Accreditation Program), or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
A. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction and with the qualification requirements of individual specification section governing their work.
1.4 CONFLICTING REQUIREMENTS
   A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements to Architect for a decision before proceeding.
   B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 CONTRACTOR'S QUALITY-CONTROL PLAN
   A. Quality-Control Plan, General: Submit quality-control plan prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.
   B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
      1. Project quality-control manager may be the Project superintendent or be an individual with no other Project responsibilities, as accepted by the Architect.
   C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
   D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:  
      1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.  
      2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
      3. Owner-performed tests and inspections indicated in the Contract Documents, including tests and inspections indicated to be performed by the Commissioning Authority when Commissioning is included in the Project.
   E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
   F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results, including Owner acceptance of nonconforming work. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.6 REPORTS AND DOCUMENTS
   A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
      1. Date of issue.
      2. Project title and number.
      3. Name, address, and telephone number of testing agency.
      4. Dates and locations of samples and tests or inspections.
      5. Names of individuals making tests and inspections.
      6. Description of the Work and test and inspection method.
      8. Complete test or inspection data.
      9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
   1. Name, address, and telephone number of technical representative making report.
   2. Statement on condition of substrates and their acceptability for installation of product.
   3. Statement that products at Project site comply with requirements.
   4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
   5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
   6. Statement whether conditions, products, and installation will affect warranty.
   7. Statement whether conditions, products, and installation exceed manufacturer's statements.
   8. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
   1. Name, address, and telephone number of factory-authorized service representative making report.
   2. Statement that equipment complies with requirements.
   3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
   4. Statement whether conditions, products, and installation will affect warranty.
   5. Other required items indicated in individual Specification Sections.

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

1.7 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST’s National Voluntary Laboratory Accreditation Program.

H. Manufacturer’s Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer’s products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer’s products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:
   a. Provide test specimens representative of proposed products and construction.
   b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
   c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
   d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
   e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
   f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

K. Mock-ups: Prior to fabrication and installation, build mock-up for each form of construction and finish required to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mock-up to comply with the following requirements, using materials indicated for the completed Work:

1. Build mock-up in the location and of the size indicated or, if not indicated, as directed by Architect. Contractor shall provide structural support framework.
   a. Show typical components, attachments to building structure, and requirements of installation.

2. Clean exposed faces of mock-up.

3. Notify Architect seven days in advance of the dates and times when mock-up will be installed.

4. Demonstrate the proposed range of aesthetic effects and workmanship.

5. Protect accepted mock-up from the elements with weather-resistant membrane.

6. Obtain Architect’s acceptance of mock-ups before starting fabrication.

7. Maintain mock-ups during construction in an undisturbed condition as a standard for review of the completed Work.

8. Acceptance of mock-ups does not constitute acceptance of deviations from the Contract Documents contained in mock-ups unless such deviations are specifically noted by Contractor, submitted to Architect in writing, and accepted by Architect in writing.
9. Demolish and remove mock-ups when directed by Architect unless accepted to become part of the completed Work.

L. Integrated Exterior Mockups: See Division 01 Section "Visual Mock-Up Requirements".

M. Room Mockups: See Division 01 Section "Visual Mock-Up Requirements".

N. Laboratory Mockups: See Division 01 Section "Testing Mock-Up for Building Enclosure System".

1.8 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner’s responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.

2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.

3. The owner will contract with a vendor to provide the third-party testing and inspection of:
   a. Soils density/moisture relationships, gradation, and Atterberg limits
   b. Concrete compressive strength testing
   c. Asphalt tests (Marshall)
   d. Fireproofing thickness/adhesion, density
   e. Structural steel magnetic particle testing, ultrasonic inspection, field welding, high strength bolt/metal decking inspection, radiographic inspection
   f. Radiation protection shielding

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

   a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 48 hours in advance of time when Work that requires testing or inspecting will be performed.

4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."

D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
4. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
5. Do not perform any duties of Contractor.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
   1. Access to the Work.
   2. Incidental labor and facilities necessary to facilitate tests and inspections.
   3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
   4. Facilities for storage and field curing of test samples.
   5. Delivery of samples to testing agencies.
   6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
   7. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor’s construction schedule.
   1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.
      a. Prepare in tabular form and include the following:
         1) Specification Section number and title.
         2) Entity responsible for performing tests and inspections.
         3) Description of test and inspection.
         4) Identification of applicable standards.
         5) Identification of test and inspection methods.
         6) Number of tests and inspections required.
         7) Time schedule or time span for tests and inspections.
         8) Requirements for obtaining samples.
         9) Unique characteristics of each quality-control service.

1.9 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner may engage a qualified to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
   1. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
   2. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
   3. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
   4. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
   5. Retesting and reinspecting corrected work.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

1.1 TEST AND INSPECTION LOG
A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to Architect.
   4. Identification of testing agency or special inspector conducting test or inspection.
B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

1.2 REPAIR AND PROTECTION
A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution."
B. Protect construction exposed by or for quality-control service activities.
C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

01 4200 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS
A. General: Basic Contract definitions are included in the Conditions of the Contract.
B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
H. "Provide": Furnish and install, complete and ready for the intended use.
I. Submitted: The terms "submitted", "reported", "satisfactory" and similar words and phrases means submitted to Architect, reported to Architect and similar phrases.
J. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS
A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly
into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

   1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

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<th>Abbreviation</th>
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<th>Web Site</th>
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<tr>
<td>IAPMO</td>
<td>International Association of Plumbing and Mechanical Officials</td>
<td>(909) 472-4100</td>
<td><a href="http://www.iapmo.org">www.iapmo.org</a></td>
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<tr>
<td>ICC</td>
<td>International Code Council</td>
<td>(888) 422-7233</td>
<td><a href="http://www.iccsafe.org">www.iccsafe.org</a></td>
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<tr>
<td>UBC</td>
<td>Uniform Building Code</td>
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<td>(See ICC)</td>
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<td>CE</td>
<td>Army Corps of Engineers</td>
<td>(202) 761-0011</td>
<td><a href="http://www.usace.army.mil">www.usace.army.mil</a></td>
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<tr>
<td>DOC</td>
<td>Department of Commerce</td>
<td>(202) 482-2000</td>
<td><a href="http://www.commerce.gov">www.commerce.gov</a></td>
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<tr>
<td>DOD</td>
<td>Department of Defense</td>
<td>(215) 697-6257</td>
<td><a href="http://dodssp.daps.dla.mil">http://dodssp.daps.dla.mil</a></td>
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<td>DOE</td>
<td>Department of Energy</td>
<td>(202) 586-9220</td>
<td><a href="http://www.energy.gov">www.energy.gov</a></td>
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<td>EPA</td>
<td>Environmental Protection Agency</td>
<td>(202) 272-0167</td>
<td><a href="http://www.epa.gov">www.epa.gov</a></td>
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<td>FAA</td>
<td>Federal Aviation Administration</td>
<td>(866) 835-5322</td>
<td><a href="http://www.faa.gov">www.faa.gov</a></td>
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<tr>
<td>FCC</td>
<td>Federal Communications Commission</td>
<td>(888) 225-5322</td>
<td><a href="http://www.fcc.gov">www.fcc.gov</a></td>
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<tr>
<td>FDA</td>
<td>Food and Drug Administration</td>
<td>(888) 463-6332</td>
<td><a href="http://www.fda.gov">www.fda.gov</a></td>
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<td>GSA</td>
<td>General Services Administration</td>
<td>(800) 488-3111</td>
<td><a href="http://www.gsa.gov">www.gsa.gov</a></td>
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<td>HUD</td>
<td>Department of Housing and Urban Development</td>
<td>(202) 708-1112</td>
<td><a href="http://www.hud.gov">www.hud.gov</a></td>
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<td>LBL</td>
<td>Lawrence Berkeley National Laboratory</td>
<td>(510) 486-4000</td>
<td><a href="http://www.lbl.gov">www.lbl.gov</a></td>
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<td>NCHRP</td>
<td>National Cooperative Highway Research Program</td>
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<td>NIST</td>
<td>National Institute of Standards and Technology</td>
<td>(301) 975-6478</td>
<td><a href="http://www.nist.gov">www.nist.gov</a></td>
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<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration</td>
<td>(800) 321-6742</td>
<td><a href="http://www.osha.gov">www.osha.gov</a></td>
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<tr>
<td>PBS</td>
<td>Public Buildings Service</td>
<td>(202) 693-1999</td>
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<td>PHS</td>
<td>Office of Public Health and Science</td>
<td>(202) 690-7694</td>
<td><a href="http://www.osophs.dhhs.gov/ophs">www.osophs.dhhs.gov/ophs</a></td>
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<tr>
<td>RUS</td>
<td>Rural Utilities Service</td>
<td>(202) 720-9540</td>
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<tr>
<td>SD</td>
<td>State Department</td>
<td>(202) 647-4000</td>
<td><a href="http://www.state.gov">www.state.gov</a></td>
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<tr>
<td>TRB</td>
<td>Transportation Research Board</td>
<td>(202) 334-2934</td>
<td><a href="http://gulliver.trb.org">http://gulliver.trb.org</a></td>
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<td>USDA</td>
<td>Department of Agriculture</td>
<td>(202) 720-2791</td>
<td><a href="http://www.usda.gov">www.usda.gov</a></td>
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<tr>
<td>USPS</td>
<td>Postal Service</td>
<td>(202) 268-2000</td>
<td><a href="http://www.usps.com">www.usps.com</a></td>
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D. **Standards and Regulations:** Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.
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<td>Americans with Disabilities Act (ADA)</td>
<td>(800) 872-2253</td>
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<td>Architectural Barriers Act (ABA)</td>
<td>(202) 272-0080</td>
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<td>Accessibility Guidelines for Buildings and Facilities</td>
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<td>DOD</td>
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<td>Available from General Services Administration</td>
<td>(202) 619-8925</td>
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<td>Available from National Institute of Building Sciences</td>
<td>(202) 289-7800</td>
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01 4339 - VISUAL MOCK-UP REQUIREMENTS
- Mock ups shall be provided to demonstrate exterior wall assemblies for appropriate construction means and methods. Mock up construction shall also illustrate color, texture and finish, as required for materials being provided.

01 4516 - FIELD TEST FOR WATER LEAKAGE
- No specific requirements

01 4540 - TESTING MOCK-UP FOR BUILDING ENCLOSURE SYSTEM
- No specific requirements

01 5000 - TEMPORARY FACILITIES AND CONTROLS
PART 1 - GENERAL
1.1 SUMMARY
A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.2 USE CHARGES
A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
   1. Cost or use charges for temporary facilities are not chargeable to Owner or Architect.
   B. Sewer Service: Pay sewer-service use charges for sewer usage, indicated by utility company meter readings, by all entities for construction operations.
C. Water Service: Pay water-service use charges for water used, indicated by utility company meter readings, by all entities for construction operations.

D. Electric Power Service: Pay electric-power-service use charges for electricity used, indicated by utility company meter readings, by all entities for construction operations.

1.3 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
   1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
   2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
   3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.

C. Dust- and HVAC-Control Plan at Renovation Work: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
   1. Locations of dust-control partitions at each phase of work.
   2. HVAC system isolation schematic drawing.
   3. Location of proposed air-filtration system discharge.
   5. Other dust-control measures.

D. Temporary Utility Reports: Make available on request, reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

E. Implementation and Termination Schedule: Make available on request a schedule indicating implementation and termination of each temporary utility.

1.4 QUALITY ASSURANCE

   1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.

B. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

C. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.


E. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to, the following:
   1. Building Code requirements.
   2. Health and safety regulations.
   3. Utility company regulations.
   4. Police, Fire Department and Rescue Squad rules.
   5. Environmental protection regulations.
   6. City ordinances and regulations.
1.5 PROJECT CONDITIONS
   A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

1.1 MATERIALS
   A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Architect. Provide materials suitable for use intended.
   B. Materials and equipment may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.
   C. Portable Chain-Link Fencing: Minimum 2 inch (50 mm), 0.148 inch (3.8 mm) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8 inch (60 mm) OD line posts and 2-7/8 inch (73 mm) OD corner and pull posts, with 1-5/8 inch (40 mm) OD top and bottom rails. Provide concrete or galvanized-steel bases for supporting posts.
   D. Polyethylene Sheet: Reinforced, fire-resistive sheet, 6 mil (0.14 mm) minimum thickness, with Class A flame-spread rating per ASTM E 84 and passing NFPA 701 Test Method 2.
   E. Dust Containment Barrier for Doors: reinforced, fire-resistive polyethylene sheet, 10 mil (0.25 mm) minimum thickness with Class B flame-spread rating per ASTM E 84 and designed to be used for securing temporary construction doors so as to minimize and mitigate particle control during construction.
   F. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (900 by 1500 mm).
   G. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

1.2 TEMPORARY FACILITIES
   A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
   B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
      1. Furniture required for Project-site.
      2. Conference room of sufficient size to accommodate. Provide electrical power service and 120-V ac duplex receptacles. Furnish room with conference table, chairs, and tack and marker boards.
      3. Drinking water and private toilet.
      4. Heating and cooling equipment necessary to maintain a uniform indoor.
      5. Lighting fixtures capable of maintaining average illumination at desk height.
   C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
      1. Store combustible materials apart from building.

1.3 EQUIPMENT
   A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
      1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.
   B. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
   C. Drinking-Water Fixtures: Containerized, tap-dispenser, bottled-water drinking-water units, including paper cup supply.
D. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.

E. Air-Filtration Units for Renovation Work: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

1.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

1.2 TEMPORARY UTILITY INSTALLATION

A. Locate temporary utilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify utilities as required.

B. Provide each utility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until utilities are no longer needed or are replaced by authorized use of completed permanent utilities.

C. Engage appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

2. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.

3. Obtain easements to bring temporary utilities to Project site where Owner's easements cannot be used for that purpose.

D. Storm Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.

1. Filter out excessive soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.

2. Connect temporary sewers to municipal system as directed by sewer department officials.

3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. After heavy use, restore normal conditions promptly.

4. Provide temporary filter beds, settlement tanks, separators, and similar devices to purify effluent to levels acceptable to authorities having jurisdiction.

E. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction. Sterilize temporary water piping before use in accordance with requirements of authorities having jurisdiction.

F. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

1. Existing Toilets in Occupied Facilities: Use of Owner's existing toilet facilities will not be permitted or allowed.

G. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low
temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

H. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
   1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.
      a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
      b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
   2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
   3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

I. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
   1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.

J. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

K. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

L. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Provide telephone line(s) for each field office.

M. Electronic Communication Service: Provide internet access of not less than 15-Mbps download and 5-Mbps upload speed for use by Architect and Owner to access Project electronic documents and maintain electronic communications

1.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
   1. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access.
   2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate to support loads and to withstand exposure to traffic during construction period. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
   1. Provide dust-control that is nonpolluting and nontracking. Reapply as required to minimize dust.

C. Traffic Controls: Provide temporary traffic controls at junction of temporary roads with public roads. Include warning signs for public traffic and "STOP" signs for entrance onto public roads. Comply with requirements of authorities having jurisdiction.
   1. Protect existing site improvements to remain including curbs, pavement, and utilities.
   2. Maintain access for fire-fighting equipment and access to fire hydrants.

D. Parking: Coordinated parking with Owner’s requirements.

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Before connection and operation of permanent drainage piping system, provide temporary drainage where roofing or similar construction is completed.
3. Remove snow and ice as required to minimize accumulations.

F. Project Signs: Coordinated signs with Owner’s requirements and requirements of authorities having jurisdiction.

G. Waste Disposal Facilities: Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."

H. Comply with progress cleaning requirements in Division 01 Section "Execution."

I. Existing Elevator Use in Occupied Facilities: Use of Owner’s existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
   1. Do not load elevators beyond their rated weight capacity.
   2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

J. Existing Stair Usage in Occupied Facilities: Use of Owner’s existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
   1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

K. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

1.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
   1. Comply with work restrictions specified in Division 01 Section "Summary."

C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
G. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
   1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.

H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

I. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

J. Covered Walkway: Erect protective, covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction and requirements indicated on Drawings.

K. Temporary Enclosures: Provide temporary, weathertight, enclosures for protection of construction, in progress and completed, including, but not limited to, vertical and horizontal openings, from exposure, foul weather, other construction operations, and similar activities.

L. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas from fumes and noise.
   1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
   2. Construct dustproof partitions with two layers of 6 mil (0.14 mm) polyethylene sheet on each side. Cover floor with two layers of 6 mil (0.14 mm) polyethylene sheet, extending sheets 18 inches (450 mm) up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.
      a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches (1200 mm) between doors. Maintain walk-off mats in vestibule, for dust control.
   3. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
   4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
   5. Protect air-handling equipment.
   6. Provide walk-off mats at each entrance through temporary partition.

M. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241 and authorities having jurisdiction; manage fire-prevention program.

1.5 MOISTURE CONTROL


B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure, protect as follows:
   1. Protect porous materials from water damage.
   2. Protect stored and installed material from flowing or standing water.
   3. Keep porous and organic materials from coming into prolonged contact with concrete.
   4. Remove standing water from decks.
   5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture, protect as follows:
   1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
   2. Keep interior spaces reasonably clean and protected from water damage.
   3. Periodically collect and remove waste containing cellulose or other organic matter.
4. Discard or replace water-damaged material.
5. Do not install material that is wet.
6. Discard, replace, or clean stored or installed material that begins to show discoloration.
7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Use permanent HVAC system to control humidity.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits. Refer to technical specification sections for additional and more stringent criteria.

1.6 OPERATION, TERMINATION, AND REMOVAL
A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
B. Maintenance: Maintain facilities in good operating condition until removal.
1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
2. Maintain markers for underground lines. Protect from damage during excavation operations.
C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor.
2. Remove temporary roads and paved areas not intended for or approved for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

01 6000 - PRODUCT REQUIREMENTS
PART 1 - GENERAL
1.1 SUMMARY
A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.2 DEFINITIONS
A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.

3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Changes in products, materials, and equipment from those required by the Contract Documents and proposed by Contractor. Refer to Division 01 Section “Substitution Procedures”.

C. Basis-of-Design Product Specification: Where a specific manufacturer’s product is named and accompanied by the words "Product Standard," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other manufacturers.

D. Hazardous Substances Prohibited by Law: Including, but not limited to, any product, material, element, constituent, chemical, substance, compound, or mixture, which is defined in, included under, or regulated by any environmental laws.

E. Environmental Laws: Applicable local, state, and federal laws, rules, ordinances, codes, regulations, and requirements in effect at the time Contractor’s services are rendered, any amendments for Contractor’s services rendered after the effective date of any such amendments.

1.3 SUBMITTALS

A. Comparable Product: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements. Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

C. Contractor shall submit an affidavit on construction company letterhead signed by an officer of the company, notarized by a notary public, which certifies compliance with the environmental laws controlling hazardous substances for the construction of this Project.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

B. Compliance: Contractor shall take whatever measures deemed necessary to insure that all employees, suppliers, vendors, fabricators, subcontractors, or their assigns, to comply with hazardous substance requirements.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer’s written instructions.

B. Delivery and Handling:
  1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  3. Deliver products to Project site in an undamaged condition in manufacturer’s original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:
  1. Store products to allow for inspection and measurement of quantity or counting of units.
  2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.6 PRODUCT WARRANTIES
A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
   1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product, required by the Contract Documents to provide specific rights for Owner, and specifically endorsed by manufacturer to Owner.
   2. Warranties: Prepare a written document, on manufacturer’s standard form, modified to include Project-specific information, that contains appropriate terms and identification, properly executed.
B. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS
1.1 PRODUCT SELECTION PROCEDURES
A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
   4. Where products are accompanied by the term "as selected," Architect will make selection.
   6. Products and materials brought onto the Project Site, and products and materials incorporated into the Work, shall comply with environmental laws.
B. Product Selection Procedures:
   1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
   2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Products:
   a. Restricted List (Approved Manufacturers/Fabricators and Products): Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.
   b. Nonrestricted List (Available Manufacturers/Fabricators and Products): Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers:
   a. Restricted List (Approved Manufacturers/Fabricators): Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.
   b. Nonrestricted List (Available Manufacturers/Fabricators): Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

5. Basis-of-Design Product (Product Standard): Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers, or unnamed manufacturer's product.

C. Descriptive Specification Requirements: Where Specifications describe a product, or assembly, listing exact characteristics required, without use of a brand or trade name, provide a product, material or assembly that provides the characteristics and otherwise complies with Contract requirements.

D. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product or material is specified for a specific application.

1. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.

E. Compliance with Standards, Codes and Regulations: Where Specifications only require compliance with imposed code, standard or regulation, select product that complies with standards, codes or regulations specified.

F. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.

G. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's color, gloss, pattern, density, or texture" or similar phrase, select a product (and manufacturer) that complies with other specified requirements.

1. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that does not include premium items.
2. Custom Range: Where Specifications include the phrase “custom range of colors, patterns, textures” or similar phrase, Architect will select color, pattern, or texture from manufacturer’s product line that includes both standard and premium items.

3. Special Custom Range: Where Specifications include the phrase “special custom range of colors patterns, textures” or similar phrase, Architect will select a new color, pattern, or texture different from those normally produced by the manufacturer.

A. Allowances (If Applicable): Refer to provisions of individual Specification Sections and of Division 01 Section "Allowance" for allowances that control product selection and for procedures required for processing such selections.

1.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor’s request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents; that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.

2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

3. Evidence that proposed product provides specified warranty.

4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.

5. Samples, if requested.

PART 3 - EXECUTION

1.1 RESTRICTION OF HAZARDOUS SUBSTANCES

A. Contractor agrees that it shall not knowingly after reasonable diligence and effort, incorporate into the Work any hazardous substance other than as may be lawfully contained within products, except in accordance with applicable environmental laws. Further, in performing any of its obligations hereunder, Contractor shall not cause any release of hazardous substances into, or contamination of, the environment, including soil, the atmosphere, any watercourse or ground water, except in accordance with applicable environmental laws. In the event that Contractor engages in any of the activities prohibited in this paragraph, to the fullest extent permitted by law, Contractor hereby indemnifies and holds harmless Owner and its partners, members, officers, directors, agents, employees and consultants from and against any and all claims, damages, losses, causes of action, suits and liabilities of every kind, including, but not limited to, expenses of litigation, court costs, punitive damages and attorney’s fees, arising out of, incidental to or resulting from the activities prohibited.

B. In the event Contractor observes on the Project Site any substance which Contractor reasonably believes to be a hazardous substance, and which is being introduced into the Work, or exists on the Project Site, in a manner violative of any applicable environmental laws, Contractor shall immediately notify Owner and report the condition to Owner in writing. The Work in the affected area shall not thereafter be resumed except by written authorization of Owner if in fact a hazardous substance has been encountered and has not been rendered harmless. In the event that Contractor fails to give Owner proper notification hereunder, upon knowingly observing a hazardous substance at the Project Site, to the fullest extent permitted by the law, Contractor hereby indemnifies and holds harmless Owner, and all of its partners, members, officers, directors, agents, employees and consultants from and against all claims, damages, losses, causes of action, suits and liabilities of every kind, including, but not limited to, expenses of litigation, court costs, punitive damages and attorneys’ fees, arising out of, incidental to, or resulting from Contractor’s failure to stop the Work.
C. If Owner believes that hazardous substances may have been located, generated, manufactured, used or disposed of on or about the Project Site by Contractor or any of its employees, agents, subcontractors, suppliers, or invitees, Owner may have environmental studies of the Project Site conducted as it deems appropriate, and Contractor shall be responsible for the cost of such studies to the extent that Contractor or any of its employees, agents, subcontractors, suppliers or invitees are responsible for the presence of any hazardous substances.

01 7300 – EXECUTION
PART 1 - GENERAL
1.1 SUMMARY
   A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
      2. Field engineering and surveying.
      3. Installation of the Work.
      4. Cutting and patching.
      5. Coordination of Owner-installed products.
      6. Progress cleaning.
      7. Starting and adjusting.
      8. Protection of installed construction.

1.2 DEFINITIONS
   A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
   B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.3 SUBMITTALS
   A. Qualification Data: For land surveyor or professional engineer.
   B. Certificates: Submit certificate signed by land surveyor or professional engineer certifying that location and elevation of improvements comply with requirements.
   C. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
      1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
      2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
      3. Products: List products to be used for patching and firms or entities that will perform patching work.
      4. Dates: Indicate when cutting and patching will be performed.
      5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
         a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.
      6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
      7. Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.
A. Retention System Certification: Submit a statement certified by the Contractor’s registered structural engineer that the design of components of the excavation support system is in compliance with provisions of the Contract Documents and the local building code, and is in keeping with generally accepted engineering practice.

8. Submit, if requested, design calculations, specifications and erection drawings, bearing the Contractor’s registered structural engineer’s stamp, to the local building code official.

9. Submit complete excavation support system shop drawings for information coordination purposes only.

10. Architect/Engineer will neither review nor approve excavation support system shop drawings.

1.4 QUALITY ASSURANCE

A. Retention System Engineering: Each component of the excavation support system shall be designed by a registered structural engineer, in accordance with the local building code, and registered structural engineer shall be engaged by the Contractor.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection

2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

3. Miscellaneous Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction on the exterior or in occupied spaces in a manner that would, in Architect’s opinion, reduce the building’s aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

   a. If possible, retain original Installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage original Installer or fabricator, engage another recognized, experienced, and specialized firm.

C. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

D. Manufacturer’s Installation Instructions: Obtain and maintain on-site manufacturer’s written recommendations and instructions for installation of products and equipment.

1.5 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

1.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with requirements in Division 01 sustainable construction requirements Section.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.
PART 3 - EXECUTION

1.1 EXAMINATION

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

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

C. Acceptance of Surfaces and Conditions: Examine substrates to receive products and systems and associated work for compliance with requirements and other conditions affecting performance. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents. Starting work within a particular area will be construed as acceptance of surface conditions. Record observations.
   1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
   2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
   3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

1.2 INSTALLATION, GENERAL

A. Installation Quality Standards: In addition to standards listed elsewhere, perform Work according to following, unless otherwise specified:
   1. Respective manufacturer/fabricator’s written installation instructions.
   2. Accepted submittals.

B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by isolating metals and other materials from direct contact with incompatible materials.

1.3 PREPARATION

A. General: Comply with manufacturer’s instructions, recommendations, and specifications for cleaning and surface preparation. Surfaces shall have no defects, contaminants, or errors which would result in poor or potentially defective installation or would cause latent defects in Work.

B. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Existing Utility Interruptions at Renovation Work: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Notify Owner not less than 72 hours in advance of proposed utility interruptions.
   2. Do not proceed with utility interruptions without Owner’s written permission.

C. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Project Management and Coordination."

1.4 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a land surveyor or professional engineer to lay out the Work using accepted surveying practices.
   1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
   2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
   3. Inform installers of lines and levels to which they must comply.
   4. Check the location, level and plumb, of every major element as the Work progresses.
   5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
   6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

1.5 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
   1. Do not change or relocate existing benchmarks or control points. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
   2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

B. Benchmarks: Establish and maintain a minimum of 2 permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
   1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
   2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
   3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

C. Certified Survey: 30 days after completion of each work component/activity, including, but not limited to, foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
1.6 INSTALLATION

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

B. Comply with manufacturer’s written instructions and recommendations for installing products in applications indicated, unless indicated otherwise in the Contract Documents.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

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

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located, aligned, and coordinated with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

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

1.7 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
   1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Division 01 Section "Summary."
F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer’s written recommendations.
   1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
   3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
   4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
   5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
   6. Proceed with patching after construction operations requiring cutting are complete.

H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
   1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
   2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
      a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
      b. Restore damaged pipe covering to its original condition.
   3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
      a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
      b. Patch fire rated assemblies with materials to match existing and maintain assembly fire rating.
   4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
   5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

1.8 OWNER-INSTALLED PRODUCTS
A. Site Access: As applicable, provide access to Project site for Owner's construction personnel.
B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.
1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.

2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

1.9 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
   2. Do not hold waste materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F (27 deg C).
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
      a. Use containers specifically intended for holding types of waste materials identified where applicable, e.g. blue colored containers with labeling and symbols for bio-waste.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills immediately.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls." and Division 01 Section "Construction Waste Management and Disposal", whichever is the more restrictive.

H. Remove construction markings not required and graffiti immediately, repairing or replacing damaged material.

I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

K. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

1.10 STARTING AND ADJUSTING

A. As applicable, coordinate startup and adjusting of equipment and operating components with commissioning requirements in Division 01 specification sections.

B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Manufacturer’s Field Service: Comply with qualification requirements in Division 01 Section "Quality Requirements."

1.11 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

01 7419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:
   1. Salvaging and/or recycling nonhazardous demolition and construction waste.
   2. Disposing of nonhazardous construction waste.

1.2 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

C. Salvage / Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

1.3 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage/recycling of 50 percent by weight of total nonhazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials.

1.4 SUBMITTALS

A. Waste Management Plan: Submit plan within 30 days of date established for commencement of the Work.

B. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:
   1. Material category.
   2. Generation point of waste.
   3. Total quantity of waste in tons (tonnes).
   4. Total quantity of waste recovered (salvaged plus recycled) in tons (tonnes).
   5. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

C. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

D. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

E. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

F. Submittal: Letter signed by Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements have been met.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
B. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.6 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements of this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
2. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
3. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:

1. Total quantity of waste.
2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
3. Total cost of disposal (with no waste management).
4. Revenue from salvaged / recycled materials.
5. Savings in hauling and tipping fees that are avoided.
6. Handling and transportation costs. Include cost of collection containers for each type of waste.
7. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION

1.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Comply with Division 01 Section "Temporary Facilities and Controls" for operation, termination, and removal requirements.

B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.
1.2 RECYCLING CONSTRUCTION WASTE
   A. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

1.3 DISPOSAL OF WASTE
   A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
      1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
      2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   B. Burning: Do not burn waste materials.
   C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

01 7420 - LEED CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
   o No specific requirements

01 7700 - CLOSEOUT PROCEDURES
PART 1 - GENERAL
1.1 SUMMARY
   A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
      1. Substantial completion procedures.
      2. Final completion procedures.
      3. Warranties.
      4. Final cleaning.
      5. Repair of the Work.

1.2 SUBMITTALS
   A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
   B. Certified List of Incomplete Items: Final submittal at Final Completion.
   C. Certificates of Release: From authorities having jurisdiction.
   D. Certificate of Insurance: For continuing coverage.
   E. Field Report: For pest control inspection.
   F. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.3 SUBSTANTIAL COMPLETION PROCEDURES
   A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
   B. Submittals Prior to Substantial Completion: Complete the following prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
      1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
      2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Divisions 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

4. Submit maintenance material submittals specified in individual Divisions 02 through 33 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer’s name and model number where applicable.
   a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner’s signature for receipt of submittals.

5. Submit test/adjust/balance records.

C. Procedures Prior to Substantial Completion: Complete the following prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner’s personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner’s personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Division 01 Section "Demonstration and Training."
6. Advise Owner of changeover in heat and other utilities.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete startup and testing of systems and equipment.
10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor’s list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request, in writing, reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

E. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

1.4 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
   a. If applicable, the final change order must be executed and included in the final application for payment before final completion can be achieved
2. Certified List of Incomplete Items: Submit certified copy of Architect’s Substantial Completion inspection list of items to be completed or corrected (punch list). Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.
B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)
A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction
   1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
   3. Include the following information at the top of each page:
      a. Project name.
      b. Date.
      c. Name of Architect.
      d. Name of Contractor.
      e. Page number.
   4. Submit list of incomplete items in the format agreed upon by the Owner and Architect.

1.6 SUBMITTAL OF PROJECT WARRANTIES
A. Time of Submittal: Submit written warranties for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
B. Partial Occupancy: Submit properly executed warranties within minimum number days, as required by the Contract, of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
   1. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS
1.1 MATERIALS
A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
   1. Use cleaning products that comply with Green Seal’s GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION
1.1 FINAL CLEANING
A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer’s written instructions.
   1. Complete the following cleaning operations, as applicable, before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

d. Remove tools, construction equipment, machinery, and surplus material from Project site.

e. Remove snow and ice to provide safe access to building.

f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

h. Sweep concrete floors broom clean in unoccupied spaces.

i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.

j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.

k. Remove labels that are not permanent.

l. Remove all graffiti and construction writing.

m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

p. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.

q. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.

r. Leave Project clean and ready for occupancy.

C. Pest Control: Comply with pest control requirements in Division 01 Section "Temporary Facilities and Controls." Prepare written report.

D. Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls," and Division 01 Section "Construction Waste Management and Disposal", whichever is the more restrictive and as follows:

1. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

1.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.

2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

4. Replace all lamps and starters to comply with requirements for new fixtures.

C. All Warranties remain in effect.

1.3 ATTIC STOCK PROVISIONS

A. Where applicable, the following quantities of attic stock shall be provided:

1. Carpet 50 LF per 600 SF
2. Carpet base 200 LF
3. Floor & wall tile (restroom) 2 boxes
4. Resilient Flooring 2 boxes
5. Sheet Vinyl 250 SF
6. Rubber base 1 box/110 LF
7. Paint 5 interior colors and 1 exterior color, 6-8 gallons each
8. Ceiling tile 2 types: 4-5 cartons each

01 7823 – OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Emergency manuals.
3. Operation manuals for systems, subsystems, and equipment.
4. Product maintenance manuals.
5. Systems and equipment maintenance manuals.

1.2 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
B. Subsystem: A portion of a system with characteristics similar to a system.

1.3 CLOSEOUT SUBMITTALS

A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

B. Format: Submit operations and maintenance manuals in the following format:

1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Owner.
   a. Name each indexed document file in composite electronic index with applicable item name.
      Include a complete electronically linked operation and maintenance directory.
   b. Enable inserted reviewer comments on draft submittals.

C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are approved.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and before commencing demonstration and training. Architect will return copy with comments.

1. Correct or revise each manual to comply with Architect’s comments. Submit copies of each corrected manual prior to commencing demonstration and training.
PART 2 - PRODUCTS

1.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:
   1. List of documents.
   2. List of systems.
   3. List of equipment.
   4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with the same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
   1. Title page.
   2. Table of contents.

B. Title Page: Include the following information:
   1. Subject matter included in manual.
   2. Name and address of Project.
   3. Name and address of Owner.
   4. Date of submittal.
   5. Name and contact information for Contractor.
   6. Name and contact information for Architect.
   7. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
   8. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
   1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
   1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
   2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect...
the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

1.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:
   1. Type of emergency.
   2. Emergency instructions.
   3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
   1. Fire.
   2. Flood.
   5. Power failure.
   7. System, subsystem, or equipment failure.
   8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner’s operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:
   1. Instructions on stopping.
   2. Shutdown instructions for each type of emergency.
   3. Operating instructions for conditions outside normal operating limits.
   4. Required sequences for electric or electronic systems.
   5. Special operating instructions and procedures.

1.4 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
   2. Performance and design criteria if Contractor has delegated design responsibility.
   3. Operating standards.
   4. Operating procedures.
   5. Operating logs.
   6. Wiring diagrams.
   7. Control diagrams.
   8. Piped system diagrams.
   9. Precautions against improper use.
   10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:
   1. Product name and model number. Use designations for products indicated on Contract Documents.
   2. Manufacturer’s name.
   3. Equipment identification with serial number of each component.
   4. Equipment function.
   5. Operating characteristics.
   6. Limiting conditions.
   7. Performance curves.
   8. Engineering data and tests.
   9. Complete nomenclature and number of replacement parts.
C. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

1.5 PRODUCT MAINTENANCE MANUALS

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual’s table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:
1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer’s written recommendations and the following:
1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

1.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers’ maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual’s table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
C. Manufacturers’ Maintenance Documentation: Manufacturers’ maintenance documentation including the following information for each component part or piece of equipment:
   1. Standard maintenance instructions and bulletins.
   2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
   3. Identification and nomenclature of parts and components.
   4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
   1. Test and inspection instructions.
   2. Troubleshooting guide.
   3. Precautions against improper maintenance.
   4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   5. Aligning, adjusting, and checking instructions.
   6. Demonstration and training video recording, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
   1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
   2. Maintenance and Service Record: Include manufacturers’ forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers’ maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

1.1 MANUAL PREPARATION

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner’s operating personnel for types of emergencies indicated.

B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
   1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner’s operating personnel.

D. Manufacturers’ Data: Where manuals contain manufacturers’ standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
   1. Prepare supplementary text if manufacturers’ standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

E. Drawings: Prepare drawings supplementing manufacturers’ printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams.
Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of operation and maintenance manuals.
2. Comply with requirements of newly prepared record Drawings in Division 01 Section "Project Record Documents."
3. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

01 7839 – PROJECT RECORD DOCUMENTS
PART 1 - GENERAL
1.1 SUMMARY
A. Section includes administrative and procedural requirements for project record documents, including the following:
   1. Record Drawings.
   2. Record Specifications.
   3. Record Product Data.
   4. Miscellaneous record submittals.

1.2 SUBMITTALS
A. Record Drawings: Comply with the following:
   1. Number of Copies: Submit copies of record Drawings as follows:
      a. Initial Submittal:
         1) Submit PDF electronic files of scanned record.
         2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are approved.
      b. Final Submittal:
         1) Submit PDF electronic files of scanned record.
         2) Submit a complete copy of the form provided in section 1.7.8 of this document.

B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit-annotated PDF electronic files and directories of each submittal.

PART 2 - PRODUCTS
1.1 ELECTRONIC PROJECT MANAGEMENT SOFTWARE
A. Electronic File of Project Record Documents: Provide Architect with an independent electronic archive of accepted project record documents using electronic project management software as defined in Division 01 Section "Project Management and Coordination", in addition to the printed documents described elsewhere in this Section.

1.2 RECORD DRAWINGS
A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
   1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
      a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
      b. Accurately record information in an approved drawing technique.
      c. Record data as soon as possible after obtaining it.
      d. Record and check the markup before enclosing concealed installations.
e. Cross-reference record prints to corresponding archive photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations below first floor.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order or Construction Change Directive.
   k. Changes made following Architect’s written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.

4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.

5. Mark important additional information that was either shown schematically or omitted from original Drawings.

6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

1.3 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
   3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
   4. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as scanned PDF electronic file(s) of marked-up paper copy of Specifications.

1.4 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Include significant changes in the product delivered to Project site and changes in manufacturer’s written instructions for installation.
   3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as scanned PDF electronic file(s) of marked-up paper copy of Product Data.
   1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.
### MISCELLANEOUS RECORD SUBMITTALS

**A.** Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

**B.** Format: Submit miscellaneous record submittals as scanned PDF electronic file(s) of marked-up miscellaneous record submittals.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

### PART 3 - EXECUTION

#### 1.1 RECORDING AND MAINTENANCE

**A.** Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

**B.** Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

### 01 7900 – DEMONSTRATION AND TRAINING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

**A.** Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.
2. Training in operation and maintenance of systems, subsystems, and equipment.

##### 1.2 SUBMITTALS

**A.** Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products.

**B.** Qualification Data: For instructor.

**C.** Attendance Record: For each training module, submit list of participants and length of instruction time.

**D.** Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

##### 1.3 QUALITY ASSURANCE

**A.** Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

**B.** Preinstruction Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.
1.4 COORDINATION
   A. Coordinate instruction schedule with Owner’s operations. Adjust schedule as required to minimize disrupting Owner’s operations and to ensure availability of Owner’s personnel.
   B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
   C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS
1.1 INSTRUCTION PROGRAM
   A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
   B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
      1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
         a. System, subsystem, and equipment descriptions.
         b. Performance and design criteria if Contractor is delegated design responsibility.
         c. Operating standards.
         d. Regulatory requirements.
         e. Equipment function.
         f. Operating characteristics.
         g. Limiting conditions.
         h. Performance curves.
      2. Documentation: Review the following items in detail:
         a. Emergency manuals.
         b. Operations manuals.
         c. Maintenance manuals.
         d. Project record documents.
         e. Identification systems.
         f. Warranties and bonds.
         g. Maintenance service agreements and similar continuing commitments.
      3. Emergencies: Include the following, as applicable:
         a. Instructions on meaning of warnings, trouble indications, and error messages.
         b. Instructions on stopping.
         c. Shutdown instructions for each type of emergency.
         d. Operating instructions for conditions outside of normal operating limits.
         e. Sequences for electric or electronic systems.
         f. Special operating instructions and procedures.
      4. Operations: Include the following, as applicable:
         a. Startup procedures.
         b. Equipment or system break-in procedures.
         c. Routine and normal operating instructions.
         d. Regulation and control procedures.
         e. Control sequences.
         f. Safety procedures.
         g. Instructions on stopping.
         h. Normal shutdown instructions.
         i. Operating procedures for emergencies.
         j. Operating procedures for system, subsystem, or equipment failure.
         k. Seasonal and weekend operating instructions.
         l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:
   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:
   a. Diagnostic instructions.
   b. Test and inspection procedures.

7. Maintenance: Include the following:
   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning
   e. Procedures for preventive maintenance.
   f. Procedures for routine maintenance.
   g. Instruction on use of special tools.

8. Repairs: Include the following:
   a. Diagnosis instructions.
   b. Repair instructions.
   c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   d. Instructions for identifying parts and components.
   e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION
1.1 PREPARATION
   A. Assemble educational materials necessary for instruction, including documentation and training module.
      Assemble training modules into a training manual organized in coordination with requirements in
      Division 01 Section "Operations and Maintenance Data."
   B. Set up instructional equipment at instruction location.

1.2 INSTRUCTION
   A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems,
      subsystems, and equipment not part of a system.
      1. Owner will furnish Contractor with names and positions of participants.
   B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal
      operation, provide similar instruction at start of each season.
      1. Schedule training with Owner with at least seven days' advance notice.
   C. Training Location and Reference Material: Conduct training on-site in the completed and fully operational
      facility using the actual equipment in-place. Conduct training using final operation and maintenance data
      submittals.
   D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of
      module by use of a demonstration performance-based test.
   E. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove
      instructional equipment. Restore systems and equipment to condition existing before initial training use.

01 8111 - SUSTAINABLE CONSTRUCTION REQUIREMENTS
   o No specific requirements

01 8113 - LEED CONSTRUCTION REQUIREMENTS
   o No specific requirements

01 9113 - GENERAL COMMISSIONING
PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. OPR and BoD documentation are included by reference for information only.

1.2 SUMMARY
A. Section includes general requirements that apply to implementation of commissioning without regard to specific systems, assemblies, or components.
B. Related Documents:
   1. OPR and BoD documentation are included by reference for information only.

1.3 DEFINITIONS
A. BoD: Basis of Design. A document that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.
B. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.
C. CxA: Commissioning Authority.
D. OPR: Owner's Project Requirements. A document that details the functional requirements of a project and the expectations of how it will be used and operated. These include Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.
E. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.

1.4 COMMISSIONING TEAM
A. Members Appointed by Contractor(s): Individuals, each having the authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated action. The commissioning team shall consist of, but not be limited to, representatives of Contractor, including Project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.
B. Members Appointed by Owner:
   1. CxA: The designated person, company, or entity that plans, schedules, and coordinates the commissioning team to implement the commissioning process. Owner will engage the CxA under a separate contract.
   2. Representatives of the facility user and operation and maintenance personnel.
   3. Architect and engineering design professionals.

1.5 OWNER'S RESPONSIBILITIES
A. Provide the OPR documentation to the CxA and Contractor for information and use.
B. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities.
C. Provide the BoD documentation, prepared by Architect and approved by Owner, to the CxA and Contractor for use in developing the commissioning plan, systems manual, and operation and maintenance training plan.

1.6 CONTRACTOR'S RESPONSIBILITIES
A. Contractor shall assign representatives with expertise and authority to act on its behalf and shall schedule them to participate in and perform commissioning process activities including, but not limited to, the following:
   1. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
   2. Cooperate with the CxA for resolution of issues recorded in the Issues Log.
   3. Attend commissioning team meetings held as follows:
      a. Biweekly.
   4. Integrate and coordinate commissioning process activities with construction schedule.
   5. Review and accept construction checklists provided by the CxA.
6. Complete construction checklists as Work is completed and provide to the Commissioning Authority as follows:
   a. Format:
      1) Electronic.
   b. Submit:
      1) Weekly.

7. Review and accept commissioning process test procedures provided by the Commissioning Authority.

8. Complete commissioning process test procedures.

1.7 CxA'S RESPONSIBILITIES
A. Organize and lead the commissioning team.
B. Provide commissioning plan.
C. Convene commissioning team meetings.
D. Provide Project-specific construction checklists and commissioning process test procedures.
E. Verify the execution of commissioning process activities using random sampling. The sampling rate may vary from 1 to 100 percent. Verification will include, but is not limited to, equipment submittals, construction checklists, training, operating and maintenance data, tests, and test reports to verify compliance with the OPR. When a random sample does not meet the requirement, the CxA will report the failure in the Issues Log.
F. Prepare and maintain the Issues Log.
G. Prepare and maintain completed construction checklist log.
H. Witness systems, assemblies, equipment, and component startup.
I. Compile test data, inspection reports, and certificates; include them in the systems manual and commissioning process report.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)
DIVISION 02 – EXISTING CONDITIONS

02 4116 - BUILDING DEMOLITION
○ No specific requirements

02 4119 - SELECTIVE DEMOLITION
○ Include specific requirements related to ICRA and ISLM requirements specific to the project

DIVISION 03 – CONCRETE

03 0150 - CONCRETE PATCHING
○ No specific requirements

03 1000 - CONCRETE FORMING
○ No specific requirements

03 1500 - CONCRETE ACCESSORIES
○ No specific requirements

03 2000 - CONCRETE REINFORCEMENT
○ No specific requirements

03 3000 - CAST-IN-PLACE CONCRETE
○ Admixtures: Interior concrete slabs-on-grade and slabs on metal decking: Cracking, curling, and Moisture vapor emission rate (MVER) should be addressed and the following guidelines should be considered:
  ○ Reduce required concrete strength to a practical minimum, such as 3,000psi. Incorporate water reducing agents in the concrete mix design to reduce W/C ratio. Also, consider the use of larger aggregate in the mix design to reduce water content. This will result in less water and cement in the mix design with a reduction in shrinkage and curling.
  ○ The maximum drying shrinkage limit shall not exceed 0.035% for the proposed mix design. This requirement shall be placed in the project specifications.
  ○ Specifications shall include the addition of a concrete shrinkage reducing admixture such as W.R. Grace Companies “Eclipse” at the dosage rate of 1.5 Gallons pcy to reduce concrete shrinkage and subsequent cracking and curling. This will also speed up moisture leaving the concrete slabs and achieving the required floor covering MVER rate earlier.
  ○ Specify a 7 day minimum wet cure is essential to achieve a high quality finished concrete slab. This must be specified in the contract documents.
  ○ The contract documents need to be carefully dimensioned with the edge of suspended slabs and include all structural closure plates and details prior to issuing of the structural drawings for bidding. This includes mechanical and plumbing equipment openings, as well as conveying systems and stairwells through the floors and roofs. If the project has a fast-track schedule then the complete opening and edge dimensioning needs to be resolved before structural shop drawings are prepared. Sheet metal closure angles at the floors inside of the exterior walls should be avoided to reduce conflict with floor finishes.
  ○ Coordinate top of footing elevations near elevator pits, as well as other possible below-level obstructions. Where required, lower top of footing elevations near elevator pits. Coordinate top of footing and top of pier elevations with the mechanical and electrical work so all footings and piers that must be lowered to allow for mechanical piping and electrical under-slab runs are specified correctly in the structural drawings.
Close attention needs to be paid to floor slopes in wet areas, specifically patient restrooms. Slopes should be detailed and monitored to assure proper water drainage.

The penthouse should receive an elastomeric covering over both the floor and pads. All floor penetrations need to be carefully considered and detailed to prevent water penetration problems to floors below. Floor drains should be designed and located in critical areas to prevent any water problems.

**03 3300 - ARCHITECTURAL CONCRETE**
- Exposed concrete requires attention to form tie placement, control and construction joints as well as the carefully rubbed finish.
- Integrimally colored concrete has been difficult to maintain a consistent color and has not been used extensively.
- Concrete exposed to the weather should not have a dark gray color (requiring carbon pigments) since this tends to reduce the air entrainment and results in excessive spalling.

**03 3500 - CONCRETE FINISHING**
- Floor slabs must have ridges and imperfections ground off of the surface, the surfaces leveled and joints and cracks filled before interior floor finishes can be installed. All fill materials must be approved by the flooring contractor to assure compatibility with the resilient materials.

**03 3800 - POST-TENSIONED CONCRETE**
- No specific requirements

**03 4500 - ARCHITECTURAL PRECAST CONCRETE**
- Specifications should indicate the maximum amount of bubble and bubble size for precast concrete elements to be incorporated into exterior masonry facades. Recommendation of 1/16” size bubble. Curing agents that can be washed as part of masonry clean up shall be specified.
- Integrimally colored concrete has been difficult to maintain a consistent color and has not been used extensively. Concrete exposed to the weather should not have a dark gray color (requiring carbon pigments) since this tends to reduce the air entrainment and results in excessive spalling.

**03 4713 - TILT-UP CONCRETE**
- No specific requirements

**03 4900 - GLASS-FIBER REINFORCED CONCRETE (GFRC)**
- GFRC has been used successfully by Intermountain Healthcare since the late 1990’s. The colors should not be heavily pigmented or deep colors since these are difficult to obtain a consistent finish.
- Very light sandblasted or acid etched finishes have been successful but this needs to be carefully coordinated with the amount of polymer used in the face layer.
- Detailing of the structural support needs to be coordinated carefully before the structural steel shop drawings have been prepared to avoid expensive field structural steel changes.
- Detailing of the structural steel bracing should be done generically so multiple suppliers could work with no changes to the system.

**03 5216 - LIGHTWEIGHT INSULATING CONCRETE**
- Specifications shall coordinate the use of lightweight concrete on roof decks with requirements for roofing materials, specifically the requirement to provide a sealer to prevent moisture drive into the roofing adhesives potentially causing delamination of the roofing system from the concrete deck.

**03 5300 - CONCRETE TOPPINGS**
- No specific requirements
03 3416 - HYDRAULIC CEMENT UNDERLAYMENTS
  o No specific requirements

03 70 00 – MASS CONCRETE
  o Mass concrete should meet requirements of curing to achieve shielding requirements where utilized for linear accelerator and other uses of concrete for shielding purposes, to reduce cracking. Appropriate temperature probes for monitoring of concrete cure should be specified.
04 2100 - MASONRY VENEER

- Brick units should be selected from regional sources with good availability for any future changes. The joint detail should generally be weather struck and tooled to avoid water infiltration. Control joints need to be carefully detailed and lintels selected to minimize deflection in order to avoid wall cracking. Brick size should be appropriate for the scale of the building.
- Where exterior stone or bricks are specified a mock up should be required that shows the size, character, blending and color of the materials, including the grout. The workmanship, joint details, method of attachment and supporting lintels as well as waterproofing membranes, sealants, coping, weep holes and flashings should be represented with the mock ups. The size of the mock up should be sufficient to allow the typical window and other material flashing details to be reviewed by the design team.
- Only stainless steel flashings shall be utilized, with rubberized asphalt flashings between metal flashing joints
- Specifications should include admixtures to prevent efflorescence in exposed masonry applications. Mortar should include additives to prevent staining of masonry by mortar.
- Masonry units shall be 2 ¾” x 12” with quarter bond

04 2200 - CONCRETE UNIT MASONRY

- Concrete masonry walls need to be sealed to assure water integrity of the walls. This includes provisions for a vapor barrier on the interior of exposed concrete masonry walls in boiler rooms. The steam can cause high humidity and moisture migration through the wall to the exterior during the winter period. Exterior joints should be weather struck and tooled to avoid water problems.
- CMU should not be specified with a dark black color since the carbon pigment reduces the air entrainment resulting in freezing and spalling problems.

04 2300 - GLASS UNIT MASONRY

- No specific requirements

04 4200 - EXTERIOR STONE CLADDING

- Stone should be specified from regional quarries where future matching stone should be readily available.
- The stone should have excellent weathering characteristics.
- Masonry units should be detailed and installed with full units at exterior corners.
DIVISION 05 - METALS

05 12 00 – STRUCTURAL STEEL FRAMING
- Follow IBC floor live load design requirements, as a minimum, but consider that the vibration performance design criteria (shown below) usually controls the stiffness and size of the floor framing members.
- Floor Framing Vibration Performance Design Criteria in micro-inches per second (at 1,000 paces/minute):
  - Patient rooms, administrative & support areas, office, etc......................... 16,000
  - Operating rooms, surgery and bench microscopes up to 100x.................... 4,000
  - CT Scanners (some models) Coordinate exact requirements with supplier.... 2,000
  - Micro surgery, eye surgery, neurosurgery, and microscopes up to 400x....... 1,000
  - Magnetic resonance imagers and microscopes up to 30,000x.................... 500
- Live loads
  - Consider designing the floor framing for 100psf live load, unreduced (exception: use reduced live loads for the design of columns and footings). This will typically allow the designer to achieve higher than code required design live load at a nominal increased cost of a few composite headed steel studs per beam. This procedure will produce a floor framing system with greater future space planning flexibility at a minimal cost increase to the project.
- Partition loads
  - Where partition locations are subject to change, the partition design live load shall be not less than a uniformly distributed live load of 15psf except when the specified floor design live load exceeds 80psf. In that instance, no allowance for partition design live loads is necessary.
  - Where provisions for partitions are required in the floor design live load, the actual partition weight or a minimum weight of 10psf shall be used in calculating the seismic weight.
- Seismic design
  - Code requirements should be studied for the specific seismic design category. Additional studies may be necessary to determine the location of any possible faults on the building site.
- Medical equipment coordination
  - It is likely that the medical equipment originally designed for may change through the course of design and construction. Consider providing a grid of steel beams at radiology rooms instead of locating steel beams at specifically designed locations or provide steel and concrete floor decking with sufficient thickness and strength to be able to connect unistrut supports directly to it.
  - MRI: coordinate location of MRI and ensure no steel or rebar in the structure is too close to the magnet

05 1213 - ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) FRAMING
- No specific requirements

05 20 00 – METAL JOISTS
- No specific requirements

05 31 23 - STEEL ROOF DECKING
- Galvanized metal deck (G90 zinc coating) is the established design standard.

05 3600 - COMPOSITE METAL DECKING
- Galvanized metal deck (G90 zinc coating) is the established design standard.
- Metal composite floor decking shall have vent tabs to allow moisture to vent out of concrete.
- The steel decking should be detailed and installed by the contractor to avoid needed additional deck angle supports.
FLOOR AND ROOF DECK OPENINGS

- Coordinate and fully dimension openings through floor and roof decks to avoid additional steel detailing and fabrication delays.
- Ensure that either the mechanical or architectural drawings define and dimension all openings and tie them to grids. This should be also coordinated with the structural drawings. (Contract drawings shall include accurate weight, dimensions and location of all major equipment items such as air handlers, fans, pumps, boilers and other fixed mechanical and electrical equipment.)

05 4100 - COLD-FORMED STEEL FRAMING

- Structural studs, needs to be defined and sized by the design team’s structural engineer. This includes overall wall loading design, and stud sizing and general design rather than a performance specification. Special details would be the design responsibility of the framing subcontractor.
  - GFRC panels will be an exception where determining the stud size will be the responsibility of GFRC fabricator. Designing and locating the connections to the structure for panelized systems will be the responsibility of the design architects and engineers. This will be completed before the structural steel bids are received.
  - Light-gauge, non-structural steel shall follow ASTM C645

05 4300 - SLOTTED CHANNEL FRAMING

- No specific requirements

05 5000 - METAL FABRICATIONS

- Ladders shall be specified with OSHA approved extensions where utilized to access roof hatches. Ladder locations are to be coordinated with public views to the building where possible.
- Metal bollards, shelf angles, boom supports and metal ladders are to be included in miscellaneous metal fabrication.
- Where possible, metal ladders to access penthouse roofs should be detailed with roof hatches and installed internally within the penthouses.
- Support structures for surgical light and equipment booms are to be designed and detailed with the construction documents.
- Due to the congested ceiling space, and the higher floor to floor height, a cantilevered pipe column support with braces in only two directions has been more successful in allowing space for overhead mechanical ducts, electrical and gas piping. Typical details will be provided for the design team.

05 5100 - METAL STAIRS

- Exit and utility stairs should have concrete with a clear sealer and not painted to reduce maintenance. Finishes are to include resilient treads.
  - All “Back of House” stairwells will be designed to have rubber tile flooring. The Basis of Design is Mannington, or other FP&D Approved Vendor. The Mannington Colorscape rubber tile collection is an acceptable style with color range of Flax, Taupestone, or Sable (midtones). The Architect is required to have prior approval from FP&D for use of other collections and/or styles.
  - Landings shall specify use of “Square” profile pattern in the Audio Spectra collection.
  - Stair treads/risers shall use either a preformed stair tread/riser with a “Sculptured/Hammered” or “Smooth” finish with a recessed wide visual impaired strip on all treads.
- Exposed or monumental stairways should have an architectural finish with all welds ground smoothly.
- Metal stairs need to comply with ADA and all building codes for loading tread design and dimensioning.
- Stair risers and stringers need to be detailed to minimize painting and maintenance.
- Interior stairs that will function for user circulation between floors should have gypsum wall board finishes including enclosing sprayed fire proofing.
05 5213 - PIPE AND TUBE RAILINGS
   o Exterior railings shall be hot dipped galvanized fabrications

05 5300 - METAL GRATINGS
   o No specific requirements

05 7300 - ORNAMENTAL HANDRAILS AND RAILINGS
   o Hand and guard rails need to be designed without horizontal intermediate members that would encourage children to climb them.

05 7400 - ORNAMENTAL METAL COLUMN COVERS
   o No specific requirements
DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 1053 ROUGH CARPENTRY
- No specific requirements

06 1643 - EXTERIOR GYPSUM SHEATHING
- Sheathing which is exposure warrantied for 180 days shall be specified.
- Sheathing locations shall be defined, with back of parapet sheathing different from exterior face sheathing, due to requirements of roofing manufacturer’s adhesive capabilities

06 4023 – INTERIOR ARCHITECTURAL WOODWORK
- Cabinetry shall comply with the Architectural Woodwork Quality Standards (AWI).
- For High-Pressure Decorative Laminate (HPDL) and solid surface countertops, use full round (bullnose) edge typical all locations.
- Materials will only be installed in the building after the environment has been air conditioned and stabilized.
- Hardboards will be furnished without urea formaldehyde binders.
- Cabinets will have 170° opening concealed hinges.
- Drawer glides should be heavy-duty side mounted, ball bearing, with full-extension slides.
- Interior woodwork should be AWI custom grade. Box, shelf, door and drawer front edges for plastic laminate cabinets should have a PVC 0.12” (3mm) matching edge banding.
- Clear finish wood cabinets should be AWI premium grade.
- Support brackets should be used in lieu of floor-mounted supports wherever possible.
- Height of workstations should be coordinated with staff.
- This shall be selected from a major manufacturer that has locally available inventories of all of the specified laminate patterns. Plastic laminate counters where there are sinks shall have exterior grade plywood core material with a continuous integral backsplash.
- Laminate countertops may utilize “Medex”, which is acceptable to the Board of Health, in lieu of the exterior grade plywood core, which may telegraph grain thru some laminates. “Medex” is a moisture resistant medium density fiberboard, exterior rated glue, non urea formaldehyde.
- All horizontal surfaces specified to have a plastic laminate finish shall be a high pressure decorative laminate HGP grade.
- Solid surfacing materials should be limited to transaction surfaces at reception or nurses stations, and vanity counter tops in the patient rooms.
- Sinks in the patient rooms are to be integrally constructed with solid surface materials. Countertops under ice machines should be carefully detailed to avoid water problems.
- Countertop materials in labs should be specified with chemical resistant finishes including plastic laminates. All other counter tops should be constructed with high pressure plastic laminate finishes.
- Hardwood paneling should have the veneers and details constructed that meet AWI premium grade requirements.

06 4223 - SLATWALL PANELING
- No specific requirements

06 6100 - SIMULATED STONE FABRICATIONS
- Solid surfacing materials should be limited to transaction surfaces at reception or nurses stations, and vanity counter tops in the patient rooms.
06 6400 - PLASTIC (FRP) PANELING
  o  No specific requirements

06 6413 - TRANSLUCENT RESIN PANEL FABRICATIONS
  o  No specific requirements

06 6419 - SIMULATED STONE PANELING
  o  No specific requirements

06 6713 - LOUVERED LIGHT DIFFUSERS
  o  No specific requirements

06 6813 - PLASTIC GRATINGS
  o  No specific requirements
DIVISION 07 - THERMAL & MOISTURE PROTECTION

07 0151 - PREPARATION FOR REROOFING
- Verify compatibility with existing roofing systems and existing structural components.
- Quality Standard: Contractor shall provide submittals indicating existing material and new material compatibility.

07 0152 - PATCHING OF EXISTING ROOFING
- Provide roofing and base flashing system with compatible components that will not permit the passage of liquid water and will withstand wind loads, thermally induced movement, and exposure to weather without failure.
- Water Drainage: New work shall maintain existing water drainage patterns; if new work adversely affects the water drainage, make necessary roofing changes to accommodate new water drainage pattern.
- Quality Standard: Architect, Engineer and Owner shall review substrate before re-roof.

07 1114 - ASPHALT MASTIC DAMPPROOFING
- Only used where other forms of damp proofing cannot be easily applied, such as on vertical faces of CMU or elevator pits in slab on grade.
- Provide protection board dependent on the backfill material for potential damage.
- Quality Standard: Review substrate before application and application before backfill.

07 1327 - ADHESIVE-COATED HDPE SHEET WATERPROOFING
- Location: Positive-side waterproofing at below-grade walls and elevator pits.
- Quality Standard: Review substrate before application and application before backfill.

07 1352 - MODIFIED BITUMINOUS SHEET WATERPROOFING
- Warranty: 10 years.
- Drainage Panel: Pre-fabricated composite with drainage core faced with geotextile filter fabric on dimpled side (facing earth) and protective covering on flat side (facing waterproofing); with protective covering of smooth polymeric film.
- Location: Positive-side waterproofing at below-grade walls and elevator pits.
- Quality Standard: Review substrate before application and application before backfill.

07 1413 - HOT FLUID-APPLIED RUBBERIZED ASPHALT WATERPROOFING
- Warranty: 10 years.
- Drainage Panel: Pre-fabricated composite with drainage core faced with geotextile filter fabric on dimpled side (facing earth) and protective covering on flat side (facing waterproofing); with protective covering of smooth polymeric film.
- Location: Roof terraces and balconies (split-slab construction).
- Quality Standard: Review substrate before application and application before backfill.

07 1423 - WATER CONTAINMENT COATING
- No specific requirements

07 1800 - TRAFFIC COATINGS
- Pedestrian Traffic Coating (Normal Duty): 30-mil with silica aggregate at a minimum rate of 5 to 10 lb/100 SF; mechanical rooms over occupied spaces.
- Pedestrian Traffic Coating (Heavy Duty): 40-mil with silica aggregate at a minimum rate of 10 to 15 lb/100 SF; exterior balconies or walkways.
- Vehicular Traffic Coating (Normal Duty): 50-mil with silica aggregate at a minimum rate of 15 to 20 lb/100 SF; top deck of parking garage.
- Vehicular Traffic Coating (Heavy Duty): 60-mil with silica aggregate at a minimum rate of 20 to 25 lb/100 SF; steep ramps and turns.
- Quality Standard: Review substrates before application.

**071900 - WATER REPELLENTS**
- Quality Standard: Review substrates before application.
- Performance Standard: Provide suitable repellent for 5 years

**07 2100 - THERMAL INSULATION**
- Quality Standards:
  - Require extruded polystyrene insulation at interior of foundation walls at slabs on grade be field reviewed for lapping joints to maintain insulation integrity.
  - Masonry Cavity Wall Insulation shall require field review for lapping joints to maintain insulation integrity.
  - Unfaced Fiberglass Semi-Rigid Insulation: Require field review and report for appropriate installation, including support element installation.
  - Unfaced Fiberglass Batt Insulation shall require field review for tight fit against studs, and for inappropriate compaction of insulation, with report. Also review and report of concealed locations for complete insulation fill.
  - Foil-Faced Fiberglass Batt Insulation: Not approved for use. Does not provide a continuous vapor barrier condition.
  - Unfaced Mineral-Fiber Board Insulation: Shall be specified, and detailed, at locations which require fire rated materials. Also shall be specified at any locations where insulation can come in contact with moisture.
  - Foil-Faced Mineral-Fiber Board Insulation: Not approved for use. Does not provide a continuous vapor barrier condition.
  - Spray-Applied Thermal Insulation: Cellulose insulation is not approved for use.
  - Polyethylene Vapor-Retarder Membrane: Specify as a continuous, full height membrane. Membrane must seal against all perimeter structures, joints be sealed with manufacturer’s recommended seam tape, and all penetrations sealed with appropriate tape or other elements as recommended by the manufacturer. Specify full review of all locations before installation of interior sheathing elements.

**07 2400 - EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)**
- Class PB only allowed at locations where existing EIFS is being patched or repaired. New EIFS system is not approved to Intermountain.
- DEFS systems shall be allowed at soffit locations in lieu of plaster soffits, at Intermountain’s discretion. Systems shall be specified on appropriate suspension systems or metal stud framing. Air/water barriers shall be specified, and detailed, to extend behind the DEFS systems to provide a continuous barrier.

**07 2617 - BELOW SLAB VAPOR RETARDER**
- Quality Standard: Provide barrier of thickness to prevent damage during construction process.
- Standard polyethylene materials, no matter the thickness, are not approved.
- Barriers need to be installed over a well-graded aggregate base coarse (sand) and the seams carefully constructed.
Barriers shall be specified to be field reviewed and a report generated before being covered.
Shall meet ACI 302.1R-15, ASTM 1745 Class A strength requirements; shall meet the ACI recommendation for moisture sensitive flooring of .01 perm for vapor transmission.

07 2720 - AIR AND WATER BARRIERS
- Due to State requirements to maintain between 30% and 50% relative humidity in the hospitals, vapor barriers become critical in the exterior wall design to prevent water accumulation in the wall cavity between December and March.
- The materials need to be installed and securely taped at joints.
- If a weather membrane system is selected with exterior insulation it needs to be continuous and tightly sealed around all penetrations such as exterior wall braces, structural members and diagonal bracing. The design team should prepare calculations showing the dew point location during winter conditions
- Synthetic Sheet Air and Water Barriers are not approved.
- Quality Standard: Rubberized asphalt vapor retarders (vapor permeable) at cold climates where vapor barrier is located on the interior surface of the insulation. Non vapor permeable shall be provided where vapor barrier is located on the exterior surface of the insulation.
- Required: Engineer’s vapor drive analysis to determine location and type of vapor retarders.
- Required: Mockup of air/water barrier joints, and assembly as part of the exterior envelope system.
- Location: Exterior gypsum sheathing

07 3126 - SLATE SHINGLES
- No specific requirements

07 4114 - METAL ROOF PANELS
- Performance Standard: FMG 1A-90 at field; 1A-150 at corners and perimeter region.
- Quality Standard: Meet Intermountain insurance requirements for fire assembly (as required)
- Required: Roof NAV assembly submission to Intermountain insurance carrier for review
- 3-Coat Fluoropolymer: Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat.
- 10 year finish warranty
- Required: Manufacturers’ recommended water barrier substrate for hot weather installation.

07 4213 - FORMED METAL WALL PANELS
- Performance Standard: Panels of sufficient gage thickness and/or shape to not show ‘oil-canning’ effects.
- 3-Coat Fluoropolymer: Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat.
- Required: Submission of project specific details indicating all aspects of metal panel assembly and installation, including continuous insulation girts, main stud anchorage systems, etc.
- Required: Partial mockup indicating sill, head, jamb, parapet conditions.

07 4243 - COMPOSITE METAL WALL PANELS
- Performance Standard: Rainscreen panels or reveal panels, as design indicates.
- 3-Coat Fluoropolymer: Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat.

07 4263 - INSULATED-CORE METAL WALL PANELS
- Quality Standard: Use where appropriate, with appropriate backing / substrate support
- 3-Coat Fluoropolymer: Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat.
07 5013 - SINGLE-PLY MEMBRANE ROOFING
- Specified warranty: 30 years, “No Dollar Limit”.
- Warranty for 100 mph winds, not just minimum requirements of roofing manufacturer.
- Required: Roof NAV assembly, to be submitted to Intermountain’s insurance group for review.
- Allowable Single-Ply Membranes:
  - EPDM:
    - ASTM D 4637, Type I, 90-mil unreinforced
    - Approved EPDM Manufacturers: Carlisle, Firestone, GAF, Johns Manville, Sika Sarnafil
  - PVC and TPO: Only when required by Project Manager or existing conditions. No new membrane installation is allowed.
    - Insulation: ASTM C 1289, Type II, Polyisocyanurate.
    - Application: Fully adhered. Ballasted or mechanically-fastened applications are not approved.
- Specify walkways, manufacturer’s specific type, 24” minimum width, from roof access point to service points, and at perimeter of elements requiring service.

07 5113 - BUILT-UP ASPHALT ROOFING
- No specific requirements

07 5552 - MODIFIED BITUMINOUS MEMBRANE ROOFING
- No specific requirements

07 5563 - VEGETATED PROTECTED MEMBRANE ROOFING
- No specific requirements

07 6200 - FLASHING AND SHEET METAL
- Pre-manufactured or Shop-Fabricated: Provide pre-manufactured or shop-fabricated copings, roof-edge flashing (gravel stops), and reglets and counterflashings.
- Required: Submission of site specific details, including joinery and seal details
- Required: Mockup elements to indicate assembly relationships with other materials.
- Self-Adhering, High-Temperature Rubberized Asphalt Underlayment Sheet: Minimum 30 mils to 40 mils (0.76 mm to 1.0 mm) thick, specified for all joint seal configurations at flashings.
- Shop-Fabricated Flashing Standards: SMACNA, FM Data Sheet 1-49.
- Metallic-Coated Sheet Steel: Zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet, standard of manufacturer; 24 gage, 0.025 in (0.64 mm) nominal minimum thickness, finish as noted below.
- Aluminum Sheet use for pre-manufactured installations visible to public view.
- Galvanized Steel Sheet use as exposed flashing at roof. Finish as noted below.
- Stainless Steel Sheet use for concealed flashing at brick, stone, and other masonry surfaces.
- 3-Coat Fluoropolymer: Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat.

07 7200 - ROOF ACCESSORIES
- Roof Curbs and Equipment Supports: Prefabricated, 0.0747 inch galvanized metal
  - Height shall be specified to match requirements of roof system
- Roof Hatches: Metal roof-hatch units with lids and insulated double-walled curbs, welded or mechanically fastened and sealed corner joints, continuous lid-to-curb counterflashing and weather tight perimeter gasketing, and integrally formed deck-mounting flange at perimeter bottom; sizes as indicated.
  - Size shall be specified to meet access requirements, and materials handling requirements.
Ladder-Assist Post: Specify roof-hatch manufacturer's standard device for attachment to roof-access ladder.

Safety Railing System: Specify as required for project. Consider portable elements (fold down safety rails) as much as possible for flexibility.

Heat and Smoke Vents: Specify as required. Specify connection to alarm system as required.

Precast Concrete Splash Blocks: Provide protection layer below splash block to protect roofing system.

Snow Guards: Prefabricated, noncorrosive units designed to be installed without penetrating roofing system; complete with predrilled holes, clamps, or hooks for anchoring. Snow guards materials and mounting method shall be fully compatible with adjacent roofing system to avoid any damage or penetrations which may compromise the integrity of the system.

Snow and Ice Melt Systems: Specify as required.

07 7600 - ROOF PAVERS
- Specify as required for project

07 7700 - ROOF AND WALL SPECIALTIES AND ACCESSORIES.
- Specify davit and tie-backs to be coordinated with window washing and metal panel cleaning equipment.
  - Window-washing and metal panel cleaning can be done from the ground up for buildings three stories or less.
  - These shall be integrated with and detailed on the structural drawings.
  - These need to be coordinated with the roofing and insulation details.
- Specify elements to be integrated and detailed, including showing structural elements.

07 8116 - CEMENTITIOUS FIREPROOFING
- Performance Standards: UL number required
- Specify Density requirements per project requirements.
  - Quality Standard: Only cementitious materials shall be provided (certified asbestos free).

07 8123 - INTUMESCENT MASTIC FIREPROOFING
- Intumescent coatings should be avoided if possible due to the cost and problems with acceptable finishes; it should only be specified where all other types of fireproofing are not suitable.
07 84 00 - FIRE STOPPING

PART 1 - GENERAL

1.1 This section applies where other fire stop specifications are not provided.
   
   A. If other fire stop specifications are provided, this shall be a supplement to that specification.
   
   B. Through-Penetration Systems: UL “Fire Resistance Directory” Section XHEZ and Section XHHW.
      1. Specify manufacturer’s labeling at all penetrations

1.2 FIRE STOPPING

A. Properly installed fire stop systems shall be installed to prevent or retard the spread of fire, smoke, water, and gases through the building. This requirement applies to openings designed for telecommunications use that may or may not be penetrated by cables, wires, or raceways. Proper fire stopping is required for all sleeves/slots per national and local codes. Install fire stop material designed specifically for the building construction conditions and to match the existing fire stop material as directed by the building engineer.

PART 2 - PRODUCT

2.1 APPROVED FIRE STOP SYSTEMS

A. Must be approved on a per-site basis with the building maintenance engineer.

B. Manufacturers
   1. STI EZ-Path
   2. Hilti
   3. SpecSeal
   4. 3M

C. Acceptable alternate
   1. Per building maintenance engineer.

PART 3 - EXECUTION

3.1 PROCEDURE

A. Contractor shall:
   1. Install and seal penetrations (conduit, sleeves, slots, chases) into or through fire-rated barriers created by or made for or on the behalf of the Contractor to prevent the passage of smoke, fire, toxic gas, or water through the penetrations.
      a. All through penetrations in a fire rated surface require a sleeve, regardless of penetration diameter or penetrating cable count.
      b. The installation of fire rated membrane penetrations shall meet UL requirement, IBC Membrane Penetration requirement and Intermountain Healthcare master specification 26 05 33 Raceways, Cable Trays, and Boxes. “Ring and string” method, directed by the Owner, can only be used in non-fire-rated partitions.
   2. Provide approved fire-resistant materials to restore originally-designed fire-ratings to all wall, floor, and ceiling penetrations used in the distribution and installation for communications cabling system. Coordinate fire stopping procedures and materials with General Contractor. Following the pathway of others through compliant and non-compliant penetrations does not remove the requirement to maintain code-compliant fire stopping.
   3. Provide and install intumescent mechanical systems in floor chases in an approved fashion in all openings.
4. Provide and install, fire stop in an approved manner in all openings where there are penetrations through walls.

5. Shall supply Owner with training manuals with instructions on methods of adding or removing cabling to/from fire stopped sleeves and chases.

6. Provide manufacturer recommended material for rated protection for any given barrier.

7. Shall laminate and permanently affix adjacent to chases the following information:
   a. Manufacturer of fire stop system.
   b. Date of installation/repair.
   c. Part and model numbers of system and all components.
   d. Name and phone numbers of local distributor and manufacturer’s corporate headquarters.

8. Solutions and shop drawings/submittals for fire stop materials and systems shall be presented to the General Contractor for written approval of materials/systems prior to purchase and installation.

9. Materials shall be installed per manufacturer instructions, be UL-listed for intended use, and meet NEC and locals codes for fire stopping measures.

10. The material chosen shall be distinctively colored to be clearly distinguishable from other materials, adhere to itself, and maintain the characteristics for which it is designed to allow for the removal and/or addition of communication cables without the necessity of drilling holes in the material.

11. The fire stopping material shall maintain/establish the fire-rated integrity of the wall/barrier that has been penetrated.

**07 8446 - FIRE-RESISTIVE JOINT FIRESTOPPING**

- Performance Requirements:
  - UL “Fire Resistance Directory” assemblies
  - Specify manufacturer’s labeling at all penetrations

**07 9200 - JOINT SEALANTS**

- Exterior Pourable Urethane Sealant: Specify joint locations suitable for this material
- Exterior Non-sag Silicone Sealant: Specify joint locations suitable for this material
- Interior Non-sag Silicone Sealant: Specify joint locations suitable for this material
- Interior Non-sag Urethane Sealant: Specify joint locations suitable for this material
- Interior Non-sag Acrylic Latex Sealant: Specify for interior joints. Specify silicone projects are not suitable for these joints.
- Quality Standard: Appropriately tooled joints, appropriately masked
- Mockup requirements:
  - Exterior elements and assemblies
  - Interior elements and assemblies
- Performance Standard: Appropriate backing materials
- Performance Standard: Appropriate sealant profiles for joint locations
  - Flush, not concave, which allows the accumulation of foreign materials
- Sealant standards for installations
- Sealant details
- High quality polyurethane type sealants should be used for exterior joints.
  - All of these joints need to be carefully detailed showing the joint width, joint depth, joint thickness, and materials abutting the joint and the location and size of the backer rod.
These details need to be shown for all joints in the exterior skin.

- All of the criteria need to be specified in the bidding documents to allow for the installation to be warranted for the length of the sealant materials.

- Interior sealants and glazing system sealants will be specified and will be detailed with their shop drawings.

- Sprayed foam insulating gap filler: specify at all exterior joint locations where insulation is not suitable.

- Preformed Expanding Foam Joint Sealants: Specify as necessary
  - Location: Joints between meter enclosures and exterior wall assemblies

### 07 9500 - EXPANSION CONTROL

  - Site specific details

- Pedestrian Traffic Joints: Support pedestrian traffic across joint.
  - Site specific Details

- Specify Joints in Fire-Resistance-Rated Assemblies: Maintain fire-resistance ratings of assemblies.

- Specify Joints in Smoke Barriers: Maintain integrity of smoke barrier.


- Exterior Joints: Specify joint systems that prevent penetration of water, moisture, and other substances deleterious to building components or content.
  - MUST include secondary water barriers.

- Seismic Joints: Remain in place on exposure to seismic activity (movement).

- Joints in Surfaces with Architectural Finishes: Serve as finished architectural joint closures.

- Roof Expansion Assemblies: System that remains watertight within movement limitations specified by manufacturer.
  - MUST include secondary water barriers, and water drainage pathways
  - Submittals must be site specific, condition specific details
DIVISION 08 - OPENINGS

08 1113 - HOLLOW METAL DOORS AND FRAMES
- Exterior doors shall have an insulated core, galvanized metallic coated, maximum duty, seamless construction. Door frames shall be insulated with mineral wool.
- All hollow metal frames shall be welded assembly. Knock down frames are not approved, except in locations where a welded assembly cannot be installed.
- Narrow-style door frames are not approved.

08 1370- INTERIOR SLIDING ALUMINUM-FRAMED DOORS AND OFFICEFRONTS
- Aurora Doors shall be used as basis of design.

08 1416 - PREFINISHED FLUSH WOOD DOORS
- All doors shall be factory finished.
- Doors may have either a hardwood veneer or high pressure plastic laminate finishes.
- AWI Premium grade
- Specify integral blinds with integral controls where required. Specify fire rated assemblies where required
- Verify vision glass with team planning members.
- Verify appropriate widths to accommodate equipment (examples: gurneys, bariatric wheelchairs).
- All exam room swinging doors shall have an STC rating of 45 and insulated hollow metal frames.

POCKET DOORS
- Pocket doors are not approved

08 1433 - STILE AND RAIL WOOD DOORS
- No specific requirements

08 1473 - SLIDING WOOD DOORS
- AD Systems Doors (formerly Aurora Doors) is the approved manufacturer
- Flush wood barn type doors in aluminum frames
- Soft-Closer: Soft and Self-closing mechanism at one or both sides of door leaf
- Installers must have training by AD Systems Doors
- Gaskets shall be included on all doors, both sides
- For further information, refer to Section 6 of the Design Guidelines

08 3113 - ACCESS DOORS AND FRAMES
- Access doors in operating rooms and other ceilings and walls where infection control and dust containment is required, shall be specified to be gasketed

08 3213 - SLIDING ALUMINUM-FRAMED GLASS DOORS
- No specific requirements

08 3323 - OVERHEAD COILING DOORS
- Overhead coiling doors should include locking devices, counterbalancing mechanism, and electric door operator with obstruction with a manual operation option.
- Where required by the code these shall be coordinated with the electrical and fire alarm drawings.
- Coordinate structural supports with miscellaneous steel specification section.
08 3326 - OVERHEAD COILING GRILLES
  - No specific requirements

08 3515 - ACCORDION FOLDING FIRE DOORS
  - No specific requirements

08 4110 - INTERIOR GLAZED ALUMINUM PARTITIONS (INTERIOR STOREFRONT)
  - No specific requirements

08 4213 - EXTERIOR ALUMINUM ENTRANCE DOORS
  - Doors should have an insulated core, metallic coated, maximum duty, seamless construction.

08 4216 - INTERIOR ALUMINUM ENTRANCE DOORS
  - No specific requirements

08 4226 - ALL GLASS ENTRANCES
  - No specific requirements

08 4229 - AUTOMATIC ENTRANCES
  - Assemblies shall be tested or certified for water and air penetration.

08 4233 - REVOLVING ENTRANCE DOORS
  - No specific requirements

08 4243 - INTENSIVE CARE UNIT / CRITICAL CARE UNIT (ICU/CCU) ENTRANCES
  - Specified doors shall be smoke rated assemblies.

08 4400 - GLAZED ALUMINUM WALL SYSTEM
  - Assemblies shall be tested or certified for water and air penetration.

08 5113 - ALUMINUM WINDOWS
  - No specific requirements

08 5213 - ALUMINUM CLAD WOOD WINDOWS AND DOORS
  - No specific requirements

08 6300 - METAL FRAMED SKYLIGHTS
  - No specific requirements

08 7100 - DOOR HARDWARE
  - Doors to be used in areas with equipment coming in and out should be specified with a continuous hinge.
    - Doors into patient rooms or rooms where beds and gurneys will be moved should be equipped with off-set type of hinges (swing clear type).
    - The door hardware designer should be brought in early in the design phase of the project to properly coordinate the code requirements as well as staff requirements. Include the use of door release buttons, specified by another section, in the control of door operators and latch releases.
    - Provide stainless steel or Acrovyn kick plates on doors where equipment will be frequently moved.
      - Height of equipment that will be stored within the room (example: soiled holding) needs to be considered when designing the door protection. Door frame protection shall also be considered at these locations.
- Cylinders and locksets shall be coordinated with facility, to match existing standards where they exist. Provide cylindrical type locksets in clinics. Mortise type locksets in Hospitals.
- Low energy door operator push plates shall be powered, not battery operated.

**08 7113 - INTERIOR AUTOMATIC DOOR OPERATORS**
- The door hardware designer should be brought in early in the design phase of the project to properly coordinate the code requirements as well as staff requirements

**08 8000 - GLAZING**
- Care is to be taken in locating glazing to the exterior, for both glare control and privacy purposes.
- Glazing materials should include high energy-efficient double-glazed units, and locations should respond to the building’s orientation to the site.
- Where it could reduce solar gain, it may be advantageous to provide a fritted glass pattern. However this pattern should not be specified within 3 feet and 7 feet above the floor where it interferes with occupants’ views.
  - A fritted pattern should be selected to reduce the heat gain but also be as unobtrusive as possible to the occupants.
- The color of the glass should be as neutral as possible to not significantly change the appearance from within the building.

**08 8300 - UNFRAMED MIRRORED GLAZING**
- No specific requirements

**08 8816 - BETWEEN GLASS BLINDS UNITS**
- Where there are clean or isolation room requirements, window units are to be specified with integral louvered 1 inch blinds
- In patient rooms and other clinically sensitive areas, cleanable roller shades have been successfully used. Offices and examination rooms have also included horizontal blinds since these are cost effective and control sun angles well.
  - For areas that are difficult to access, roller shades can be motor operated and remotely controlled to reduce sun glare during certain seasons. Draperies and vertical blinds have not been successful in previous projects
  - Battery-operated systems are not approved.

**08 8835 – SEALED GLASS UNITS WITH OPERABLE LOUVERS**
- Vision Control Sealed Glass Units with Operable Louvers are to be provided in the following applicable locations:
  - Patient Rooms (ICU, Step-Down, Med/Surg, IP Rehab, LDRP, NICU, Nursery, etc.)
  - Behavioral Medicine Rooms (locate on corridor side only)
  - Emergency /Observation Dept. (Psych Rooms - locate on corridor side only)
  - Prep/Recovery Rooms
  - OR’s/Procedure Rooms
  - Imaging Rooms
  - Laser Rooms (use a magnetic window cover)
- Specifications are as follows:
  - Color: Metallic Gray is preferred to compliment the interior finishes.
  - Thickness: “2” airspace system is preferred.
  - Operating Mechanism: Hand Crank, typical except on doors with vision control glazing units. Units shall come with an auto-reversing feature.
- Glazing Units in Doors including *Patient Rooms, etc.: Use Aluminum Knob (Disc) for operating mechanism. Mechanism to be located inside patient room, down low and adjacent to door handle.

- *Only ICU and Step-Down Units will have the glazing units in the door.

- Glazing Units in Decentralized Windows including OR's, Patient Rooms, Pre- & Post Op (Prep/Recovery), Imaging, Laser Rooms, **ED Psych Areas, **Behavioral Medicine Rooms: Use Hand Crank both sides. Locate Hand Crank in an accessible area on both sides of frame (corridor and patient room) low on the frame in an accessible location where they cannot be damaged by doors, carts or similar items.

- **Emergency Department Psych and Behavioral Medicine Room windows. Locate Hand Crank on the corridor side of the room only, mount lower on frame in an accessible location where they cannot be damaged by doors, carts or similar items.

- Basis of Design: Unicel Architectural  
  Phone: 800.668.1580

**08 9100 - WALL LOUVERS**

- Louvers should be avoided, as they collect foreign materials.
DIVISION 09 - FINISHES

09 2400 - PORTLAND CEMENT PLASTERING
- No specific requirements

09 2900 - GYPSUM BOARD ASSEMBLIES
- Specify acoustical seals around outlets and other penetrations.
- Specify mineral fiber blankets for sound attenuation between studs and above ceilings.
- Wallboard assemblies shall receive level 5 sprayed on finish, with integral primer, on all occupied areas.
- Care must be taken to assure that the assemblies are continuous and tightly caulked between spaces.
- Due to the additional cost and considering the occupancy requirements, it may not be necessary to extend the walls to the underside of the slab to adequately attenuate the sound.

09 3000 - TILING
- Slip-resistant tile shall be specified in 'wet' areas such as kitchens.
- Grout color is to be chosen with a medium dark color.
- Wall tiles should be selected that is modular in size and thickness.
- Tile selection shall be from a domestic source that can easily be replaced if necessary.

09 5113 - ACOUSTICAL PANEL CEILINGS
- Specified ceiling materials should be standardized with a minimum number of different ceiling tile sizes and patterns. (Preferably just one pattern should be selected to reduce attic stocks and assure easy replacement).
- Standard tile should be 2’ x 4’ straight edged tile (not tegular) with a standard fissured pattern.
- The tile should have an NRC rating of not less than .65 and a light reflectance of 0.85 or better.
  - In open offices with systems furniture or where indirect lighting is employed, the ceiling tile should have a higher reflectance.
- For open offices a ceiling tile with an NRC of 0.90+ needs to be specified.
- Armstrong Ceilings is an approved manufacturer.
- Areas required to be surgically clean should have a hard gypsum wall board ceiling that is painted. Cleanable ceiling tiles, where accessibility is desired, shall be of vinyl faced gypsum board.
  - For Central Processing ceilings, USG Sheetrock® Brand Lay-In Gypsum Ceiling Panels Climaplus™ Performance is an acceptable ceiling choice.

09 6115 - CONCRETE FLOOR SEALER
- Mechanical Rooms floors and pads painted with a grey epoxy.

09 6340 - THICK-SET STONE FLOORING
- No specific requirements

09 6500 - RESILIENT FLOORING
- Resilient flooring will be specified in accordance with the current Intermountain Healthcare vendor contract. Vinyl composition floor tile will be 12” x 12” x 0.125” thickness. Tile patterns will be installed so that tile widths of more than ½ the tile width will be installed at the perimeter.
- Resilient 4 inch top-set base color should be a dark value to help obscure buffer and scuff marks. Resilient sheet flooring should be installed with an integral 4 inch coved base (to match millwork base) with heat welded seams.
- Woven sheet vinyl textured flooring is not to be specified on Intermountain projects, due to its’ difficulty to keep clean.
Solid sheet vinyl should be specified with heat welded seams. Care should be taken when choosing colors, as lighter values show equipment wear and tear. Welded seams should be glaze cured per manufacturer’s instructions.

Where more than one vinyl is specified with a pattern, the designers should make every effort to reduce waste created by insetting different colored vinyl sheets.

Approved Mannington installers:

Western Wholesale Flooring
823 South Main
Salt Lake City, UT 84111

Mt West Interiors
10400 S 2700 W
South Jordan, UT 84095

DesignTeam Inc
3050 South 900 East
Salt Lake City, UT 84106

Floor Styles
6763 South 400 West
Midvale, UT 84047

Spectra Contract Flooring
3759 W 2340 S Unit H
West Valley City, UT 84120

Majestic Flooring (St George)
314 N 3050 E Suite C1
St. George, UT 84790

MIDWEST Commercial Interiors
987 South West Temple
Salt Lake City, UT 84101

Wall 2 Wall
3588 W 1820 S
Salt Lake City, UT 84104

St George Flooring
526 Commerce St
Hurricane, UT 84737

7515 South State
Midvale, UT 84047

Diversified
45 West Louise Avenue
Salt Lake City, UT 84115

David Tayor & Assoc
4331 S Main St
Salt Lake City, UT 84107

Hart Floor Company
339 North Main #130
Logan, Utah 84321

Flooring Services
9929 South 500 West
Sandy, UT 84070

09 6513 - RESILIENT BASE AND ACCESSORIES
- Where resilient base may be specified with use of vinyl composition floor tile, the bottom of the base shall be sealed against the floor tile, as required by the Board of Health, and as good practice, with clear sealant. Coordinate with specifications and finish schedules / notes.

09 6623 - THIN-SET TERRAZZO
- No specific requirements

09 6723 - RESINOUS FLOORING
- A resinous flooring system shall be specified for all penthouse floors
  - For pool areas, Stonhard; Stonshield URT is a preferred manufacturer/product
    - Wearing Surface: Textured for slip resistance.
    - Overall System Thickness: 3/32 to 1/8 in (2 to 3 mm).
    - Application Method: Squeegee and rolled.
    - Undercoat: Two-component, free flowing, solvent free, aliphatic urethane formulation consisting of a polyaspartic resin and an aliphatic isocyanate.
    - Aggregate: Brightly colored, quartz broadcast aggregate.
    - Topcoat: Sealing or finish coats: Two-component, UV resistant, aliphatic polyaspartic urethane sealer.
      - Basis of Design: Stonhard; Stonseal CA7
    - McKay Dee ASC has this product installed (for reference).
09 6900 - CARPETING
- Carpet will be specified based upon the current floor covering contract with Intermountain Healthcare.
- Broadloom carpet will be installed generally except where a carpet tile is indicated.
  - Carpet tiles should be used under large systems furniture installations and over access flooring.
  - When carpet tiles are utilized, ensure that manufacturing directions for installation are followed to prevent fraying from incorrect pattern placement in coordination with traffic patterns.
- Broadloom carpets should have a urethane backing, 100% nylon solution died yarn, and attention should be paid to changes in the direction of the carpet installation.
- Carpet colors and patterns should be selected to help obscure stains and wear patterns.
- Generally carpet base will be installed with carpet floor finishes.
- Where possible custom carpet patterns and colors should be avoided to reduce maintenance problems requiring special mill runs of carpet.
- Carpet tile specifications shall require manufacturing directions for installation are followed.
- Carpet color schemes throughout a facility should match.
- Walk-off carpet at the entry of a facility should have a softer, dark look.
- Long corridor areas should not have a disruption in pattern as it will appear there was not enough carpet to finish the job.
- Carpet and cove base are to be color coordinated.

09 6900 - ACCESS FLOORING
- No specific requirements

09 7200 - WALL COVERINGS
- No specific requirements

09 7500 - INTERIOR STONE FACING
- No specific requirements

09 7723 - FABRIC-WRAPPED PANEL
- No specific requirements

09 8433 - ACOUSTICAL WALL PANELS
- No specific requirements

09 9100 - PAINTING
- Paint material and supplier/manufacturer shall be confirmed with the facility to verify matching of materials kept in stock.
- All finished rooms including mechanical rooms, data closets and electrical rooms should have the drywall painted.
- Provide for metal, acrylic enamel or an alkyd system. (Avoid the use of epoxy finishes that are difficult to repair).
- Interior drywall should be painted with an eggshell, satin or semi-gloss finish acrylic latex paint. This will be determined by the room use. For example, a clinic procedure room wall should be easily wipeable; thus, a semi-gloss finish is desired.
- Operating rooms and suites should also have an acrylic latex paint with a glossy luster. Verify cleanability of paints specified for operating rooms. Epoxy paints may be required.
- Exterior metal railings and trim should be painted with high quality semi-gloss acrylic enamel.
- Avoid using epoxy since it is difficult to repair.
- Specify low-VOC and low-odor paints where utilized in occupied remodel areas, especially in patient care areas.
09 9713 - COATINGS FOR STEEL
  • No specific requirements

09 9663 - TEXTURED ACRYLIC COATING
  • Not recommended for use
DIVISION 10 - SPECIALTIES

10 1100 - VISUAL DISPLAY BOARDS
- Coordinate use of display boards with furnishings specified separately.

10 1713 - TELEPHONE ENCLOSURES
- Not recommended

10 2113 - TOILET COMPARTMENTS
- Compartments should have a door, panel and pilaster construction with seamless metal construction floor mounted and overhead braced.
- Urinal screens should be wall hung with integral flanges.
- The partitions should have backing constructed to allow mounting of grab bars.
- Finish is to be 304 brushed stainless steel.
- UDOH requires at least (1) 42” grab bar in all toilet stalls, not just ADA stalls.
- One comfort-height toilet (per floor) shall be provided in all public restrooms.

10 2123 - CUBICLE SPECIALTIES
- Specify Intermountain standard quick removable systems, with standard curtain patterns. Coordinate with existing types within a facility

10 2223 - ACCORDION FOLDING PARTITIONS
- STC 45 minimum, if used

10 2226 - OPERABLE PANEL PARTITIONS
- No specific requirements

10 2613 - WALL AND CORNER GUARDS
- Provide 42 inch high wall protection such as Acrovyn panels in areas that will be subjected to equipment and cart damage.
  - This includes soiled utility rooms, laundry rooms, and service corridors. Any location that will experience any number of wheeled or carted equipment and furnishings should receive wall protection corresponding to the height of the tallest piece of wheeled equipment
  - Care should be taken in detailing the height specified for bumper and rail guards.
  - Provide a chair railing in conference and waiting rooms to protect wall finishes. Coordinate the railing detailing and height with the owner furnishings

10 2813 - TOILET ACCESSORIES
- Toilet accessories, including waste receptacles, mirrors, infant changing stations and grab bars will be contractor furnished and contractor installed.
  - Sanitary napkin vendors and disposal units, shower curtains and rods, shower seats, and robe hooks will also be contractor furnished and installed.
  - Soap dispensers, toilet paper dispensers, seat cover dispensers and paper towel dispensers will be owner furnished and contactor installed to assure compatibility with the current product vendor.
  - The detailing and placement of these items needs to be carefully coordinated with ADA accessibility requirements.
  - Where accessories are mounted partially on tile, a trim shall be specified and detailed to finish around the exposed portion of the accessory, so no space is left open between the accessory and the wall above the tile (BOH requirement).
10 4116 - EMERGENCY KEY CABINETS (KNOX BOX)
- Coordinate with requirements of local AHJ
- Units may be surface mounted or recessed, as specified by the local AHJ

10 4400 - FIRE PROTECTION SPECIALTIES
- Extinguishers at MRI areas shall be specified in aluminum containers.
- Extinguishers in operating room areas and electronic areas shall be specified as CO2 type.
- With pressurized O2 throughout the building there shall be 10lb. extinguishers for a pressurized gas fire per code for Class B fires (NFPA 10).
- Fire extinguisher boxes shall be designed to be recessed (fully or partially) into the wall wherever practical
  - These need to be located and detailed in the architectural drawings in order to be coordinated with fire rated wall assemblies and corridor clearances

10 5113 - METAL LOCKERS
- Lockers in engineering and other back of house spaces shall be specified metal for durability and cleanability.
- Avoid specifying lockers with wide face frames that leave an impractically narrow locker opening.
- Lockers shall be specified with padlock hasps, not combination locks.

10 5116 - WOOD LOCKERS
- Lockers for staff and patients can match other cabinets and casework in the building with high pressure laminate finish and integral door edging similar to the building cabinets.
- Lockers may be millwork fabrications in lieu of manufactured lockers
- Lockers shall be specified with padlock hasps, not combination locks.

10 5500 - POSTAL SPECIALTIES
- There may be exterior mail boxes that will be required.
  - The number, size, and location of these mailboxes will be determined by the owner.

10 7500 – FLAGPOLES

PART 1 - GENERAL
1.1 SUMMARY
A. Furnish labor, materials, tools, equipment and services for three (3) flagpoles, as indicated, in accordance with provisions of Contract Documents.
  1. National, State and Intermountain flags, approved by communications and FDC/FPD.
B. Completely coordinator with work of other trades.

1.2 QUALITY ASSURANCE
A. Provide flagpole and base constructed to withstand not less than 90 MPH wind with recommended flag flying.

1.3 SUBMITTALS
A. Project information: Manufacturer of listed products.

PART 2 - PRODUCTS
2.1 ACCEPTABLE MANUFACTURERS
A. Flagpoles:
  1. Base: Morgan-Francis AABEC Pole
  2. Optional:
a. American Flagpole
b. Baartol
c. Concord Industries
d. Eder Flag Manufacturing
e. Lingo

3. Other manufacturers desiring approval comply with Section 00 26 00.

2.2 MATERIALS

A. Flagpole:
   1. Seamless aluminum tubing, alloy 6063-T6
   2. Height above ground: 30 feet
   3. Profile: Cylindrical butt section with uniform conical upper section tapered at a rate of 1:66 of run.
      a. Form tight, inconspicuous shop and field joints between sections with shrunk or closely telescoped fit.
      b. Provide airtight and weather tight joints throughout.

B. Base:
   1. Manufacturer’s standard ground set base system for type of installation.
   2. Minimum 16 GA 1.3 mm galvanized corrugated steel tube or minimum 12 GA 2 mm rolled steel tube, sized to suit flagpole and installation.
   3. Welded steel bottom base and support plate, lightning ground spike and steel centering wedges.
   5. Provide loose hardwood edges at top for plumbing pole after erection.
   7. Depth as required for design winds and flag size.

C. Finish: Natural clear anodized finish: AA-M42C20A41
   1. Fine, non-directional mechanical polish.

D. Fittings:
   1. Winch System
      a. Internal heavy-duty geared winch system with removable crank.
      b. Mechanism serviced through flush hinged access door.
      c. Door to pivot on heavy duty piano hinge and secured with cylinder lock.
   2. Truck: Concealed revolving, ball bearing, non-fouling double truck assembly with 2 IN 50 mm diameter steel sheaves.
   3. Internal halyards: Stainless steel braided aircraft cable, one set per pole.
   4. Flag attachment:
      a. Consist of a Teflon roller sling encircling pole and rubber covered counterweight.
      b. Two bronze or chrome plated swivel snaps per halyard.
   5. Hood: Aluminum, finish to match pole.
   6. Flag provided by owner.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify that substrate is acceptable for installation of base.
B. Installation constitutes acceptance of responsibility for performance.
C. Install per manufacturer’s recommendation.
D. Paint portions of flagpole below grade with two coats of bituminous paint.
E. Provide positive lightning ground for flagpole installation.
F. Install concrete flagpole foundation. See Division 03.

ADDITIONAL FLAGPOLE RECOMMENDATIONS

- Coordinate location of freestanding flag pole with owner during Design Development.
- It should not impede snow removal, and height needs to be in scale with the building and should not block building signage.
- Provide ground lighting to illuminate each flag from both sides.
- Maintenance requirements are required for removal and replacement as necessary.

INTERIOR SIGNAGE

- Intermountain Healthcare will coordinate the contract for interior building signage, including code-required signage.
- Refer to Design Guidelines Section 4.6 for information on Intermountain-approved signage.

EXTERIOR SIGNAGE

- For larger projects, architect is to coordinate exterior building directories at the main entrance(s) as required.
- This signage shall be provided by the Owner.
- Coordinate illuminated signage with appropriate trades.
- Refer to Design Guidelines Section 4.6 for information on Intermountain-approved signage.
DIVISION 11 - EQUIPMENT

GENERAL
- For all equipment provided for which there are multiple sources of energy, or for which the power connection is not a corded plug, the manufacturer shall provide an electronic copy of the appropriate lock-out / tag-out procedure AND a laminated card of the same, to be attached near the equipment control point.

11 1000 VEHICLE AND PEDESTRIAN EQUIPMENT
- Decorative bollards used to protect patients and pedestrians at the building entry will be selected in conjunction with the design team and owner.
  - The bollards should be readily visible and be easily replaceable if they are damaged.
- Concrete-filled pipe bollards should be placed in locations to reasonably protect a building from vehicle damage.
  - This includes dock areas, prominent corners, etc.
- Bollard bases should be detailed to withstand the elements.

11 1300 - LOADING DOCK EQUIPMENT
- Sufficient lift and bumper guard equipment shall be planned in the dock area.
- A light shall be planned to direct light into the trailer to aid in the movement of materials from the back of darkened delivery trucks.
- A truck-washing station shall be provided as necessary.
- Provide dock levelers for the main loading docks.
- Provide door seals at the dock wall.
  - Provisions will also have to be made for vehicles that are not dock height

11 2400 - BUILDING MAINTENANCE EQUIPMENT
- No specific requirements

11 40 00 FOOD SERVICE EQUIPMENT
- All trades shall be coordinated with floor sinks, trench drains, freezer slabs, slab depressions and recesses.
- Grease trap locations shall be carefully coordinated with owner.

11 50 00 EDUCATIONAL EQUIPMENT
- No specific requirements

11 5213 - PROJECTION SCREENS
- Ceiling-mount supports should be coordinated with other above-ceiling elements.
- Wall-mount support height should be coordinated with facility staff.

11 7000 - MEDICAL EQUIPMENT
- Specific requirements as to installation and connections shall be noted in this or a separate volume
- Coordinate the medical, mechanical, and electrical equipment requirements with medical boom supports (ductwork, air curtains, electrical, medical gases, sprinkler heads, etc.).
- MRI path: coordinate the transportation path of the MRI magnets and other heavy hospital equipment for installation and future replacement and design structure accordingly
- It is important to allow a pathway to install and later to replace the larger imaging equipment such as MRIs.
  - This includes designing the floors to provide for this loading and corridor widths and ceiling and door heights to provide necessary clearances.
- Closely coordinate all penetrations (both mechanical and electrical) through the RF shielding. Detail the floor and other surfaces to provide for the RF shielding.
- The RF shielding will be designed and detailed by the shielding vendor.
The bidding documents should identify that the contractor will sequence his work to complete the major imaging equipment rooms at the latter part of the construction work.

- This will allow for any rough-in changes that might need to be made because the imaging equipment might not be purchased until near the end of the construction work. The contractor is responsible for any interruption in the sequencing of their work in the imaging areas.

- The owner will provide equipment cut sheets for owner furnished and contractor or owner installed equipment.

- The design drawings should identify all backing and overhead structure needed to support this equipment.

**TRASH COMPACTOR**

- Intermountain project staff members and Facility Development staff will determine if the size and scope of the facility requires a trash compactor.

  - This will also include provisions for bio-hazardous and hazardous material disposal.

**11 9000 OTHER EQUIPMENT**

- High-density file storage systems shall be provided by a separate vendor, with coordination for floor loading and rail installations.

- Sharps disposal containers shall be installed following the NOISH & CDC Guidelines.

  - Fixed sharps disposal containers should be 52 to 56 inches off the ground.

  - Sharps containers should be easily accessible for immediate disposal of sharp and should not be obstructed.

    - This includes placed:
      - Over garbage or linen bins
      - Near furniture
      - Blocked by Nurses Computers
      - Behind cabinets or doors

- Sharps containers should be less than 2/3 full.

  - Stericycle technicians replace full sharps containers at serviced locations. At self-service locations Intermountain caregivers swap out full sharps containers. Sharps containers are to be switched out prior to getting full.
DIVISION 12 - FURNISHINGS

12 1000 ART
- Intermountain Healthcare will coordinate the contract for artwork in the building.

12 2000 WINDOW TREATMENTS
- Intermountain Healthcare will typically provide window coverings for back-of-house room functions.
- Window coverings in public spaces (waiting rooms, reception areas, etc) should be designed and specified to be contractor-furnished and –installed.

12 2113 - HORIZONTAL LOUVER BLINDS
- Where there are clean or isolation room requirements, window units are to be specified with integral louvered 1 inch blinds.
- These are to be included in office and examination rooms

12 2116 - VERTICAL LOUVER BLINDS
- Not recommended

12 2413 - ROLLER SHADES
- Specify motorized with remote (wired) controls where difficult to operate manually
  - Battery-operated systems are not approved.

12 3000 CASEWORK
- Modular casework, steel construction, shall be specified at lab areas where high strength, durability and modular layout are required, to accommodate changing configurations.

12 3640 - STONE COUNTERTOPS
- No specific requirements

12 3643 - TERRAZZO SLAB COUNTERTOPS
- No specific requirements

12 3661 - SIMULATED STONE COUNTERTOPS
- Specify requirements for backing material type as required by the BOH (Board of Health)

12 400 FURNISHINGS AND ACCESSORIES, FURNITURE
- Intermountain Healthcare will coordinate the systems furniture requirements of facilities with their current contracted vendor.

12 4816 - ENTRANCE FLOOR GRILLES
- Metal grate-type walk-off mats are not approved.

12 6000 MULTIPLE SEATING
- Auditorium Seating: Seating shall be specified based upon requirements of assembly

12 9300 - SITE FURNISHINGS
- No specific requirements

12 9313 - BICYCLE RACKS
- No specific requirements
DIVISION 13 - SPECIAL CONSTRUCTION

13 3448 - PREFABRICATED ROOFTOP HELIPAD
- No specific requirements

13 4213 - PRE-ENGINEERED METAL BUILDING
- No specific requirements

13 4900 - RADIATION PROTECTION
- A report with recommended shielding levels will be provided to the design team
- Intermountain Healthcare Facility Development staff will coordinate the design and installation of RF shielding with the general contractor.
  - The RF shielding will be designed by the vendor to meet the requirements of the MRI equipment vendor.
  - Intermountain will provide the design criteria for radiation protection shielding. The physicist’s report with recommended shielding levels will be provided to the design team.
    - Owner will coordinate certification / verification of installed shielding.
    - The contractor will be responsible for the accuracy and continuity of all shielding installation details, including wave guides and conduit or duct penetrations.

13 4923 - RF / MRI MODULAR SHIELDING PARTITIONS
- Specify all penetrations (both mechanical and electrical) through the RF shielding. The RF shielding will be designed and detailed by the shielding vendor.
- The specifications should identify that the contractor will sequence his work to complete the major imaging equipment rooms at the latter part of the construction work. This will allow for any rough-in changes that might need to be made because the imaging equipment might not be purchased until near the end of the construction work. The contractor is responsible for any interruption in the sequencing of their work in the imaging areas.
DIVISION 14 - CONVEYING EQUIPMENT

GENERAL
- For all equipment provided for which there are multiple sources of energy, or for which the power connection is not a corded plug, the manufacturer shall provide an electronic copy of the appropriate lock-out / tag-out procedure AND a laminated card of the same, to be attached near the equipment control point.
- For all elevators, use only roller guides. Slide guides are not allowed.
- Where applicable, one elevator is to extend service to the mechanical penthouses and roof areas where significant mechanical or HVAC equipment is installed.

14 1000 - DUMBWAITERS
- Enclosure ratings shall be determined and specifications note ratings of door assemblies. Size shall be determined by size of items being transported. Head and sill clearances shall be coordinated with floor and roof assemblies. Coordinate call systems and notification systems related to dumbwaiter operation.

14 2100 - ELECTRIC TRACTION ELEVATORS
- During early design, discussion should take place with owner whether to use a traction or hydraulic elevator system.
- At least one elevator should be sized to provide access for emergency gurneys and distribution of supplies in the building as required.
- Elevators should be provided with monitoring software that can be remotely accessed by the owner’s staff to be able to quickly determine when there is a problem.
- Elevator cabs do not require 10 foot ceilings and cabs should have good light levels and durable vandal-resistant finishes (such as Forms and Surfaces).
- Coordinate elevator guide rail support columns with shaft wall thickness.
  - Provide support of both car and counter weight guide rails.
  - Coordinate the design and location of the elevator guide rail support columns very closely with the elevator shop drawings.
  - Give exact location of guide rails, separator beams, and hoist beams to steel detailer.
  - If this information is not known prior to commencement of steel fabrication, structural engineer will detail field connections on structural drawings.
- Elevator call buttons must be easily and clearly identifiable from the surrounding faceplate, and not confused with emergency operation instructions or key opening.
- Stairs accessible to the public should be located near the elevators and be easily identified to encourage people to use the stairs in lieu of the elevators.
- Language should be included in specifications to provide all programming information so Thyssen Krupp (our contracted elevator maintenance company) can maintain it beyond the warranty period.

14 2400 - HYDRAULIC ELEVATORS
- Refer to traction elevator information for additional requirements

14 3100 - ESCALATORS
- No specific requirements

14 9100 - CHUTES
- No specific requirements
PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES
A. The contractor shall furnish and install all motor starters and drives with properly sized thermal overload protection in each at the blower packages.
B. Furnish, install and terminate all low-voltage plenum-rated control wire re
   1. The low-voltage communication wiring is to be securely tie-wrapped to the tube. Tie wraps should be installed at a minimum of every five (5) feet.
   2. In areas where the cable does not follow the tube route, the control wire must be properly installed in electrical conduit.
   3. Where the cable penetrates a fire-rated wall or floor, the penetrations must meet the applicable code requirements for fire penetrations. At a minimum, the control wiring shall be installed in conduit that extends six-inches (6") on either side of the rated wall or floor and fire caulking applied to the ends of the conduit and the penetration through the wall or floor.
   4. The Contractor shall provide all junction boxes required for the installation of remote indicators.
   5. The vendor may recommend the use of Ethernet in lieu of low voltage communication wiring. This shall be presented as a vendor suggested alternate.
C. The system electronics shall not interfere with telemetry equipment.
D. The tube routing and equipment placement shall be properly designed and coordinated through the shop drawings to avoid placement over patient care areas. In areas where installation over patient care areas is unavoidable, the Contractor shall install sound insulation on the tubes and architectural sound attenuation boxes around the equipment that are over patient areas. The sound insulation should extend a minimum of six feet (6'-0") on either side of the patient care area. The Contractor is to submit all sound attenuation measures and insulation cut sheets to the Owner for approval. Insulation shall be a minimum of one and one-half inch (1-1/2") thick layer of one and one-half (1-1/2") pcf density fiberglass insulation with dust cover and taped joints over the tubing or equivalent.

1.3 SCOPE
A. All low voltage wiring related to the specimen tube system shall comply with the installation guidelines called out in Div. 27.

1.4 DESCRIPTION OF WORK
A. System supplier shall provide all engineering, equipment, materials and labor for a complete turn-key expansion of the six-inch (6") automated computer-controlled pneumatic tube system.

END OF SECTION
DIVISION 21 - FIRE SUPPRESSION

GENERAL
- One manufacturer shall be used for all firestopping installation (mechanical, electrical, top of wall penetrations) for entire building, not separated out by trades.
- Cable Suspension Systems (i.e. Gripple, etc.)
  - Cable Suspension Systems (i.e. Gripple, etc.) are not approved for use as a gravity load or primary load suspension system on mechanical systems, electrical systems, plumbing systems, fire sprinkler systems, low voltage/cable tray systems or similar systems. Only threaded rod with uni-strut (trapeze type supports) are approved for gravity load or primary load support system. The trapeze supports shall be hung vertical with no bends or angles where the loading is reduced. Where this occurs, the Contractor shall replace the threaded rod supports until they comply with the requirements. Complete shop drawing submittals are required.
  - Cable Suspension Systems (i.e. Gripple, etc.) are approved to be used as a seismic restraint system on mechanical systems, electrical systems, plumbing systems, and low voltage/cable tray systems where ceiling space constraints occur and/or where their performance criteria exceeds other types of seismic restraint systems.
  - Where Cable Suspension Systems are allowed, the Cable Suspension System manufacturer or authorized dealer is required to demonstrate that their product(s) meet and/or exceed all applicable code and loading requirements, which shall be submitted as a complete shop drawing submittal to be reviewed and approved by the Design Team, which includes the Architect, Structural Engineer, Mechanical Engineer, and Electrical Engineer. The Design Team shall coordinate with the Director of Facility Planning and Development, and FP&D project manager for final approval prior to returning the shop drawing submittal.

21 10 00 WATER-BASED FIRE-SUPPRESSION SYSTEMS
- The fire protection system should be designed to meet Intermountain’s insurance group requirements.
- Design and construction documents need to be submitted to Intermountain’s insurance group for review and shop drawings and submittals need to be submitted by the contractor to be approved by Intermountain’s insurance group.
- Thin-wall pipe will not be used. For larger pipe sections, an approved grooved pipe coupling system may be used.
- Fire protection system should be designed to maintain the minimum design water pressure throughout the year and should consider possible seasonal pressure drops resulting from irrigation and other water demands.
- The fire protection system should be designed in accordance with FM Global design requirements.
- Design and construction documents need to be submitted to FM Global for review and shop drawings and submittals need to be submitted by the contractor to be approved by FM Global.
- Fire riser check valves must be of a serviceable type. Wafer-type check valves are not acceptable.

21 20 00 FIRE-EXTINGUISHING SYSTEMS
- No specific requirements

21 30 00 FIRE PUMPS
- No specific requirements

21 40 00 FIRE-SUPPRESSION WATER STORAGE
- No specific requirements
DIVISION 22 - PLUMBING

GENERAL
- For all equipment provided for which there are multiple sources of energy, or for which the power connection is not a corded plug, the manufacturer shall provide an electronic copy of the appropriate lock-out / tag-out procedure AND a laminated card of the same, to be attached near the equipment control point.
- Cable Suspension Systems (i.e. Gripple, etc.)
  - Cable Suspension Systems (i.e. Gripple, etc.) are not approved for use as a gravity load or primary load suspension system on mechanical systems, electrical systems, plumbing systems, fire sprinkler systems, low voltage/cable tray systems or similar systems. Only threaded rod with uni-strut (trapeze type supports) are approved for gravity load or primary load support system. The trapeze supports shall be hung vertical with no bends or angles where the loading is reduced. Where this occurs, the Contractor shall replace the threaded rod supports until they comply with the requirements. Complete shop drawing submittals are required.
  - Cable Suspension Systems (i.e. Gripple, etc.) are approved to be used as a seismic restraint system on mechanical systems, electrical systems, plumbing systems, and low voltage/cable tray systems where ceiling space constraints occur and/or where their performance criteria exceeds other types of seismic restraint systems.
  - Where Cable Suspension Systems are allowed, the Cable Suspension System manufacturer or authorized dealer is required to demonstrate that their product(s) meet and/or exceed all applicable code and loading requirements, which shall be submitted as a complete shop drawing submittal to be reviewed and approved by the Design Team, which includes the Architect, Structural Engineer, Mechanical Engineer, and Electrical Engineer. The Design Team shall coordinate with the Director of Facility Planning and Development, and FP&D project manager for final approval prior to returning the shop drawing submittal.

22 10 00 PLUMBING PIPING
- Provide shut off valves/isolation valves, locate in the corridors for easy access
- Avoid locating plumbing and drain lines in exterior walls wherever possible.

22 30 00 PLUMBING EQUIPMENT
- Deionized water systems – piping system will use un-pigmented polypropylene with fusion type joints.

22 32 00 WATER TREATMENT SYSTEMS
- Water conditioning systems should be provided with soft water equipment for domestic hot water and steam generators or humidification equipment.
  - This shall also be provided where required for mechanical boilers and cooling equipment.
- Copper/Silver ionization shall be provided for all domestic water feeds for hospital facilities.

22 40 00 PLUMBING FIXTURES
- Scrub sink locations for public use (ex. NICU) should be separate from staff hand washing areas and away from main circulation doors.
  - Coordinate closely with Intermountain project team staff members for locations of foot pedal-operated sinks.
- Hard-wired, NOT battery-operated, hands-free sinks and toilets shall be specified. Where suitable, utilize flow generating electrical operated faucets.
- Toilets in all facilities shall be floor-mounted.

FAUCETS AND HOSE BIBBS
- Provide non-freeze type hose bibs with shut-off valves for lines serving the hose bib located within the facility.
- Provide hose bib with vacuum breaker in mechanical rooms and chiller rooms.
- Provide non-freeze hose bib with vacuum breaker near cooling tower.
- Provide hose bibs outside building for window washing, walk and area way, wash-down placed regularly along the perimeter of the facility.

**22 45 16 EYE WASH EQUIPMENT**
- As required by OSHA Guidelines, provide emergency eyewash and showers in all areas such as laboratories and where hazardous chemicals are mixed and used.
  - Guardian Model G5022, Combination Eyewash and Drench Hose is the basis of design; alternate manufacturers’ equivalent may be acceptable.
  - A mixing valve for tepid water is necessary.
  - The deck mounting of the eyewash provides at least six inches of clearance in all directions (from the edge of the eyewash nozzle) per manufacturer installation instructions.
- There shall be a drain at each location to allow the fixture to be frequently tested and operated.
- Fixtures must not be obstructed by cabinets, counters or any casework (paper towel dispensers, soap dispensers, and faucet wrist blades, etc.)

**22 50 00 POOL AND FOUNTAIN PLUMBING SYSTEMS**
- No specific requirements

**22 60 00 GAS AND VACUUM SYSTEMS FOR LABORATORY AND HEALTHCARE FACILITIES**
- No specific requirements
DIVISION 23 - HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)

GENERAL

- For all equipment provided for which there are multiple sources of energy, or for which the power connection is not a corded plug, the manufacturer shall provide an electronic copy of the appropriate lock-out / tag-out procedure AND a laminated card of the same, to be attached near the equipment control point.
- All new buildings shall have Camfil filters provided upon turnover to owner (date of Substantial Completion or Certificate of Occupancy). Final filter rack should be 12” deep, not 4” as is common in some commercial construction.
- All intake air louvers shall be designed to prevent the incursion of falling, blowing, or drifting snow to the system.
- Cable Suspension Systems (i.e. Gripple, etc.)
  - Cable Suspension Systems (i.e. Gripple, etc.) are not approved for use as a gravity load or primary load suspension system on mechanical systems, electrical systems, plumbing systems, fire sprinkler systems, low voltage/cable tray systems or similar systems. Only threaded rod with uni-strut (trapeze type supports) are approved for gravity load or primary load support system. The trapeze supports shall be hung vertical with no bends or angles where the loading is reduced. Where this occurs, the Contractor shall replace the threaded rod supports until they comply with the requirements. Complete shop drawing submittals are required.
  - Cable Suspension Systems (i.e. Gripple, etc.) are approved to be used as a seismic restraint system on mechanical systems, electrical systems, plumbing systems, and low voltage/cable tray systems where ceiling space constraints occur and/or where their performance criteria exceeds other types of seismic restraint systems.
  - Where Cable Suspension Systems are allowed, the Cable Suspension System manufacturer or authorized dealer is required to demonstrate that their product(s) meet and/or exceed all applicable code and loading requirements, which shall be submitted as a complete shop drawing submittal to be reviewed and approved by the Design Team, which includes the Architect, Structural Engineer, Mechanical Engineer, and Electrical Engineer. The Design Team shall coordinate with the Director of Facility Planning and Development, and FP&D project manager for final approval prior to returning the shop drawing submittal.

23 10 00 FACILITY FUEL SYSTEMS
- No specific requirements

23 20 00 HVAC PIPING AND PUMPS
- No specific requirements

23 30 00 HVAC AIR DISTRIBUTION
- All ventilation system ductwork must meet the Sheet Metal and Air Conditioning Contractors’ National Association (SMACNA) design guidelines for clinical office environments
- High pressure ductwork should be galvanized steel spiral lock construction.
- The ductwork seams should be sealed to minimize air leakage
- Ductwork will be tested to verify that it meets the SMACNA requirements for allowable air leakage.
- Ductwork should be internally lined with 1” insulation, except where insulation must be on outside for air quality purposes
- All fabricated ductwork shall be kept clean and the end tightly sealed before and after it is delivered to the jobsite.
- The ductwork will be kept dry and sealed until it is has been installed.
  - All ductwork openings will be sealed at the end of the day.
- Ductwork that is not kept tightly sealed will be removed from the job and replaced at the contractor’s expense.
- All air intake louvers will be extruded aluminum with weather proof blade design and include bird and insect screens.
  - The location needs to be carefully considered so that is not affected by the loading dock fumes, or building exhaust fan locations. Prevailing winds should also be taken into consideration.
- Exhaust systems should be designed with noise attenuating curbs or equipment in addition to an adequate length of lined ductwork to minimize fan noise in occupied spaces.
  - The fans shall be designed with vibration isolators and flexible duct sections and inertia pads where required to minimize noise transmission.
  - The location of exhaust fan discharge nozzles need to be carefully designed to not interfere with any air intake louvers.

23 33 13 FIRE SMOKE DAMPERS
- Fire and or smoke dampers shall be located where they can be easily accessed for periodic inspection and maintenance.
- They shall be provided with access panels and easily identified

23 40 00 HVAC AIR CLEANING DEVICES
- Indoor air quality: Comply with ASHRAE 61.1-2004 and all approved addenda for Indoor Air Quality performance.

23 50 00 CENTRAL HEATING EQUIPMENT
- VAV boxes should be zoned in rooms with similar exposure and similar occupancy.
  - Generally there could be 1200 – 1500 square feet of space per VAV zone.
- Hot water systems are the preferred heating systems.
- Provide boiler backup by redundancy or modularization.
- If a power burner is specified, the A/E shall determine the maximum allowable length of positive pressure flue

23 60 00 CENTRAL COOLING EQUIPMENT
- Specify appropriate ARI Standards and certification for water chillers. Specify certification by the Cooling Technology Institute.
- For Technology Distribution Rooms (TDR, aka Data Closets): Multiple Evaporator DX Split Systems: Fujitsu is to be specified as basis of design, with option for an approved alternate

23 70 00 CENTRAL HVAC EQUIPMENT
- Buildings are to be designed to be as energy efficient as practical. Energy modeling will be done for the LEED application (as required) and to meet the State of Utah’s energy code requirements.

23 80 00 DECENTRALIZED HVAC EQUIPMENT
- Technology Equipment Center (TEC, aka Data Center): Liebert units are recommended for basis of design for these rooms. Key functional components include:
  - VFD controlled on the supply side
  - Capacity controlled through their digital scroll compressor
  - IComm controls work all units as a team
DIVISION 25 - INTEGRATED AUTOMATION

25 10 00 INTEGRATED AUTOMATION NETWORK EQUIPMENT
   o No specific requirements

25 30 00 INTEGRATED AUTOMATION INSTRUMENTATION AND TERMINAL DEVICES
   o No specific requirements

25 50 00 INTEGRATED AUTOMATION FACILITY CONTROLS
   o The building management system should be designed to communicate easily with any other existing facilities if the building is located on an already established campus.
     o This shall include manufactures of boilers, chillers, large pumps and other building equipment that need to be furnished with compatible cards and software.
     o The project should include LAN or other communication equipment and wiring as needed to fully integrate the building with the existing campus as required.
     o Preference shall be given to incorporating the existing building automation system (BAS) in the new construction.
   o Building management systems should have the major equipment provided with emergency power and UPS back up for computers.
   o When designing an entirely new facility, regardless of size or function, the design shall include a BAS that allows for remote monitoring, adjustment, and troubleshooting of HVAC systems by Intermountain Healthcare staff.
   o The selection of the BAS manufacturer will only be from the list of Intermountain Healthcare approved BAS manufacturers and shall be made in coordination with Intermountain Healthcare project management.

25 90 00 INTEGRATED AUTOMATION CONTROL SEQUENCES
   o Refer to building management systems information noted above
DIVISION 26 - ELECTRICAL

GENERAL

- For all equipment provided for which there are multiple sources of energy, or for which the power connection is not a corded plug, the manufacturer shall provide an electronic copy of the appropriate lock-out / tag-out procedure AND a laminated card of the same, to be attached near the equipment control point.

- Cable Suspension Systems (i.e. Gripple, etc.)
  - Cable Suspension Systems (i.e. Gripple, etc.) are not approved for use as a gravity load or primary load suspension system on mechanical systems, electrical systems, plumbing systems, fire sprinkler systems, low voltage/cable tray systems or similar systems. Only threaded rod with uni-strut (trapeze type supports) are approved for gravity load or primary load support system. The trapeze supports shall be hung vertical with no bends or angles where the loading is reduced. Where this occurs, the Contractor shall replace the threaded rod supports until they comply with the requirements. Complete shop drawing submittals are required.
  - Cable Suspension Systems (i.e. Gripple, etc.) are approved to be used as a seismic restraint system on mechanical systems, electrical systems, plumbing systems, and low voltage/cable tray systems where ceiling space constraints occur and/or where their performance criteria exceeds other types of seismic restraint systems.
  - Where Cable Suspension Systems are allowed, the Cable Suspension System manufacturer or authorized dealer is required to demonstrate that their product(s) meet and/or exceed all applicable code and loading requirements, which shall be submitted as a complete shop drawing submittal to be reviewed and approved by the Design Team, which includes the Architect, Structural Engineer, Mechanical Engineer, and Electrical Engineer. The Design Team shall coordinate with the Director of Facility Planning and Development, and FP&D project manager for final approval prior to returning the shop drawing submittal.

EMERGENCY POWER FOR COOLING SYSTEMS ON HOSPITAL CAMPUS

- Functional Description:
  - The following is to be considered in the development of new hospital facilities to coincide with Intermountain Healthcare’s system Emergency Management Plan for hospital facilities. Emergency power for cooling systems for buildings located on a hospital campus is to be provided to Outpatient facilities (e.g. Medical Office Building, Medical Group Clinics, etc.) and Hospital facilities (e.g. Hospitals, Ambulatory Surgical Centers, etc.) where the following general considerations apply. The intent is to standardize when and where emergency power for cooling systems is to be provided.

- General Considerations:
  - Direct patient care areas as well as direct patient care support areas are of upmost importance when considering emergency power for cooling systems.
  - When feasible, non-patient care areas (e.g. Administration and similar support spaces, etc.) should be on a separate Air Handler Unit.
  - When generators are provided on a hospital campus the following shall apply:
    - Provide emergency power, including all necessary mechanical and electrical components, to support the cooling system for clinical/patient care areas within hospital facilities.
    - Emergency power is to be extended to support the cooling system of Outpatient facilities when it is attached to a hospital facility and is connected to the campus Central Utility Plant (CUP).
  - For existing hospital campuses and other Intermountain facilities, including Standalone Outpatient and Non-Clinical facilities, emergency power for cooling systems will be considered on a case by case basis.
  - Emergency power for cooling systems will not need to be considered for Standalone Outpatient facilities and Non-Clinical facilities (e.g. administrative buildings, leased buildings, etc.) that do not have generators.
When considerations need to occur, decisions will be made by Facility Design and Construction in consultation with Facility Management, Facility Planning and Development and Capital Finance.

### 26 05 19 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

- Low voltage recommendations for use of 600V aluminum conductors for circuit wiring are as follows:
  - **Conductor Characteristics:**
    - THHN, THWN-2 or XHHW-2 Insulation depending on the application.
    - AA-8000 aluminum allow compact stranded conductors.
    - Sizes 1/0 AWG-750 kcmil.
  - **Uses Allowed:**
    - Service entrance conductors.
    - Feeders supplying switchboards and panelboards.
  - **Uses Not Allowed:**
    - Branch circuit wiring
    - Motor feeders
    - Mechanical equipment feeders
    - Imaging equipment feeders
    - Feeders for equipment that is not labeled for use with aluminum conductors

### 26 10 00 MEDIUM-VOLTAGE ELECTRICAL DISTRIBUTION

- No specific requirements

### 26 20 00 LOW-VOLTAGE ELECTRICAL TRANSMISSION

- Low voltage equipment (with the exception of the building management, fire alarm and security systems) will be owner-designed, owner-contracted and owner-installed.
  - This will be done in close coordination with the building electrical engineer so that the contract documents can include the conduits and cabling for these systems.
  - This will include the data system fiber backbones, as well as the distribution the file servers and routers, and to the individual work stations.
  - This will be coordinated with Division 27 to ensure installation of properly-sized conduits, boxes, and similar items.
  - This will include the coordination and installation of raceways for data and communications.
  - All emergency lights are to be self-testing.

### 26 30 00 FACILITY ELECTRICAL POWER GENERATING AND STORING EQUIPMENT

- The UPS system installed should include redundancy in the system to prevent shutdown in case of failure of the main line.
  - All outlets in data rooms for the UPS systems and A/B bus links should be NEMA-rated

### 26 40 00 ELECTRICAL PROTECTION

- Lightning protection should be provided in new hospital facilities.
  - Depending on the location and relative height of the new building, lightning protection may be required at both the building parapet and at penthouse parapet walls.

### 26 50 00 LIGHTING

- Coordinate the number of light fixtures per area to avoid an overabundance of light fixtures in a specific area.
  - This has proven problematic in areas where specialty light fixtures are used
  - A variety of lighting control options (half-on, half-off, etc) is always desirable in both staff and patient environments.
    - These controls should be closely coordinated with Intermountain Healthcare project team members.
  - Light fixtures should be coordinated closely with the architect’s interior design team to avoid clunky, unattractive fixtures.
- Height of hanging light fixtures should be closely coordinated with the workstations to avoid head injuries.

**EXTERIOR LIGHTING**
- Exterior lights installed flush with surrounding sidewalk elevations have proven to be a high-maintenance item and are to be avoided.
- Appropriate lighting of the exterior, including proper illumination of flags and exterior building-mounted signage, should be coordinated with the owner and included in the contract documents.
- Exterior lighting box colors shall be coordinated with any existing campus lighting.
DIVISION 27 - COMMUNICATIONS

27 00 00 – COMMON GENERAL CONDITIONS FOR ALL COMMUNICATIONS SECTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, and other documents as designated, apply to this Document.
   B. See Division 7 and section 27 01 00 Part 3 for additional requirements

1.2 RELATED SECTIONS
   A. Specifications throughout all Divisions of the Project Manual are directly applicable to this section, and this section is directly applicable to them.
      1. All Division 27 Sections
      2. Requirements of the following Division 26 sections apply to this section
         a. Basic electrical requirements
         b. Basic electrical materials and methods
         c. Grounding, earthing, and bonding
      3. Numbered Sections such as:
         a. Fire stopping
         b. Grounding
         c. Bonding
         d. Earthing
         e. And other sections by other trades as listed in the appendices.
      4. Items such as boxes, enclosures, and other non-Division 27 shall be included and installed by the normally designated trade.
      5. Named sections requiring special attention by their designated trades are HVAC, including building automation and control, fire sprinkler, and plumbing.

1.3 SUMMARY
   A. The work on many processes in this section are not part of the Division 27 contract. The respective trades shall include their portions, and administration topics that are applicable to all Division 27 Sections in their proposal.
   B. This document is based upon the 2012 Construction Specification Institute (CSI) Master Format numerical and title indicators for sections within Division 27: Communications
   C. Where IT or Owner representation is stipulated in this Division, it shall be provided by the Data Center Operations Infrastructure Cabling team, and Intermountain Medical Group as applicable.

1.4 SUBMITTALS
   A. Product data shall be supplied for any equipment that does not the specified part number.
   B. Shop drawings
      1. Labeling schedules and layouts in owner designated electronic format
      2. Cabling administrative drawings

1.5 CONDITIONS
   A. Specifications, Guidelines, Details, appendices, and Tables for all Division 27 sections can be accessed on the manufacturer’s web site: http://siemon.com/us/
   B. Drawings and General provisions of the contract, including Uniform General Conditions, Supplementary General Conditions, architectural plans and specifications, requirements of Division 1, electrical, mechanical, plumbing, audio visual, security and telecommunications specifications and plans apply to the communications section, and shall be considered a part of this section. The Contractor shall read all sections in their entirety and apply them as appropriate for work in this section.
   C. Conflicts:
      1. Drawings and specifications are to be used in conjunction with one another and to supplement one another. In general, the drawings determine the nature and quality of the installation, materials, and tests. The quantities are derived from the drawings, details, listings, and manufacturer’s directions.
a. Final order counts and distances are the contractor’s responsibility.

2. If there is an apparent conflict between the drawings and specifications, or between specification sections, the items with the greater quality or quantity shall be submitted, estimated, and installed.

3. Clarification with the Owner and/or Owner’s Representative about these items shall be made prior to the ordering and installation.

D. OWNER / CONTRACTOR
1. The facility will submit appropriate scope of work information that will allow the contractor to appropriately plan and bid the project.

E. CONTRACTOR
1. Furnish all labor, materials, tools, equipment and services for the installation described herein. Provide add/deduct unit pricing for all components as part of the bid response. Base fixed price add/deduct units on an average cable length of 175 linear feet.

2. The Contractor shall procure and maintain for the duration of this agreement, insurance against claims.

3. The Contractor and its employees will respect and protect the privacy and confidentiality of the Owner, its employees, clients, patients, processes, products, project information, project documents, and intellectual property to extent necessary, consistent with the legal and policy responsibilities of the Owner. Contractors and their employees shall sign a non-disclosure confidentiality agreement and abide by the requirements to keep confidential all information as outlined above.

4. Use of Subcontractors: Successful bidder shall inform the Owner’s contact and/or General Contractor in writing about the intention to use Subcontractors and the scope of work for which they are being hired. The Owner or Owner’s designated contact must approve the chosen Subcontractors in writing prior to the Subcontractor’s hiring and start of any work. The low voltage Subcontractor must be approved and certified to the satisfaction of the DCO representative. Refer to the listing in appendix 7.

5. The Contractor’s designated project manager will be recognized as the single point of contact. The Project manager shall oversee all work performed to ensure compliance with specifications as outlined in bid documents (which includes all specifications and drawings) to ensure a quality installation.

1.6 SCOPE OF WORK:
A. This establishes a communications infrastructure to be used as signal pathways for voice, high-speed data transmission, and other low voltage services. Contractor shall:

1. Comply with all Master Specifications documents and the following requirements for a complete project installation.

2. Provide a structured cabling system as described hereafter that includes, but is not limited to, supplying, installing, labeling and testing of: fiber backbone, fiber and voice riser cable; data copper, fiber, and voice copper horizontal cabling, cable connectors, communications outlets and terminations, patch cables, and equipment racks/cabinets for networking hardware and patch panels.

3. All requirements and specifications will be enforced. Cable pathways and runs to individual outlets are not shown in their entirety but shall be provided as if shown in their entirety.

4. Coordinate with electrical tradespersons to verify conduit routing does not cause cabling to exceed allowable link length. Follow industry standard installation procedures, including BICSI Installation Standard and guidelines as well as specified manufacturers standard recommended procedures and installation practices for communications cable to assure that the mechanical and electrical transmission characteristics of this cable plant and equipment are maintained.

5. The Division 27 work shall be performed by an approved, certified installer.

6. The low voltage communications Subcontractor shall complete non-concealed work.

1.7 REFERENCE STANDARDS
A. The latest published edition of a reference shall be applicable to this Project unless identified by a specific edition date.

B. All reference amendments adopted prior to the effective date of the Contract shall be applicable to this Project.

C. The publications listed below form a part of this specification. The publications are referred to in the text by basic designation only.
D. Specific reference in specifications to codes, rules, regulations, standards, manufacturer’s instructions, or requirements of regulatory agencies shall mean reference to the latest printed edition of each in effect at the date of contract.

E. Codes and Standards (Most recent editions with addenda/TSB, etc.) All materials, installation and workmanship shall meet or exceed the applicable requirements and standards addressed within the references listed in Appendix 04.

1.8 DEFINITIONS

A. Definitions and Abbreviations are listed in Appendix 05:

PART 2 - PRODUCTS

2.1 PRODUCTS AND WORK NOT INCLUDED BY DIVISION 27 (NIC)

A. Others shall separately purchase and/or provide certain equipment and miscellaneous items that will be installed during the installation process. Such items may not be indicated in the documents. Contractor shall coordinate with the Owner and his suppliers when considering:

1. Provision and installation of phone systems, computer hardware, and related networking software and equipment.
2. Provision and installation of multi-port routers, hubs in communications rooms.
   a. TDR UPS by Div. 27 DCO
3. Communications grounding bus bars and grounding wires connecting to the main building electrode system by Division 26.
4. Dedicated power panels, ground bus bars, circuits and utility outlets.
5. Installation and finishing of fire-rated plywood backboards.
6. Building mechanical ductwork, cooling/heating system, and environmental control sensors.
7. Communication pathway devices such as, conduits, conduit sleeves, back boxes, and penetrations in walls and floors. Including, but not limited to concealed work, office spaces and open areas.
8. Provision and installation of modular furniture and millwork.

PART 3 - PENETRATIONS

3.1 The work in this section is in the Division 7 contract; and verified complete at project turnover.

A. Wall Penetrations - Fire - Smoke – Sound

1. All fire, smoke, and sound wall penetrations must be correctly made to protect the safety of patients and employees. A facility is designed/architected and built with fire integrity that must not be lost as the building is modified over its lifetime.
2. The items listed often penetrate 1 – and 2 – hour fire-resistance-rated (FRR) assemblies. General requirements for filling the space between the item in question and the wall are found in NFPC 101® Section 8.2.3.2.4.2. There is the option to either fill the space with appropriately rated fire-stop material or protect the space with an approved device designed to maintain the fire resistance of the wall.
3. If a sleeve is used around the item that transverses the wall, the sleeve must be installed into the wall without any opening between the sleeve and the wall. The open space within the sleeve must then be filled with appropriately rated fire stop.

B. All items listed in 1 through 2 must have penetrations in fire-resistance-rated assemblies filled to maintain the integrity of the fire barrier.

1. Conduits
   a. When conduit passes through a wall that is either rated or must be fire-stopped due to lack of sprinklers in the compartment, it is essential to fill any gap around the conduit as described above.
2. Cables/Wires
   a. Sometimes cables or wires are passed through a penetration contained in a fire wall as a single installation. This often happens in a health care organization with communication cables. Even in these cases, the penetration must be patched appropriately.
3. NOTE: Fire, smoke, and sound wall penetrations are also governed by local and state building codes.
4. NOTE: This requirement applies to any and all departments, organizations, employees, and/or vendors who perform structured cable work in the facilities for:
5. Telephony and Computer networks, fire, smoke, and sound wall penetrations, alarm systems, security systems, HVAC Control or sensors, patient entertainment systems, announcing systems, nurse call, telemetry, RFID, etc.

6. NOTE: While this document is written specifically for low voltage wiring, the JCAHO standards apply for any fire or smoke wall penetration. As you perform work in the facility, if you note any existing penetrations that are not up to standard, please notify the construction Project Manager immediately.

7. While Facility Engineering has the overall responsibility, each department, organization, employee, and/or vendor has the responsibility to follow the process in obtaining a permit from facility engineering before work is started and to follow the guidelines to maintain the fire/smoke wall integrity.

C. Process:

1. NOTE: This process applies to any person, group, and/or vendor who perform low voltage cable installations at any Intermountain facility or clinic.
   a. Fire/Smoke Walls
      1) Any Vendor, department, and/or person needing to do any cable work that involves wall penetrations, adding to existing or new, are required to obtain a “Low Voltage Cable Work Permit” from Facility Engineer.
   b. Above Ceiling Work
      2) Any Vendor, department, and/or person needing to do any cable work above the ceiling tiles, adding to existing or new, are required to obtain a “Low Voltage Cable Work Permit” from Facility Engineering.

2. Permit
   a. The permit requires detail information as to what work is being done, where the work will be done. The permit will also state the current approved sealing compound for the facility and specific requirements for conduits etc.
   b. There may also be specific rules regarding how work may be conducted areas of the hospital.
      1) NOTE: Different manufacturer’s sealing products can NOT be used in the same penetration. Therefore, if an additional cable is added to an existing penetration and you don’t have the same brand of caulk, you must remove all the old caulk and re-do the seal completely.

3. Quality of Work
   a. Only the ceiling tiles to be removed are where the work is being worked done. Only two or three tiles can be removed at a time. New or existing damage to the ceiling tiles, support, or grid will be reported to Facility Engineering.
   b. Cables must be properly suspended and not left lying on the ceiling tiles or grid. Facility Engineering will provide guidance on how cables should be supported and the support structure available for use.
   c. Old cable must be completely removed where possible.
      1) Old unused cable adds weight to the suspension system and difficulty identifying specific cable runs.
   d. A work area cannot be left unattended with tools, ladders, or ceiling tiles being removed. This is for the safety of the patients and families with little children.
   e. The low voltage permit is a large Red tag that is to be tied to the ladder the vendor / person will be using. The tag is visible enough that anyone walking by can see the tag and know that the work has been approved by engineering to be done. If the tag is not present employees are to notify engineering that unauthorized work is being done.
   f. Equipment, ladders, supplies, cable, etc. will NOT be placed near self-closing fire doors in a way that will interfere with the normal operation of the doors in the event of a fire.
   g. Closets TDR’s, TEC’s, similar, and datacenters will be treated with the same respect as public areas in the facility. Trash, extra wire, wire ends, zip tie pieces, packing material, metal filings, and sheetrock dust must be removed from the data closets and datacenter areas.
   h. Facility Management or the prime contractor will inspect the penetration and remove the tag upon successful inspection.
      1) NOTE: In addition to complying with the fire/smoke wall standards, all computing cabling will comply with the Division 27 standards outlined elsewhere in this document.
3.2 MEASUREMENT PROCEDURES

A. The Contractor shall:
B. The Contractor shall
   1. Coordinate supports, adjacent construction, and fixture locations to ensure actual dimensions correspond to established dimensions.
   2. Verify dimensions in areas of installation by field measurements before fabrication and indicate measurements and scale on shop drawings.
   3. Coordinate fabrication schedule with construction progress to avoid delays of the work.
   4. Where field measurements cannot be made without delaying the work, establish dimensions and coordinate with the General Contractor.
   5. When approved, proceed with fabricating units without field measurements.

3.3 CHANGES

A. ALTERNATES:
   1. If an alternate material is proposed that is equal to or exceeds specified requirements, Contractor shall provide manufacturers’ specifications in writing for Owner approval prior to purchase and installation.
   2. Substitutions of material by the Contractor shall be in writing complete with written manufacturers’ specifications. The material substituted shall not void, alter or change manufacturers’ structured cabling system warranty.
   3. Contractor shall:
      a. Provide a complete cabling infrastructure according to these written specifications and drawings. If the Owner changes the scope of work to be performed by the Contractor, it shall be in writing.
      b. Promptly respond to these changes with a complete material list, including pricing, labor, and taxes in writing presented to the Owner for approval. Also include unit pricing.
      c. Not proceed with any additional scope of work without a signed approval by the Owner.
   4. Owner will not pay for additional work performed by the Contractor without signed approval of these changes. Contractor will submit a copy of signed change order upon billing.
   5. The Owner’s Infrastructure Cable team will be the final judge of acceptability, with review by Owner’s Representative and the distribution of the acceptance by the Architect. No substitute shall be ordered, installed or utilized without the Architect’s prior written verification of acceptance from the Owner’s Infrastructure Cable team.

B. SUBSTITUTION PROCEDURES

   1. Substitution may be considered when a product becomes unavailable through no fault of the Contractor.
   2. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Include in each request for substitution:
      a. Product identification, manufacturer’s name and address.
      b. Product Data: Description, performance and test data, reference standards, finishes and colors.
      c. Samples: Finishes.
      d. Complete and accurate drawings indicating construction revisions required (if any) to accommodate substitutions.
      e. Data relating to changes required in construction schedule.
      f. Cost comparison between specified and proposed substitution.
   3. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
   4. The Owner will be the final judge of acceptability, with review by Owner’s Representative and the distribution of the acceptance by the Architect. No substitute shall be ordered, installed or utilized without the Architect’s prior written verification of acceptance from the Owner’s Infrastructure Cable team.

PART 4 - EXECUTION

4.1 QUALITY ASSURANCE

A. Regulatory Requirements:
1. Contractor shall supply all city, county, and state telecommunication cabling permits required by appropriate governing agency.

2. Prior to commencing work, the Contractor and staff shall secure all required Intermountain Healthcare permits including, but not limited to; facility sign in, ceiling work permits, hot work permits, and confined space permits.

3. Contractor shall be city, county, and state-licensed and/or bonded as required for communications/low voltage cabling systems work.

B. Certifications:

1. Contractor shall submit an up-to-date and valid certification verifying qualifications of the Contractor and installers to perform the work specified herein at time of bid submission.

2. Contractor shall have a complete working knowledge of low voltage cabling applications such as, but not limited to, data, voice and video network systems.

3. Contracting firm shall have installed similar-sized systems in at least ten (10) other projects in the last five years prior to this bid and be regularly engaged in the business of installation of the types of systems specified in this document. Certification shall include, but not be limited to, items such as name and location of project contacts and numbers, total square footage, total number of cables/drops, types of media, etc.

4. Contractor shall provide certificates for the appropriate insurance coverage as defined in contract documents.

5. All installer personnel that will be assigned to this project shall be listed in a qualification document. 50% of the personnel working on the job site shall have a minimum of 3 years’ experience in the installation of the types of systems, equipment, and cables specified in this document. Any personnel substitutions shall be noted in writing to Owner’s Data Center Operations Infrastructure Cabling representative prior to commencement of work.

6. BICSI ITS Cabling Installation Program Installer Level 1 or 2 or Technician certifications may be substituted in lieu of the 3-year requirement. All cabling installers shall be trained and certified by the cable manufacturer for communication cabling installations and maintenance of said materials.

7. Refer also to General Conditions.

C. Administrative Requirements and Coordination:

1. The Contractor shall:
   a. Provide a specified contact person (name and contact number) for coordination to attend project meetings with the communication consultant, the Owner and others.

   b. Coordinate work of this section with Owner’s system specifications, workstations, equipment suppliers, and installers.

   c. Coordinate installation work with other crafts (examples include ceiling grid contractors, HVAC and sheet metal contractors, etc.) under the direction of the General Contractor to resolve procedures and installation placement for cable trays and cable bundle pathways. The goal of this coordination will be to establish priority pathways for critical data/voice network cable infrastructure, materials, associated hardware, as well as mitigate delays to the project and to allow service access for communications and HVAC components. Damage by Contractor to the craftwork of others will be remedied at the Contractor’s expense in a timely manner.

   d. Exchange information and agree on details of equipment arrangements and installation interfaces. Record agreements reached in meetings and distribute record to other participants, Owner and communication consultant.

   e. Arrangement, layout, and locations of distribution frames, patch panels, and cross-connect blocks in equipment rooms and racks to accommodate and optimize arrangement and space requirements of any service provider equipment, telephone system, and LAN equipment as directed by Data Center Operations. Tasks shall be coordinated with the Owner’s Data Center Operations team, and other trades’ installation representatives.

   f. Where installed, confirm exact locations and method of mounting outlets in modular furniture. Follow furniture manufacturers’ written instructions for installing cable and devices in modular partitions. Obtain modular furniture and power pole locations from the General Contractor. Wiring locations noted in plans along walls for modular furniture are approximate and will have to be determined by Contractor at time of installation. Field condition adjustments for installation may have to be made and coordination efforts with the mechanical and electrical
contractor for pathway must take place early in the project to comply with maximum 40% conduit fill factor requirements.

g. When requested by Owner or Owner’s representative, furnish extra materials that match specified products and that are factory packaged with protective covering for storage and identified with labels describing contents. Unit pricing shall apply.

D. Contract Administration:
1. Change orders shall be submitted to the Owner/Project Manager complete with price breakdown and description for approval before any work is done.
2. Owner’s Data Center Operations Representative will provide job field reports upon inspection of Contractor’s installation, materials, supporting hardware, coordination with other trades and progress to schedule to the Owner’s project manager.
3. Job Field Report outline:
   a. General installation progress in relation to scheduled work made by the Contractor up to that date.
   b. All deficiencies noted in the cable installation to be corrected by the Contractor.

E. Pre-Installation Meetings
1. Contractor shall:
   a. Attend and/or arrange a scheduled pre-installation conference prior to beginning any work of this section.
   1) Agenda: This venue is to ask and clarify questions in writing related to work to be performed, scheduling, coordination, etc. with consultant and/or project manager/and Data Center Operations Infrastructure Cabling representative.
   2) Attendance: Communications project manager/supervisor shall attend meetings arranged by General Contractor, Owner’s Data Center Operations Infrastructure Cabling representatives, and other parties affected by work of this document.
   3) All individuals who will be installers of communication cables and equipment in an on-site supervisory capacity shall be required to attend the pre-installation conference. Individuals who do not attend the conference will not be permitted to supervise the installation of, or install, terminate, or test communications cables on the project. This includes supervisors, project managers, and lead installers of this project.

F. Request for Change (RFC)
1. A Request for Change shall be opened and approved by the Change Approval Board prior to any modifications, attachments, or other activities that may affect production systems.
   a. Policy and details available through the Data Center Operations Infrastructure Cable Representative.

G. Post-Installation Meetings
1. At the time of substantial completion, or shortly thereafter, the low voltage Sub-Contractor shall call and arrange for a post-installation meeting to present and review all submittal documents to include, but not limited to as-built drawings, test reports, warranty documentation, etc. Attendees shall be Owner staff, Owner’s Representative, General Contractor, and others that the General Contractor deems appropriate.
   2. At this meeting the Contractor shall present and explain all documentation, including test results, and ask for feedback on its completeness. Any discrepancies or deviations noted by and agreed to by participants shall be remedied by Contractor and resubmitted within one week of meeting.

4.2 DELIVERY, STORAGE, AND HANDLING:
A. Coordination with delivery companies, drivers, site address, and contact person(s) will be the responsibility of the Contractor.
B. Contractor Shall:
1. Be responsible for prompt material deliveries to meet contracted completion date.
2. Coordinate deliveries and submittals with the General Contractor to ensure a timely installation.
3. No equipment materials shall be delivered to the job site more than three weeks prior to the commencement of its installation.
4. Equipment shall be delivered in original packages with labels intact and identification clearly marked.
5. Materials shall not be damaged in any way and shall comply with manufacturer’s operating specifications.
6. Equipment and components shall be protected from the weather, humidity, temperature variations, dirt, dust, or other contaminants. Equipment damaged prior to system acceptance shall be replaced at no cost to the Owner.

7. Material Contractor shall be responsible for all handling and control of equipment. Material Contractor is liable for any material loss due to delivery and storage problems.

C. Owner/General Contractor shall supply a list of security requirements for Contractor to follow.

4.3 PROJECT/SITE CONDITIONS

A. For all environmental recommendations, refer to master Architectural section.

B. For all security recommendations, refer to related Division 01.

C. After completing system installation, including outlet fittings and devices, inspect exposed finish. Contractor will remove burrs, dirt, and construction debris. If applicable, the Contractor will repair damaged finishes, including chips, scratches, and abrasions.

D. Contractor shall provide daily a clean work environment, free from trash/rubbish accumulated during and after cabling installation.

E. Food and drink are not permitted in work areas. They shall be stored, prepared, and consumed only in designated break or cafeteria areas.

F. Contractor shall keep all liquids (drinks, sodas, etc.) off finished floors, carpets, and tiles. If any liquid or other detriment (cuts, soils, stains, etc.) damages the above finishes, Contractor shall provide professional services to clean or repair scratched/soiled finishes, at Contractor’s expense.

4.4 CLEANING

A. Work areas will be kept in a broom clean condition throughout the duration of the installation process.

B. Remove all unnecessary tools and equipment, unused materials, packing materials, and debris from each area where work has been performed daily, unless designated for storage.

C. The Contractor will damp clean all surfaces prior to final acceptance by Owner.

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Introduction

1. The layer 1 committee working with the communications subcommittee is providing this document as a guideline that has been approved by the enterprise architecture review board (EARB). To make the approval of such a large topic possible, the subcommittee broke the structured cable topic into its sub components and each subcomponent was completed, reviewed, and approved in turn. The result is this comprehensive guideline that should provide adequate guidance on this topic.

PART 2 - PRODUCTS

2.1 KEY POINTS

A. Category 6A shielded foil over unshielded twisted pair (F/UTP) is the only approved standard for cabling.

1. Specifically, Siemon category CAT6A F/UTP (foil over unshielded twisted pair) cable and associated patch panels, wall plates and jacks; for data centers, and all clinical and hospital campus'.

2. Only Siemon certified contractors or certified Intermountain Healthcare facility staff will install structured cable at Intermountain Healthcare facilities.

2.2 SUPPORTING INFORMATION

A. CAT6A F/UTP provides more head-room over CAT5e. Specifically, 500Mhz bandwidth vs 100Mhz bandwidth.

B. CAT6A F/UTP provides superior cross-talk and external noise immunity, with CAT6A F/UTP providing better immunity to external noise.

C. CAT6A F/UTP provides additional application of 10gig throughput at 100 meters.

D. CAT6A F/UTP provides substantial “future proofing” by cost when compared with fiber or the proposed CAT7a shielded cable.

E. CAT6A F/UTP reduces POE losses due to reduced Voltage drop

F. CAT6A F/UTP provides improved heat dissipation for POE routes.

G. CAT6A F/UTP utilizes the RJ-45 footprint, thus making it backward compatible.

2.3 IMPLEMENTATION

A. This guide is to be used for New Construction and Remodels. These standards will be implemented over time in existing cabling environments as rework is performed.

B. If there is a current need to connect servers at 10GBaseT and the only option was copper, CAT6A F/UTP is recommended. New Server connections shall be a minimum OM4.

C. Installations already in place are not required to remove or replace existing cabling CAT5e or newer. All new cabling shall follow the recommendation to use CAT6A F/UTP cabling.

2.4 STANDARD PRODUCT

A. The Approved cable type for horizontal cabling is dependent on the type, location and port requirements of the Work Area.

1. The Approved Standard Manufacturer for Intermountain’s horizontal cabling is:

   Siemon Company USA

   101 Siemon Company Drive

   Watertown, CT 06795

2. Approved Suppliers of Siemon cable, patch panels, jacks, and parts are listed in Appendix 06.

PART 3 - EXECUTION

3.1 Horizontal Cabling

A. The Horizontal Subsystem is the portion of the communications cabling system that extends from the work area communications outlet/connector to the Floor Distributor (FD)/Horizontal Cross-connect (HC) in the communications room (TDR). It consists of the communications outlet/connector, the horizontal
cable, optional consolidation point, and that portion of the cross-connect in the telecommunications room serving the horizontal cable. Each floor of a building should be served by its own Floor Distributor/Horizontal (FD/HC) Subsystem located in the Communications Room. (TDR)

1. NOTE: Cable installers have rigorous requirements to be certified for Siemon cables and products. Validation of certification is required prior to accepting a bid.

2. Current Siemon Approved/Certified Cable Installers for Siemon Network are listed in Appendix 07.

B. Reliability of the horizontal cabling system is critical to the operation of IS equipment throughout a facility. Installing the cable is extremely labor intensive and there are several learned skills used to correctly install the cable. Cable installers are certified, and installers must demonstrate the ability to install the cable correctly to be certified. If the cable is installed by a certified installer and is installed in accordance with the manufactures guidelines, the manufacturer will warranty the cable installation.

C. The manufacturer also requires the cables to be individually labeled and 100% tested and certified. Cable testing and certification equipment is usually expensive and is not commonly available at the facility or many telecom installers. Certified Installer companies are required by the manufacturer to be knowledgeable in the use of “Qualified” Field Testing equipment and provide test results for warranty registration. Contractor is to verify with the manufacturer the current “Qualified” tester manufacturers and the current operating software. Contractors will provide test results in the operating software format (not PDF, text or Word) to Intermountain Healthcare upon completion.

D. Much of the cable is installed in walls and in the ceiling and usually lasts the lifespan of the building. As with most technology, the lifespan of cable is its usability and applicability to its use on future computing technology.

END OF SECTION
SECTION 27 01 13 – WARRANTY PRODUCT AND SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and this Section is directly applicable to them, including but not limited to the listing found in Section 27 00 00.

PART 2 - PRODUCTS

2.1 STANDARD WARRANTY

A. Upon Completion of the project, the Siemon Registration form along with all test results, copper and fiber must be submitted to the Siemon Company for approval. After approval by the Siemon Company, Intermountain Healthcare must receive the Full Warranty Documentation from The Siemon Company before final retention funds are released to the General Contractor, Electrical Contractor and the Certified Installer Subcontractor.

B. Contractor shall provide a minimum one (1) year warranty on installation and workmanship PLUS an Extended Product Warranty and System Assurance Warranty for this wiring system and shall commit to make available local support for the product and system during the Warranty period.

C. System Certification: Upon successful completion of the installation and subsequent inspection, the customer shall be provided with a numbered certificate, from the manufacturer, registering the installation.

D. Either a permanent link or channel model configuration may be applied to the horizontal and/or backbone sub-systems of the structured cabling system. Applications assurance is only applied to a channel model configuration. All channels are to be qualified for linear transmission performance up to 500 MHz to ensure that high-frequency voltage phase and magnitude contributions do not prove cumulative or adversely affect channel performance.

2.2 EXTENDED WARRANTY

A. The manufacturer of passive telecommunications equipment used in a manner not associated with the Systems Warranty must have a minimum five (5) year Component Warranty on all its product. The Products Warranty covers the components against defects in material or workmanship under normal and proper use.

1. Special Project Warranty: A full end-to-end written warranty mutually executed by manufacturer and the principal Installer, agreeing to replace and install voice/data distribution system components that fail in materials or workmanship, or do not meet manufacturer’s official published specifications and performance criteria within the special Project warranty period specified below. This shall cover applications assurance, cable, and connecting hardware including both labor and materials. This warranty shall be in addition to, and not a limitation of, other rights and remedies the Owner may have against the Contractor under the Contract Documents

B. A twenty (20) year warranty available for the Category 6A Z-MAX copper structured cabling system shall be provided for an end-to-end channel model installation which covers applications assurance, cable, connecting hardware and the labor cost for the repair or replacement thereof. If a fiber warranty is requested/required it will be an XGLO twenty (20) year warranty, which is based on using 50/125µm, laser optimized multi-mode fiber as minimum.

1. Performance claims based on worst case testing and channel configurations

2. Special Project Warranty Period: 20 years minimum, beginning on the date of Substantial Completion.

3. Siemon Certified Warranty Requirements:
   a. The Siemon Pre-Registration form must be filled out and sent to Siemon before work is to begin. IHC must also have the Pre-Registration Letter from The Siemon Company before work is to begin.

   b. Upon Completion of the project, Intermountain Healthcare must receive the Full Warranty Documentation from The Siemon Company before final retention funds are released to the general contractor, electrical contractor and structured cabling subcontractor if applicable.
2.3 MAINTENANCE
   A. Support Availability: The Contractor shall commit to make available local support for the product and system during the Warranty or Extended Warranty period.
   B. Many Intermountain Healthcare facilities operate 24/7/365.

END OF SECTION
1. RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
   B. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and this Section is directly applicable to them, including but not limited to the listing found in Section 27 00 00.

2. SYSTEM DESCRIPTION
   A. Owner reserves the right to be present during any or all testing.
   B. The objective of this project is to provide a complete communications cabling infrastructure system installation including, but not limited to: fiber backbone, riser system, horizontal data and voice cabling with associated terminations, mounting equipment, cable pathway and management systems, testing and other items/materials, as specified in drawings, these specifications, and contract documents.
   C. The Contractor’s BICSI Registered Communications Distribution Designer (RCDD) supervisor shall review, approve and stamp all documents prior to submitting. The Contractor’s RCDD shall warrant in writing that 100% of the installation meets the requirements specified herein upon completion of all work.
   D. Product Certificates shall be signed by manufacturers of cables, connectors, and terminal equipment certifying that products furnished comply with requirements.
   E. Contractor shall submit the required Field Test Reports in the format and media specified, upon completion of testing the installed system.
   F. Contractor shall deliver manufacturer’s signed long-term Warranty of installed cabling system to include all components that comprise the complete cabling system. Delivery to be affected within two weeks of the time of final punch list review. Failure of any component to pass system component tests shall be promptly corrected, repaired or replaced to meet standards compliance. Contractor shall coordinate with manufacturer for warranty paperwork and procedures prior to the start of the project.

3. PREFERRED OWNER INSPECTION & TEST CHECKPOINTS
   A. DCO & ICT Inspection Milestones & Responsibilities need to be coordinated into master project plan to allow the GC to make timely arrangements. All are per floor and/or phase.
      1. ICT & DCO = Framing, during and/or after boxes & conduits are in place; prior to sheetrock.
      2. ICT = When cable basket is starting to be installed
      3. ICT = When cable basket is ready, but prior to starting to pull cable
      4. ICT & DCO = When TDR’s are ready for racks and ladders
      5. When TDR environmental requirements are ready, room is dust free, and securable.
         a. TDR’s should be high on the build list to allow sufficient time to complete
      6. DCO = When anchoring racks and laying out equipment
      7. ICT = When trim and testing are in progress
      8. For mechanical systems punch list walks.
      9. OTHERS
         a. Depending on project, the manufacturer will inspect 1 or 2 times.
         b. DCO or ICT = When problems or questions arise.

PART 2 - PRODUCTS

1. SITE TESTS & INSPECTIONS
   A. Prior to pulling cable, the cabling contractor shall schedule an inspection of the pathways with a member of the Data Center Operations Infrastructure cabling team.
   B. Upon completion of the communications infrastructure systems, including all pathways and grounding, the Contractor shall test the system.
      1. Cables and termination modules shall be affixed, mounted or installed to the designed/specified permanent location prior to testing.
      2. Any removal and reinstallation of any component in a circuit, including faceplates, shall require retesting of that circuit and any other disturbed or affected circuits.
3. Cable/jack shall be affixed, mounted or installed to the designed/specified permanent location prior to testing. Any removal and reinstallation of any component in the circuit shall require retesting of that circuit.
4. Approved instruments, apparatus, services, and qualified personnel shall be utilized.
5. If tests fail, Contractor shall correct as required to produce a legitimate passing test.
6. Manipulation of tester parameters on a failing test in order to achieve a passing test is unacceptable.

C. These specifications will be strictly enforced. The Contractor must verify that the requirements of the specifications are fully met through testing with an approved tester (rated for testing the cable type in use), and documentation as specified below. This includes confirmation of requirements by demonstration, testing and inspection. Demonstration shall be provided at final walk-through in soft copy and printed test data.

D. Notification of the likelihood of a cable exceeding standardized lengths must be made prior to installation of the cable. Without contractor’s prior written notice and written approval by the Owner, testing that shows some or all pairs of cable not meeting specifications, shall be replaced at Contractor’s expense (including respective connectors).

E. With the Owner’s written approval, the over-length cable(s) shall be excluded from requirements to pass standardized tests and shall be explicitly identified.

F. Testing is still required for non-compliant cabling. The tests shall be for wire-mapping, opens, cable-pair shorts, and shorts-to-ground. The test results must be within acceptable tolerances and shall be submitted with the Owner’s acceptance document.

2.2 CABLE TESTING PLAN
A. The Contractor shall:
1. Provide a complete and detailed test plan for approval of the cabling system specified herein, including a complete list of test equipment for copper and fiber optic components and accessories prior to beginning cable testing. The following minimal items shall be submitted for review:
   a. All testing methods that clearly describes procedures and methods.
   b. Product data for test equipment
   c. Certifications and qualifications of all persons conducting the testing.
   d. Calibration certificates indicating that equipment calibration meets National Institute of Standards and Technology (NIST) standards and has been calibrated at least once in the previous year of the testing date.
   e. Examples of test reports, including all graphs, tables, and charts necessary for display of testing results.
2. Include validation, and testing. Owner will require that the telecommunications cabling system installed by the Contractor be fully certified to meet all necessary requirements to be compliant with referenced IEEE and TIA specifications and vendor’s warranty.
3. Will determine the source/cause of test failure readings and correct malfunctioning component and/or workmanship within each channel or permanent link and retest to demonstrate compliance until corrected failure produces a passing result.

2.3 CABLE TESTING REPORTS
A. The Contractor shall submit cable test reports as follows:
1. Submit certified test reports of Contractor-performed tests.
   a. The tests shall clearly demonstrate that the media and its components fully comply with the requirements specified herein.
   b. Three (3) set(s) of electronic and hardcopy versions of test reports shall be submitted together and clearly identified with cable identification.
   c. Cable inventory data shall be submitted for all fiber, copper, and coaxial cabling and termination equipment. Submit data electronically on CD-ROM or Flash Drive, listing products furnished, including:
      a) Manufacturer’s name.
      b) Manufacturer’s part numbers.
      c) Cable numbers.
      d) Location and riser assignments.
      e) Product Data:
2. Equipment and materials shall be standard products of a manufacturer regularly engaged in the manufacture of telecommunications cabling.

PART 3 - EXECUTION

3.1 TEST EQUIPMENT
A. All transmission testing of balanced twisted-pair cables shall be performed with an approved Level III balance twisted pair tester found on the Siemon Ally Website. The latest version of software shall be installed prior to performing testing. Refer to the Siemon Warranty Documents for proper testing requirements of associated cable and components.
B. All balanced twisted-pair field testers shall be factory calibrated each calendar year by the field test equipment manufacturer as stipulated by the manuals provided with the field test unit. The calibration certificate shall be provided for review prior to the start of testing.
C. Auto test settings provided in the field tester for testing the installed cabling shall be set to the default parameters.
D. Test settings selected from options provided in the field testers shall be compatible with the installed cable under test.

3.2 TEST METHOD / CRITERIA
A. Copper Testing
1. Testing of all newly installed cable channels shall be performed prior to system cutover.
   a. Visually inspect F/UTP and optical fiber cable jacket materials for NRTL certification markings. Inspect cabling terminations in communications equipment rooms for compliance with color-coding for pin assignments and inspect cabling connections for compliance with TIA/EIA-568-C.1.
   b. Visually confirm Category 6A marking of outlets, cover plates, outlet/connectors, and patch panels.
   c. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
   d. Test F/UTP copper cabling for DC loop resistance, shorts, opens, intermittent faults, and polarity between conductors. Test operation of shorting bars in connection blocks. Test cables after termination but not cross-connection.
   e. Test instruments shall meet or exceed applicable requirements in TIA/EIA-568-C, and those required by manufacturer to validate and start warranty.
2. Copper Testing All 500 MHz category 6A field-testing shall be performed with an approved level 11e balanced twisted-pair field test device, that complies with performance requirements in "Test Instruments (Normative)" Annex, complying with measurement accuracy specified in "Measurement Accuracy (Informative)" Annex (Level Ile or Ile balanced twisted pair field test device). Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.
3. All installed 500 MHz category 6A channels shall perform equal to or better than the minimum requirements as specified below:
   a. Category 3, balanced twisted-pair backbone cables, whose length does not exceed 90 m (295 ft) for the permanent link, and 100 m (328 ft) for the channel shall be 100 percent tested according to ANSI/TIA/EIA-568-C.1. Test parameters include wire map plus F/UTP (ScTP) shield continuity (when present), insertion loss, length and NEXT loss (pair-to-pair). NEXT testing shall be done in both directions.
   b. All balanced twisted-pair backbone cables exceeding 90 m (295 ft) or 100 m (328 ft) shall be 100% tested for continuity if applications assurance is not required.
   c. 500 MHZ Category 6A balanced twisted-pair horizontal and backbone cables,
   d. whose length does not exceed 90 M (295 FT) for the permanent link, and 100 M (328 FT) for the channel shall be 100 percent tested.
4. F/UTP Performance Tests
   a. Wire map.
   b. Length (physical vs. electrical, and length requirements).
   c. Insertion loss.
   d. Near-end crosstalk (NEXT) loss.
   e. Power sum near-end crosstalk (PSNEXT) loss.
f. Equal-level far-end crosstalk (ELFEXT).
g. Power sum equal-level far-end crosstalk (PSELFEXT).
h. Return loss.
i. Propagation delay.
j. Delay skew.
k. F/UTP Shield continuity.

5. Final Verification Tests: Perform verification tests for F/UTP systems after the complete communications cabling and workstation outlet/connectors are installed.

6. Document data for each measurement. Data for submittals shall be printed in a summary report that is formatted similar to Table 10.1 in BICSI TDMM, or transferred from the instrument to the computer, saved as text files, and printed and submitted.

7. End-to-end cabling will be considered defective if it does not pass tests and inspections.

8. Prepare and submit test and inspection reports.

B. Horizontal Fiber Testing

1. Fiber horizontal cables shall be 100% tested for insertion loss and length.
2. Insertion loss shall be tested at 850 nm or 1300 nm for 50/125μm and 62.5/125μm multimode cabling in at least one direction using the Method B (1-jumper) test procedure as specified in ANSI/TIA/EIA-526-14A.
3. Length shall be tested using an OTDR, optical length test measurement device or sequential cable measurement markings.
4. The horizontal link performance guarantees are based on an optical fiber calculation for the appropriate fiber solution. Optical fiber calculations shall be determined using the Siemon Fiber Loss Calculator found on the Siemon Ally Website.

C. Backbone Fiber Testing

1. Fiber backbone cables shall be 100% tested for insertion loss and length.
2. Insertion loss shall be tested at both 850 nm and 1300 nm for 50/125μm and 62.5/125μm multimode cabling and both 1310 nm and 1550 nm for 8.5/125μm single mode cabling and in at least one direction using the Method B (1-jumper) test procedure as specified in ANSI/TIA/EIA-526-14A.
3. Insertion loss shall be tested at 1310 and 1550 for single-mode cabling in at least one direction using the Method A.1 (1-jumper) test procedure as specified in ANSI/TIA/EIA-526-7.
4. Length shall be tested using an OTDR, optical length test measurement device or sequential cable measurement markings.
5. The backbone link performance guarantees are based on an optical fiber calculation for the appropriate fiber solution. Optical fiber calculations for any fiber cable greater than 90m (295 ft.) shall be determined using the Siemon Fiber Loss Calculator found on the Siemon Ally Website.

3.3 DEMONSTRATION

A. Include training for appropriate IT staff in numbering system and documentation system methods and record keeping.
1.1 SUBMITTALS

A. The Contractor:
   1. Shall not perform any portion of the work requiring submittal and review of shop drawings, product data, or samples until Owner has approved the respective submittal. Such work shall be in accordance with approved submittals.
      a. Shop drawings as required by the owner or as a minimum to include a minimum of two sets of a plan view and elevations of all work to be installed. The Contractor shall make any corrections required by the owner or the owner’s representative or consultant team, file with him two corrected copies and furnish such other copies as may be needed. The consultant’s approval of such drawings or schedules shall not relieve the Contractor from responsibility for deviations from drawings or specifications, unless he has in writing called the Architect's attention to such deviations at the time of submission, nor shall it relieve him from responsibility for errors of any sort in shop drawings or schedules.
   2. Shall not perform any portion of the work requiring approval of the System Assurance Warranty manufacturer’s warranty registration qualification procedures that would disqualify any part or all of the wiring system from that warranty qualification.

B. The Contractor shall provide a copy of the Certified Test Data Sheet, available from the delivering distribution warehouse for either a full run or cut piece from the Master Reel of the fiber cable to be installed
   1. The Certified Test Data Sheet shall include the Master Reel number, cable description, a passing test result with details, test equipment description, date certified, and a certificate of compliance stamp, and shall be included in the O&M Manual as a component of the final deliverables submittal package.

C. The Contractor shall provide the appropriate documentation from the certifying manufacturer showing the project is registered and qualified for the System Assurance Warranty. All subsequent work shall be in accordance with approved submittals.

1.2 DRAWINGS

A. Shop Drawings
   1. The Contractor shall:
      a. Submit catalogue cut-sheets that include manufacturer, trade name, and complete model number for each product specified. Model number shall be handwritten, marked with an arrow or underlined to indicate exact selection.
      b. Identify applicable specification section reference for each product performance for each component specified for approval prior to purchase and installation.
      c. Submit for approval diagrams showing room layouts, rack layouts (including elevations), riser layouts, etc.

B. Record Drawings
   1. Drawings for the cabling system infrastructure elements shall be maintained and kept on file by the Siemon Certified Installer (Company) for the entire term of the warranty. Drawings shall include:
      a. Horizontal cable routing and terminations
      b. Telecommunications outlets/connectors
      c. Backbone cable routing and terminations
      d. Telecommunication Spaces (TS)

C. Samples
1. For workstation outlet connectors, jack assemblies, housings and faceplates for color selection and evaluation of technical specifications and requirements. Confirm with Architect, interior designer, and Owner representative for color before purchasing materials. Face plates shall match electrical face plates in color and material type.
2. Upon request, provide samples for workstation outlets, jacks, jack assemblies, in specified finish, one for each size and outlet configuration
3. Sample mock-up rooms may be required in some areas to ensure proper equipment placement and fit.

D. Qualifications:
   1. The Contractor shall provide the appropriate documentation to comply with the requirements set forth in Section 01 43 23 Qualifications, included with, and at the time of, bid submittal.

PART 2 - SUSTAINABLE DESIGN RECORDS AND REPORTS

2.1 DRAWINGS

A. Closeout Submittals (As-built Drawings):
   1. Communications Design drawings are to be supplied to the Architect to prepare the master “As-Built” drawings.
   2. As-Built drawings shall be in AutoCAD format, same version as used by Architect and consultant. Dimensions and scale of the drawing sheets submitted shall match the size of the drawing used for the contract documents and shall include the cable numbers labeled in accordance with this document.
   3. Utilize normal recognized drafting procedures that match AutoCAD standards, Architect and consultant guidelines and methodology.
   4. The As-Built drawings shall incorporate all changes made to the building identified in, but not limited to, addendum, change notices, site instructions or deviations resulting from site conditions.

B. Contractor shall:
   1. Clearly identify any resubmitted drawing sheets, documents or cut sheets either by using a color to highlight or cloud around resubmitted information.
   2. Maintain drawing numbering or page/sheet scheme consistency as per previously issued drawings/documents.
   3. Provide dimensioned plan and elevation views of networking components, showing:
   4. All communications data/voice outlet locations complete with outlet/cable labeling.
   5. Cable routing paths of communications cables to identified infrastructure pathways.
   6. All rack and cabinet locations and labeling thereof.
   7. One-line diagram of equipment/device interconnecting data/voice cabling of the data and voice systems.
   8. Standard or typical installation details of installations unique to Owner’s requirements.
   10. Submit one soft (compatible with Microsoft software) and hard copy with project deliverables within three weeks subsequent to substantial completion.
   11. Hard copy of floor plans for record shall be plotted to a standard, saleable, identified drawing scale.

2.2 RECORDS AND REPORTS

A. All records shall be created by the installation contractor and turned over at the completion of work.
   1. The format shall be computer based
a. Soft copies and hard copies shall be part of the As-built package.
   1) Soft copies shall be in a Fluke Link Ware compatible database format
b. The minimum requirements include:
   1) Cable records must contain the identifier, cable type, termination positions at both ends, splice information as well as any damaged pairs/conductors.
   2) Connecting hardware and connecting hardware position records must contain the identifier, type, damaged position numbers, and references to the cable identifier attached to it.
2. Test documentation on all cable types shall be included as part of the As-built package.
   a. Soft copies and hard copies shall be part of the As-built package.
B. All Siemon Pre-Warranty and Warranty Registration documents shall be included.
C. All reports shall be generated from the computer-based program used to create the records above. These reports should include but not limited to:
   1. Cable Reports
   2. Cross-connect Reports
   3. Connecting Hardware Reports

PART 3 - EXISTING CONDITIONS SITE SURVEY

3.1 SITE SURVEY

A. Prior to placing any cable pathways or cable, the contractor shall survey the site to determine job conditions will not impose any obstructions that would interfere with the safe and satisfactory placement of the cables. The arrangements to remove any obstructions with the Project Manager need to be determined at that time.

END OF SECTION
SECTION 27 01 43 – QUALIFICATIONS AND REQUIRED TRAINING FOR CONTRACTOR AND INSTALLER

PART 1 - GENERAL INSTALLER QUALIFICATIONS

1.1 ENTITIES

A. Communications contractors
   1. The Communications Contractor shall at a minimum possess the following qualifications:
      a. Contractor shall be a Siemon Certified Contractor with valid up to date contract certification and
         in good standing with the Siemon Company.
      b. Siemon Certified Contractor and associated Siemon Certified Designer/Installer must have a
         physical office within the state that any proposed contract work is to be completed.
      c. Be in business a minimum of five (5) years.
      d. Contractor shall demonstrate satisfaction of sound financial condition and can be adequately
         bonded and insured if the project deems necessary.
      e. Possess those licenses/permits required to perform telecommunications installations in the
         specified jurisdiction.
      f. Use personnel knowledgeable in local, state, province and national codes and regulations. All work
         shall comply with the latest revision of the codes or regulations. When conflict exists between
         local or national codes or regulations, the most stringent codes or regulations shall be followed.
   2. Contractor must possess current liability and workers compensation insurance certificates.
   3. Contractor must be registered with BICSI and have at least one RCDD on staff.
      a. or ITS Cabling Installer Program Technician certification and Installer Level 1 & 2 for a minimum of
         75 percent of staff
   4. Must have personnel fluent in the use of Computer Aided Design and possess and operate CAD
      software using .DWG or .DXF format.

B. Installers
   1. For small projects, (rework, moves, adds, or changes in existing areas), facility staff can be trained
      and certified for Siemon cable installation. Certification insures continuity and consistency in installation
      methodology and does not invalidate the Siemon warranty.

C. Demolition
   1. Demolition of low voltage cabling shall be performed by the Low Voltage installation contractor.
      a. To prevent accidental removal of in-use circuits
      b. To allow for re-use of circuits where practical.

1.2 TRAINING

A. The Contractor shall be fully conversant and capable in the cabling of low voltage applications such as, but
   not limited to data, voice and imaging network systems. The Contractor shall at a minimum possess the
   following qualifications:
   1. Personnel trained and certified in the design of the Siemon Cabling System®.
   2. Personnel trained and certified to install the Siemon Cabling System®.
   3. The Designer and Installer shall show proof of current certification of the Siemon Cabling System® via
      an updated certificate given after attending the CI-301 training course or an on-line re-certification
      class given every two years.
   4. Provide references of the type of installation provide in this specification.
   5. Personnel trained and certified in the installation of copper cable and in the use of Level Ille Copper
      Transmission Performance testers, fiber optic cabling, splicing, termination and testing techniques.
      Personnel must have experience using an optical light source and power meter plus an OTDR.
   6. Personnel trained in the installation of pathways and supports for housing horizontal and backbone
      cabling.

END OF SECTION
SECTION 27 01 71 – RESPONSIBILITY AND WORKMANSHIP OF CONTRACTOR

PART 1 - GENERAL

1.1 CONTRACTOR RESPONSIBILITY

A. Contractor shall be obligated to exercise the highest standard of care in performing its obligations as defined in a request for proposal. All work shall be done in a workman like fashion of the highest standards in the telecommunications industry.

B. All equipment and materials are to be installed in a neat and secure manner, while cables are to be properly dressed in accordance with standards recommendation for a specific type of media (i.e. UTP vs. F/UTP @ 10 Gigabit)

C. Workers must clean any debris and trash at the close of each job and workday.

D. Contractor acknowledges that Intermountain Healthcare will rely on contractor’s expertise, ability and knowledge of the system being proposed and shall be obligated to exercise the highest standard of care in performing contractual obligation as defined in the Scope of Work.

E. Contractor must submit The Siemon warranty, Cable Records, As Built Drawings and Test Results at the completion of work. Note: Intermountain Healthcare reserves the right to withhold final payments until all registration documents are approved by the Siemon Company and received by Intermountain Healthcare.

1.2 CONTRACTOR AND EMPLOYER RESPONSIBILITY

A. Contractors, their employees, and installers will attend annually Intermountain Healthcare required Infection Control training.

B. Contractors, their employees, and installers will attend Intermountain Healthcare required site and job specific orientation.

C. Contractors, their employees, and installers will maintain Intermountain Healthcare required immunizations.

D. Contractors, their employees, and installers will keep their Intermountain Healthcare required confidentiality agreements current.

E. Contractors, their employees, and installers agree to follow all of Intermountain Healthcare Policies and procedures and wear the appropriate ID at all times while on any of Intermountain properties.

F. Contractor will determine with Owner the appropriate level of Environmental Containment precautions to utilize for each work location. Infection Control Risk Assessments and permits will be performed as required.

G. Upon request, provide qualification data for all qualified layout technicians, installation supervisors, and field inspector

1. Siemon issued qualification badges shall be readily available for this purpose.

1.3 EXAMINATION

A. Field Measurements: Verify dimensions in areas of installation by field measurements before fabrication and indicate measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the work.

B. Established Dimensions: Where field measurements cannot be made without delaying the work, establish dimensions and proceed with fabricating units without field measurements. Coordinate supports, adjacent construction, and fixture locations to ensure actual dimensions correspond to established dimensions.

1.4 PREPARATION

A. Contractor’s on-site RCDD supervisor shall review, approve and stamp all shop drawings, coordination drawings, As-Built Drawings, and submittal documents.

B. Pre-installation inspection

1. The Contractor shall visually inspect all cables, cable reels, and shipping cartons to detect possible cable damage incurred during shipping and transport. Visibly damaged goods are not acceptable and shall be replaced by the contractor at no additional cost to the Owner.
1.5 MISCELLANEOUS CONTRACTOR RESPONSIBILITIES

A. Contractor will maintain unobstructed egress in work areas.
B. Contractor will keep an access for all Emergency Services.
C. Contractor will maintain training for Personnel in alternate exits if needed.
D. Contractor will maintain Temporary construction partitions, as required, that are smoke tight and built of non-combustible materials.
E. Additional Fire Extinguishers may be required and will be properly maintained and inspected.
F. Construction site will be maintained clean and orderly.
G. Contractor will observe Intermountain Healthcare’s Tobacco use Policy. (All forms of tobacco use are strictly prohibited)
H. All Electrical Extension cords will be grounded, and in good condition and, plugged into approved GFI Receptacles.
I. Construction site will be restricted. (Approved personnel Only)
J. Required Personal Protective Equipment (PPE) will be worn as required. (ie: hard hats, safety glasses, safety shoes, fluorescent vest, in accordance with general contractor’s safety policy)
K. Tools will be unplugged, and power secured at the end of each working day.
L. All employees and contractors will understand how to obtain MSDS sheets.
M. Contractor will notify proper personnel of any fire system shut down. A 48-hour notification is required.
N. Contractor will address all vibration concerns with Intermountain Healthcare and general contractor’s staff.
O. Contractor will address all Noise Issues with Intermountain Healthcare and general contractor’s staff.
P. Contractor will fill out a Hot Work permit and keep it on site daily as needed.
Q. Contractor will fill out an Above Ceiling Work Permit and keep it on site daily as needed.
R. Contractor will obtain a Confined Space Permit, when required, and keep it on site.
S. Contractor shall notify Information Systems 72 hours in advance of any shut down or known interruption of required environmental services. Follow up by notifying the Service Desk

END OF SECTION
SECTION 27 01 86 – PERFORMANCE REQUIREMENTS AND APPLICATIONS SUPPORTED

PART 1 - GENERAL PERFORMANCE REQUIREMENTS

1.1 ACCEPTANCE

A. Once all work has been completed, test documentation has been submitted, and Owner is satisfied that all work is in accordance with contract documents, the Owner shall notify Contractor in writing of formal acceptance of the system.

1. Horizontal cabling system shall comply with transmission standards in ANSI/TIA/EIA-568-C, when tested according to test procedures of this standard.

B. Contractor must warrant in writing that 100% of the installation meets the requirements specified herein (Standards Compliance & Test Requirements).

C. Acceptance shall be subject to completion of all work, successful post-installation testing which yields 100% PASS rating, and receipt of full documentation soft and hard copies as describe herein.

1. PASS* ratings are not considered a PASS rating.

PART 2 - GENERAL APPLICATIONS SUPPORTED

2.1 APPLICATIONS SUPPORTED

A. Existing and future applications supported for a channel model warranty include those approved by the Institute of Electronic and Electrical Engineers (IEEE), the Asynchronous Transfer Mode (ATM) Forum, the American National Standards Institute (ANSI) or the International Organization of Standards (ISO) that specify compatibility with the cable referenced herein.

END OF SECTION
SECTION 27 05 00 – COMMON WORK RESULTS FOR COMMUNICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and this Section is directly applicable to them, including but not limited to the listing found in Section 27 00 00 and all other Division 27 Sections.

PART 2 - PRODUCTS

2.1 SUMMARY

A. This section covers general work results for all Communications Division detail subsections.

B. Work of the following sections cover a complete installation of both permanent and channel links for a data and voice communications network utilizing copper and fiber transmission media.

PART 3 - EXECUTION

3.1 SCOPE OF WORK

A. Includes, but is not limited to the following.

1. The Contractor shall:
   a. Provide and install fabric and/or either plenum, PE or PVC Innerduct, rated appropriately for the installation environment; in accordance with all applicable codes and ordinances.
   b. Provide, install, terminate, test, label and document all fiber backbone, fiber and copper riser cable.
   c. Provide, install, terminate, test, and document all fiber, copper voice, and data horizontal cable.
      1) CAT6A UTP and CAT6A F/UTP shall not be mixed on the same campus.
   d. Provide and place all termination devices such as, but not limited to, modular patch panels, termination blocks, information outlets (jacks and plates), phone jacks, fiber distribution panels, bulkheads, connectors, and fiber fan out kits.
   e. Provide in quantities specified interconnect components such as, but not limited to, copper patch cords, fiber patch cables and data station cables.
   f. Provide and place horizontal and vertical cable support devices such as, but not limited to, rack and wall-mounted horizontal and vertical cable management, cable runway, communications cable runway, and all required mounting hardware, unless otherwise noted.
   g. Provide and install all equipment mounting racks, cabinets and/or brackets.
   h. Provide and install UL-approved fire stopping systems in all communication pass-thru, conduits and cable trays, and ceiling, wall and floor penetrations in coordination with General Contractor.
   i. Provide all appropriate consumable items required to complete the installation.
   j. Grounding and bonding in MC and TR rooms to grounding bus provided by Division 26.
   k. Provide complete documentation and demonstration of work.
   l. Completion of all punch list deficiencies within 10 working days.
   m. Provide indexed and organized complete Test Results of all copper and fiber cable and their components.
   n. Provide Submittals as outlined below.
o. Conduct a final document handover meeting with client, consultant, and PM to review, discuss and educate the Owner on the test results and As-Built Drawings.

p. Provide a Manufacturer’s Extended Product Warranty and System Assurance Warranty for this wiring system.

END OF SECTION
SECTION 27 05 26 – GROUNDING AND BONDING FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. This work shall be provided by Division 26
   1. Division 26 shall provide and install the communications system grounding bus bar,
   2. Systems other than the voice/data system shall be bonded by their respective installers or Division 26.
   3. Exception: Division 27 shall bond racks, ladders, and other conductive IT equipment and enclosures as required.

B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

C. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and this Section is directly applicable to them, including but not limited to the listing found in Section 27 00 00.

D. Requirements of the following Division 26 Sections apply to this section:
   1. Basic Electrical Requirements
   2. Basic Electrical Materials and Methods
   3. Grounding and Bonding for Electrical Systems

1.2 SUMMARY

A. This Section includes methods and materials for grounding and bonding Communications systems

B. All grounding / earthing and bonding shall be done to applicable codes and regulations. It is recommended that the requirements of IEC/TR3 61000-5-2 - Ed. 1.0, ANSI-J-STD-607-A, or both be observed throughout the entire cabling system.

PART 2 - PRODUCTS

2.1 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:
   3. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.

2.2 CONNECTORS

A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.

PART 3 - EXECUTION

3.1 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70 (NEC), Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with UL 467 for grounding and bonding materials and equipment.

3.2 APPLICATIONS
A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.

B. Conductor Terminations and Connections:
   1. Connections to Structural Steel: Bolted connectors.

3.3 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with the following items in addition to those required by NFPA 70 (NEC).
   1. Computer and Rack Mounted Electronic Equipment Circuits: Install insulated equipment grounding conductor in branch circuit runs from equipment area power panels and power distribution units.
   2. Signal and Communication Equipment: For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.
   3. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.

3.4 INSTALLATION

A. Grounding Conductors
   1. Route along shortest and straightest paths possible, unless otherwise indicated or required by Code.
   2. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
      a. Jumper across all tray junctions use two-hole lugs to prevent loosening of ground connections over time.
      b. Per BICSI TDMM Chapter 17 "Grounding, Bonding and Electrical Protection":
         1) Grounding and bonding connectors should be one of the following: Tin plated copper, copper or copper alloy
         2) Connections should be made using bolt or crimp connectors, clamps or lugs OR exothermic welding. Where possible compression type connectors and two-hole lugs should be used
      c. Per TIA/EIA 607-A the TBB (Telecommunications Bonding Backbone) connections "shall be made using irreversible compression-type connectors, exothermic welding or equivalent."

END OF SECTION
SECTION 27 05 28 – PATHWAYS FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Main pathways for communications systems shall be the responsibility of the Division 27 low voltage contract.
   1. Includes, but is not limited to, hangars, supports, J-hooks, cable tray
   2. Sections 270536, 270539, and 270543-46, are supplemental clarifications that are additions to this section. The appropriate section(s) shall added for the material used.

B. Conduits, pathways, and boxes which are embedded within building finishes for communications systems shall be the responsibility of the Division 26 electrical contractor

C. Requirements of the following Division 26 sections apply to this section
   1. Basic electrical requirements
   2. Basic electrical materials and methods
   3. Grounding, earthing, and bonding for electrical systems

1.2 SUMMARY

A. Contractor shall install work following specifications, drawings, manufacturer’s instructions and approved submittal data.

PART 2 - PRODUCTS

2.1 CABLE PATHWAYS

A. Comply with TIA / EIA-569-B.

B. Pathways shall be designed and installed to meet applicable local and national building and electrical codes or regulations.
   1. All materials shall be UL- and/or CSA and/or ETL-approved and labeled in accordance with NEC for all products where labeling service normally applies.
   2. NRTL labeled for support of Category 6A cabling, designed to prevent degradation of cable performance and pinch points that could damage cable.
   3. Materials and equipment requiring UL 94, 149 or 1863 listing shall be so labeled. Modification of products that nullifies UL labels are not permitted.
   4. The installed systems shall not generate, nor be susceptible to any harmful electromagnetic emission, radiation, or induction that degrades, or obstructs any equipment.

C. Pathways consist of conduit, cable tray/basket tray/ladder rack, J-hooks and surface mounted raceway and power poles.
   1. Cable / basket tray shall be utilized for distribution pathways.
      a. Provide proper support and load distribution pathways.
      b. Flexibility, scalability and accessibility.
      c. Ladder rack shall be used in data rooms.
   2. Conduits may be utilized where cable tray is not viable, providing the cross-sectional area of the cable tray.
   3. J-hooks are the minimum pathway device required for all low voltage contractors for use in ceiling distribution. J-hooks shall not be spaced further than 5 ft. (1.5 m) apart with a recommendation of 3 ft. (1 m) spacing. Note: Construction may require distances to exceed the maximum and are considered an exception requiring approval of project manager or...
building engineer. As a minimum, J-hooks must be installed without exception; free flight of
cables in ceiling space is not acceptable.

a. Ensure all J-hooks and support products meet plenum requirements where applicable.
b. J-hooks shall not be utilized for main pathways.
   1) A main pathway is where the contained cable bundle will have more than one
      additional branch.

4. Note: Surface mounted raceway and power poles should be installed only when other
   pathway choices are not feasible.

2.2 EQUIPMENT

A. Compatibility

1. All material and equipment as provided should be the standard Commercial-Off-The-Shelf (COTS)
   products of a manufacturer engaged in the manufacturing of such products. All shall be typical
   commercial designs that comply with the requirements specified. All material and equipment shall be
   readily available through manufacturers and/or distributors.
   a. All equipment shall be standard catalogued items of the manufacturer and shall be supplied
      complete with any optional items required for proper installation.
   b. Coordinate the features of materials and equipment so they form an integrated system. Match
      components and interconnections for optimum future performance and backward compatibility

2. Expansion Capability: Unless otherwise indicated, provide spare positions in patch panels, cross
   connects, and terminal strips, and space in cable pathways and backboard layouts to accommodate
   20% future increase in campus distribution and active workstations.

3. Backward Compatibility: The provided solution shall be backward compatible with lower category
   ratings such that if higher category components are used with lower category components, the basic
   link and channel measures shall meet or exceed the lower channel’s specified parameters.

4. Component Compliance: The provided solution’s components shall each meet the minimum
   transmission specifications listed herein such that no individual component will be less than
   specifications for permanent link and channel, although tests for link and channel ultimately meet
   required specifications.

5. In the event of a breach of the representations and warranties contained herein, the Contractor, at
   their own expense, shall take all measures necessary to make the cabling system work and comply with
   the applicable manufacturer written technical recommendations and standards.

B. Horizontal cables shall be installed in “clean, dry” locations that provide protection from moisture levels
   above the intended operating range of inside plant (ISP) cables. “Slab-on-Grade” building designs wherein
   pathways are installed underground on/in the poured concrete slabs that are in direct contact with the soil
   are considered wet locations and hence are not permitted.

1. Comply with requirements in Division 09 Section "Interior Painting" for painting backboards.
   a. For fire-resistant plywood, do not paint over manufacturer’s label.
   b. For cables, their pathways, boxes, and accessories; MASK and prevent any contact or overspray.

2. Cable pathways shall be installed to provide protection from the elements (i.e. moisture) and other
   hazards.

3. Cables and cable pathways shall be protected from detritus elements such as paints, adhesives, and
   cleaners.
   a. In case of contamination, cables shall be replaced. Cleaning is not acceptable.

4. Pathways shall not have exposed sharp edges that may come into contact with telecommunications
   cables. Cables exiting the pathway will be routed over a bend delimiter (waterfall) designed by the tray
   manufacturer for that purpose.

C. Pathways shall not be located in elevator shafts.

D. Grounding / Earthing and bonding of pathways shall comply with applicable codes and
   regulations. It is recommended that the requirements of IEC/TR3 61000-5-2 - Ed. 1.0, ANSI-J-
   STD-607-B, or both be observed throughout the entire cabling system.
2.3 SURFACE MOUNTING

A. Surface Mount Cable Runs and Faceplate Boxes
   1. Surface mounting of cable pathway runs and/or boxes for outlets/faceplates are only authorized as a
      last resort and exception to running cables through the wall and above the ceiling.
   2. If surface mount cable runs are used:
      a. Burrs will be removed from the inside of the plastic or metal surface mount cable runs to prevent
         damage to cables pulled through the run.
      b. Raceway manufacturer plastic bushings shall be installed at all outlet openings in raceway to
         prevent damage to cable.
      c. “T”, Splice, and corner pieces will be used to join runs. Runs will not be butted together without
         the appropriate joining pieces.

PART 3 - EXECUTION

3.1 HORIZONTAL PARAMETERS

A. Allowable Cable Bend Radius and Pull Tension:
   1. In general, communications cable cannot tolerate sharp bends or excessive pull tension during
      installation.
      a. Bend radius for 4 pair UTP and F/UTP under no load (no pulling tension) shall not exceed four (4)
         times the outside diameter of the cable and eight (8) times the outside diameter of the cable under
         load (110N/25lbf). Note: Cable bend radius and pulling tensions for cables other than 4 pair cable
         increase with the diameter and type of cable refer to the manufacturer’s recommendations for
         specific requirements.
   2. After installation, exposed cable and other surfaces must be cleaned free of lubricant residue. Use only
      lubricants specifically designed for cable installation.

B. Pull Strings:
   1. Horizontal and Vertical Pathways
      a. The pathway installer shall:
         1) Provide pull strings in all new conduits, including all conduits with cable installed as part of
            this contract.
         2) Provide pull strings in all new cable trays
         3) Pull string shall have a rated average breaking strength of 200 pounds.
         4) Data and video cables can be pulled in tandem with pull strings. During pulling sessions, pull
            strings must move freely to prevent cable jacket/cable damage.
         5) Free moving pull strings shall be provided in all locations where they are utilized as part of this
            contract.

C. Conduit Fill:
   2. Comply with requirements of NFPA 70 (NEC)
   3. The number of cables placed in a pathway shall not exceed manufacture specifications, nor, will the
      geometric shape of a cable be affected.
      a. Conduit pathways shall have a maximum fill ratio of 40% to allow for proper pulling tension and
         lay of the CAT6A F/UTP cable. A minimum of a 1” diameter conduit is recommended for new
         construction. Existing conduits will require the reduction of the number of cables placed in the
         conduit to meet the required fill ratio.

3.2 INTRA-BUILDING CABLE ROUTING

A. Pathways
   1. The backbone subsystem shall include cable installed in a vertical manner between floor
      telecommunications rooms and the main or intermediate cross-connect in a multi-story building and
      cable installed horizontally between telecommunications rooms and the main or intermediate cross-
      connect in a long single-story building.
   2. Adequate riser sleeve/slot space shall be available with the ability to ingress the area later in all
      telecommunications rooms, such that no drilling of additional sleeves/slots is necessary. Proper fire
      stopping is required for all sleeves/slots per national and local codes. Install fire stop material designed
specifically for the building construction conditions and to meet the existing fire stop material as directed by the building engineer.

3. Backbone pathways shall be installed or selected such that the minimum bend radius of backbone cables is kept within manufacturer specifications both during and after installation.

4. Where redundant paths are required, they shall be separated by a minimum of 24”.
   a. Separate innerducts are required for each leg of the redundant path.
   b. Separate physical routing for each path shall be utilized where possible.

5. Building backbone cables shall be installed in “dry” locations that provide protection from moisture levels above the intended operating range of inside plant (ISP) cables. “Slab-on-Grade” building designs wherein pathways are installed underground on/in the poured concrete slabs that are in direct contact with the soil are considered wet locations and hence are not permitted.

B. Media

1. The backbone cables shall be installed in a hierarchical star topology, emanating from the Campus Distributor/Main Cross-connect (CD/MC) to each Floor Distributor/Horizontal Cross-connect (FD/HC) in all telecommunication rooms. Building Distributor/Intermediate Cross-connects (BD/IC) may be present between the Campus Distributor/Main Cross-connect (CD/MC) and the Floor Distributor/Horizontal Cross-connect (FD/HC).

2. Unless otherwise recommended by the manufacturer, all fiber cables will be run in innerduct.
   a. Armored fiber optic cable shall not require innerduct except where exposed to hard service, or additional space may be required in the future through the same path.

3. Fibers will be terminated in the telecommunication rooms using SC and LC connectors in wall mounted interconnect centers or rack mounted panels equipped with sufficient ports, slack storage space and splice trays if required to terminate and secure all fibers. ST connectors are no longer recommended in the TIA 568-C.3 standard but may be used in legacy installations.

4. All fiber splicing and connections shall be fusion type. Hand Polished joints are not acceptable.

5. At least one 4-pair balanced twisted-pair hybrid/bundled or multi-pair cable should be run for each Intra-building/Building backbone segment. Optical fiber shall be installed for any backbone segment greater than 90 m (295 ft.). If the Intra-building/Building Backbone segment is less than 90 m (295 ft), and fiber is not installed, then a balanced twisted-pair cable of CAT6A F/UTP cable shall be installed for each known application.

6. Minimum structured cable shall be Siemon CAT6A F/UTP.

END OF SECTION
SECTION 27 05 29 – HANGERS AND SUPPORTS FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
B. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and this Section is directly applicable to them, including but not limited to the listing found in Section 27 00 00.

PART 2 - PRODUCTS

2.1 APPROVED PRODUCT

A. The J-hooks shall meet or exceed the below characteristics of construction and features
   1. Provide broad based support for cabling to aid in maintaining overall system performance.
   2. Be available in 50.8mm (2”) and 101.6mm (4”) options
   3. Come equipped with a cable retention clip
   4. Offers a full line of mounting accessories.

2.2 APPROVED MANUFACTURERS

A. Siemon
B. Ericson / Caddy
C. B-Line
D. CTS
E. Stiffy

PART 3 - EXECUTION

3.1 J-HOOKS AND OTHER SUPPORTS SHALL BE INSTALLED SUCH THAT THEY:

A. Shall be supported with devices designed for this purpose and shall be installed independently of any other structural component. J-Hooks shall not use the suspended ceiling support wires or lighting fixture support wires.
B. The number of cables placed into the J-hooks shall be limited to a number that will not cause a change to the geometric shape of the cables.
   1. Limit to a 40% fill in new construction.
C. J-hooks shall not be spaced farther than 1.5 meters (5 ft.) apart, with a recommendation that they be spaced at 1 meter (3 ft.) apart. Note: Construction may require distances to exceed the maximum and are considered an exception requiring approval of project manager or building engineer.
D. J-hooks or better must be installed without exception.

3.2 UNACCEPTABLE INSTALLATIONS

A. Free flight of cables
B. Resting or attaching of cables on pipes, conduits, HVAC duct work
C. Resting on or attached to fire sprinkler systems
D. Resting on ceiling tile grid in ceiling space is not acceptable.

END OF SECTION
SECTION 27 05 33 – CONDUITS AND BACK BOXES FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
B. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and this Section is directly applicable to them, including but not limited to the listing found in Section 27 00 00.
C. Division 26 – Electrical work

PART 2 - PRODUCTS

2.1 APPROVED PRODUCT

A. Conduits and Back boxes shall meet the construction requirements of the NEC for the type of structure and space in which they are installed and will be of the diameter and size to provide adequate fill, bend radius and connector space. Refer to section 27 05 28.
B. Coordinate with Division 26 for the exact required conduit size and back box dimensions as they relate to the specific telecommunication cable and connectors.

PART 3 - EXECUTION

3.1 CONDUIT SIZING

A. Conduit size shall be based on the type of cable installed and the required fill ratio and bend radius associated with the type of cable specified.
   1. Minimum conduit size to back box for CAT6A F/UTP shall be 1 inch
B. Conduit and installation shall be provided by Division 26.
C. All conduit stubs shall be installed with plastic bushings appropriate for the size of conduit used.
D. Conduits that stub to accessible ceiling shall be installed in the direction to provide the shortest path to the TDR, complete with pull string.

3.2 BACK BOX SIZING

A. New work back boxes for CAT6A F/UTP shall be a minimum of trade size 4-11/16” x 4-11/16” x 3” (depth) plus a 5/8” plaster ring to allow for proper bend radius and connector termination/installation. Side knockouts shall be avoided.
B. Back boxes for rework shall meet the same specification as for new work.
   1. If existing back boxes or back boxes that are smaller due to construction restrictions, then devices such as extension rings, bezels or faceplates shall be used to modify the back box to insure proper bend radius and connector termination/installation.
      a. Verification and approval of the size change must have DCO Infrastructure Cabling and engineering approval.

3.3 BACK BOX COMPOSITION

A. All back boxes for IT systems shall be UL/CSA listed and approved for the purpose.
   1. Non-metal back boxes shall not be used for any interior IT related device.

3.4 SPECIAL CONDITIONS – LEAD LINED WALLS FOR RADIATION CONTROL

A. Refer to the complete IT Lead Lined Wall Procedure – Attachment to Appendix
SECTION 27 05 36 – CABLE TRAYS FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Requirements of the following Division 26 sections apply to this section.
   1. Basic electrical requirements
   2. Basic electrical materials and methods
   3. Grounding, earthing, and bonding

This section shall be coordinated with Sections 270528, 270539, and 270543_46.

1.2 COORDINATION

A. Prior to beginning installation, a kick-off meeting to properly coordinate the tray installation and expectations should be held. It should be arranged by the General Contractor, and at a minimum include representatives of the following trades: FP&D, Electrical (Div 26), Structured cable, Nurse Call, paging, building automation and control, plumbing, HVAC, fire sprinkler, framing, and others as applicable. The Data Center Operations Infrastructure Cabling Team will lead the meeting.

B. The wire basket tray routing shall be approved by the low voltage CI cable contractor (Div. 27 sub-contractor), and the Data Center Operations.

C. Triple tier J-Hook pathways shall parallel the basket trays for other services.
   1. The triple tier J-Hooks shall be installed by the cable tray installer.

D. Single J-Hooks as needed to extend beyond the triple tier, shall be installed by the trade that will be utilizing them.

E. Cable tray shall be a high priority installation to allow adequate time for proper and complete cable installation prior to ceiling grid.

PART 2 - PRODUCTS

2.1 APPROVED PRODUCT

A. The Cable Tray shall meet or exceed the below characteristics of construction and features:
   1. It shall be fully welded and available in a galvanized silver or powder coat black finish.
   2. Have an optional construction using “elongated” shaped wires offering a more broad-based support for installed cables.
   3. Cable ladder shall be used in data rooms for horizontal management above the racks.
   4. Ladder shall match the manufacturer of the data racks or exact equal.
   5. Ladder shall be assembled with manufacturer approved parts and methods.

2.2 PART NUMBERS (SUBMITTAL REQUIRED)

A. Cable Tray
   1. Refer to plans for part numbers.
   2. WBT – Wire Basket Tray (preferred).
   3. Siemon RouteIT™ Wire Mesh Cable Tray, or equal basket type tray.
   4. Cabolfil per owner’s approval.
**PART 3 - EXECUTION**

**3.1 PATHWAY INSTALLATION**

**A. Supports**

1. Installed per Manufacturer’s Specifications and utilize components specific to the maintenance of proper access in and out of the cable tray using bend delimiters.

2. Distance between supports shall not exceed 8 feet
   a. Less distance between supports required if per manufacturer’s instructions.

3. Supports shall be of the trapeze design to provide maximum stability
   a. Each support shall attach to structure via its own hangers.
      1) All hanger supports shall be constructed of a rigid material such as all-thread
      2) All hangers and supports shall be installed perpendicular and plumb to the tray. No angle supports shall be permitted unless augmented perpendicularly.
      3) Where hangers for other equipment such as duct work have been provided due to the path to structure being blocked
      4) Supported by devices that are designed for that purpose and are installed independent of any other system components.
      5) Vibration and sway (seismic) damping provided by seismic contractor
      6) Provide support across width of tray underneath, not via basket side wires.
      7) Building walls are not considered to qualify as a support.

4. Supports shall be of sufficient strength to support at least 200% of the expected load

5. Wall mounted angle brackets shall not be used as a load bearing support for cable tray.

**B. Complete System Access**

1. Cable tray shall have a dedicated free clearance zone surrounding it.
   a. 12” clear space shall be provided on the side where natural feed will occur
   b. 6” clear space shall be provided on the side opposite the feed access
   c. 6” clear space above the top of tray
   d. 3” clear space below the tray

2. Exception: other services may pass through the free clearance zone provided it is perpendicular to the tray direction and providing they do not exceed 6’ in width or interfere with the access to pull wire in the tray.
3.2 ROUTING OF BASKET TRAY

A. Exact cable tray location shall be coordinated with other trades to ensure proper clearances and access. Prior to installation, final cable tray routing must be approved by the Owner’s Data Center Operations/Infrastructure cabling team.
B. Cable tray shall be installed in straight lines, either parallel or perpendicular to building lines.
C. Cable tray shall follow corridor paths
   1. Routing above rooms and other partitions shall be avoided
D. Cable tray and flush penetrations shall be utilized over hard-lid areas as specified.
E. Access panels shall be provided where needed to provide access to the cable tray on both sides of the wall in hard-lid areas within 3’ or less of the basket tray.

3.3 TRAY INTEGRITY

A. Tray shall be installed as a complete, continuous system with no open spaces, cut outs, or missing segments. Bonding between sections shall be accomplished by the manufacturer’s approved clamp or designated method.
B. Tray shall be free from obstructions, other systems, trash or debris. Access to the tray shall be provided as outlined.
C. Tray must not be notched or cut-out to accommodate other trades. Repairs will not be accepted. Section replacement will be required at no cost to owner.
D. As much tray material as possible shall be left uncut at turns, junctions, elevation changes, width changes, etc. Overlap shall be clamped to maximize strength and prevent pinch points.
3.4 WALL OR OTHER PENETRATIONS (SUBMITTAL REQUIRED)

A. Fire and smoke related assemblies.
   1. Penetrations shall comply with all fire and smoke prevention methods per codes and as outlined elsewhere in this document, including Section 270528 and Division 7.

B. Approved Penetration Methods
   1. Preferred barrier penetration method shall be to run the tray continuous through the barrier, with closure provided by Firestop pillows.
      a. Framing shall be boxed around openings to permit proper pillow insertion. Coordinate with framing contractor.
   2. Sleeves or conduits
      a. EZ-Path or alternate penetrations must provide 150% of the designed cross-sectional area of the basket.
      b. Conduit permitted only with written pre-bid permission or engineering notation on the drawings.
      c. Each penetration sleeve or conduit shall be bonded on both sides of the penetrated barrier using UL and AHJ approved methods.
   3. All penetrations shall be positioned in-line with the cable tray to facilitate ease of pulling conductors and provide a straight-line path.
      a. The bottom of the penetration device shall be flush with the bottom of the cable tray
      b. Side-to-side penetrations must be completely within the cable tray space or directly above whenever possible.
   4. Approved penetration devices shall be a minimum size of 4”
      a. Total penetration space at each location shall be sized for 20% growth and be equal to or greater than the cross-sectional area of the basket tray.
      b. Approved devices where smaller penetrations are permitted shall be a minimum size of 1”.
   5. Approved devices shall be approved by the local facility manager:
      a. Fire rated STI EZ-Path.
      b. Hilti self-sealing device.
      c. Tray with enclosed wall and properly sized and installed pillows.
      d. Conduit sleeves:
         1) Conduit sleeves should only be used as a last resort upon approval from owner’s Data Center Operations Infrastructure Cabling representative.
3.5 UTILIZATION

A. Capacity
   1. Trays and penetration devices shall be properly sized.
      a. Provide a maximum calculated fill ratio of 40% to an inside depth not to exceed 3 inches (75 mm).
      b. Provide capacity to allow for at least 20% future growth.

B. Systems Served
   1. Cable trays, J-hooks, and penetrations shall be dedicated to a single system. Mixing of other systems with voice and data shall not be permitted in tray or J-hook paths.
   2. Exception: Different systems may share cable tray providing the following conditions are met:
      a. Less than 40% overall fill is maintained, plus 20% additional space for growth
      b. There is a minimum 3” separation between systems.
      c. There is a grounded physical divider between systems.

C. Restricted Content in Trays
   1. The wire basket tray shall only contain cables for the voice and data communications systems.
      a. If there is sufficient space in the tray, and with approval from both the data network sub-contractor and the Data Center Operations, certain other IP services may share tray space. (i.e. camera, telemetry, similar).
      b. Service loops must not reduce tray capacity.
      c. Nurse call cabling shall be run in the J-Hook path. All nurse call installations must provide their own path or utilize the triple J-Hook system.

D. Triple J Hook Patch Assignments
   1. The Middle tier of the triple J-Hook path may alternately be utilized for Nurse Call, or other EMI producing systems.
   2. The Lower tier of the triple J-Hook path is designated for Card Access and building automation and controls
   3. The Top tier of the triple J-Hook path is designated for satellite, DAS, or similar systems.
   4. Service loop and slack shall not interfere with other pathways.

END OF SECTION
SECTION 27 05 39 – SURFACE RACEWAYS FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL
1.1 RELATED DOCUMENTS
A. Requirements of the following Division 26 sections apply to this section
   1. Basic electrical requirements
   2. Basic electrical materials and methods
   3. Grounding, earthing, and bonding
B. Surface raceways shall not be installed except by direction from the architect and engineer.
C. Surface raceways shall not be installed in sterile areas unless explicitly called for.

PART 2 - PRODUCTS
2.1 APPROVED PRODUCTS
A. Surface raceway shall be suitable for the type of environment in which they are to be installed, such as plenum and non-plenum. They shall also be manufactured of materials that will provide maximum protection of the cables after installation.
B. Surface raceways shall be sized appropriately per the NEC for the type of cable being installed.

PART 3 - EXECUTION
3.1 INSTALLATION
A. Surface raceway installation
   1. Maximum surface raceway fill ratio shall not exceed 40% fill at the initial installation, with a maximum fill ratio of 60% fill to accommodate unplanned additions after the initial installation. Note: This ratio also applies to modular furniture raceways.
   2. Shall be supported and installed per manufacturers specifications and utilize components specific to the maintenance of proper access in and out of the cable tray using plastic bushings, bezels, or faceplates.

END OF SECTION
SECTION 27 05 43 / 46 – UNDERGROUND DUCTS, UTILITY POLES & RACEWAYS FOR INTER-BUILDING / CAMPUS CABLE ROUTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Requirements of the following Division 26 sections apply to this section.
   1. Basic electrical requirements.
   2. Basic electrical materials and methods.
   3. Grounding, earthing and bonding.

PART 2 - PRODUCTS

2.1 INTER-BUILDING / CAMPUS CABLE ROUTING

A. The backbone subsystem shall include cable installed between buildings via approved underground, tunnel, direct-buried, aerial or any combination of these from the Campus Distributor/Main Cross-connect (CD/MC/TEC) to Building Distributor/Intermediate Cross-connect (BD/IC/TDR) in a multi-building campus.
   1. Armored fiber is required.
   2. Unless otherwise recommended by a professional design engineer, all non-armored fiber cables will be run in innerduct.

B. Backbone pathways shall be installed or selected such that the minimum bend radius and pulling tension of backbone cables is kept within cable manufacturer specifications both during and after installation.

C. In an underground system, adequate underground conduit space shall be available and accessible at each building. The conduits shall not exceed a fill ratio of 40%.
   1. All underground systems shall be designed to prevent water runoff from entering the building. All underground systems must be cleared of any moisture prior to installation of any cable type. These systems must be sealed at both ends when not in use and after cable installation to prevent moisture and rodent infiltration.

PART 3 - EXECUTION

3.1 INSTALLATION

A. The backbone cables shall be installed in a hierarchical star topology, emanating from the Campus Distributor/Main Cross-connect to each satellite building, Building Distributor/Intermediate Cross-connect or Floor Distributor/Horizontal Cross-connect located in a telecommunication room. All Inter-building/Campus cables shall be installed to the applicable codes and regulations.
   1. Separate innerducts are required for each leg of the redundant path.
   2. Separate physical routing for each path shall be utilized where possible.

C. Optical fiber shall be run for all Inter-building/Campus backbone segments, and as a recommendation, at least one balanced twisted-pair cable should be run for each Inter-building backbone segment.
   1. Fibers will be terminated in the telecommunications rooms using SC or LC connectors in wall mounted interconnect centers or rack mounted panels equipped with sufficient ports, slack storage space and splice trays if required to terminate and secure all fibers. ST connectors are no longer recommended in the TIA 568-C.3 standard but may be used in legacy installations.

D. Over-voltage Circuit Protection shall be utilized for cabling which enters or exits a building shall comply with applicable codes and regulations.

E. OSP (outside plant) cables shall transition to an ISP (inside plant) within 50 feet of changing environment, per national and local codes and regulations.

END OF SECTION
SECTION 27 05 53 – IDENTIFICATION FOR LOW VOLTAGE CABLES AND LABELING

PART 1 - GENERAL

1.1 NOT USED

PART 2 - PRODUCTS

2.1 LABELING

A. Structured cabling shall be labeled in accordance with ANSI/TIA 606-B standards.
B. A unique identifier shall be marked on each faceplate to identify it as connecting hardware.
C. Each port in the faceplate shall be labeled with its identifier.
D. A unique identifier shall be marked on each piece of connecting hardware to identify it as connecting hardware.
E. Each port on the connecting hardware shall be labeled with its identifier.

F. Cable Labeling

1. Label System
   a. Labels Identification (Labeling) System:
      1) Brady
      2) Dymo
      3) Hellerman-Tyton
      4) Panduit
      5) Acceptable alternate
         a) Approval from Data Center Operations Infrastructure Cabling team member required prior to bid

2. Cable Labels
   a. Self-adhesive vinyl or vinyl-cloth wraparound tape markers, machine printed with alphanumeric cable designations. Plastic, self-adhesive labels are not acceptable.
   b. Each end of the Horizontal cables shall be labeled with a mechanically generated label within 300mm (12 in) of the end of the cable jacket with the link identifier which shall be a unique configuration determined by owner. This also applies to the Backbone Cables.

3. Flat-surface labels
   a. Self-adhesive vinyl or vinyl-cloth labels, machine printed with alphanumeric cable designations

4. Contractor shall:
   a. Provide transparent plastic label holders, and 4-pair marked colored labels.
   b. Install colored labels according to the type of field as per ANSI/TIA 606-B.1 color code designations.

G. PALLETTE

1. Use the owners color-code guidelines for voice, data, cross-connect, riser, and backbone fields. Otherwise, use the ANSI/TIA 606-B designation strip color-code guidelines for voice, data, cross-connect, riser, and backbone fields. Color designations for F/UTP cable:
   a. Intermountain Healthcare Standard Wiring Palettes for Horizontal Cabling
   b. Color
      1) Data & IP Phones
         Blue
      2) Analog Phone
         Blue
      3) Security Card Readers
         Grey
      4) IP Security Cameras
         Blue
      5) Fire Systems
         Red
      6) TV Coax
         Black
      7) Public Address
         White
      8) Clinical Engineering –
         Orange
         a) Monitoring, Bed Systems
         Orange
         b) Nurse Call (5e)
         Orange
         c) Real time patient data
         Orange
      9) Wireless
         Yellow
      10) Foreseeer (Belden 1422)
         Red

H. Outlet/Jack/Faceplate Icons/labeling will match the color of the cable attached to the back side of the outlet/jack.
PART 3 - EXECUTION

3.1 GENERAL IDENTIFICATION
A. Installer shall label all cable, regardless of length.
B. Identify system components, wiring, and cabling complying with TIA/EIA-606-B. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
C. Color-code cross-connect fields. Apply colors to voice and data service backboards, connections, covers, and labels.
D. Using cable management system software specified in Part 2, develop Cabling Administration Drawings for system identification, testing, and management. Use unique, alphanumeric designation for each cable and label cable, jacks, connectors, and terminals to which it connects with same designation. At completion, cable and asset management software shall reflect as-built conditions.
E. Comply with requirements in Division 09 Section "Interior Painting" for painting backboards. For fire-resistant plywood, do not paint over manufacturer’s label.
F. Cable Schedule: Post in prominent location in each equipment room and wiring closet. List incoming and outgoing cables and their designations, origins, and destinations. Protect with rigid frame and clear plastic cover. Furnish an electronic copy of final comprehensive schedules for Project.
G. Cabling Administration Drawings: Show building floor plans with cabling administration-point labeling. Identify labeling convention and show labels for telecommunications rooms, backbone pathways and cables, entrance pathways and cables, terminal hardware and positions, horizontal cables, work areas and workstation terminal positions, grounding buses and pathways, and equipment grounding conductors. Follow convention of TIA/EIA-606-B. Furnish electronic record of all drawings, in software and format selected by Owner.

3.2 CONCEALED ENDS
A. Jacks, connectors, terminations, and similar that are located in concealed locations such as above grid ceilings, shall have additional labeling. The additional label shall be on the face of the grid in a visible location, immediately adjacent to the termination location.

3.3 CABLE AND WIRE IDENTIFICATION
A. Label each cable visibly within 4 inches of each termination and tap, where it is accessible in a cabinet or junction or outlet box, and elsewhere as indicated.
B. Each wire connected to building-mounted devices is not required to be numbered at device if color of wire is consistent with associated wire connected and numbered within panel or cabinet.
C. Label each terminal strip and screw terminal in each cabinet, rack, or panel.
   1. Individually number wiring conductors connected to terminal strips and identify each cable or wiring group being extended from a panel or cabinet to a building mounted device shall be identified with name and number of particular device as shown.
   2. Label each unit and field within distribution racks and frames.
D. Labels shall be preprinted or computer-printed type with printing area and font color that contrasts with cable jacket color but still complies with requirements in TIA/EIA-606-B.

END OF SECTION
SECTION 27 11 00 - EQUIPMENT ROOM FITTINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. Requirements of the following Division 26 sections apply to this section
      1. Basic electrical requirements
      2. Basic electrical materials and methods
      3. Grounding, earthing, and bonding
   B. Standards
      2. Minimum recommended room sizes are requirements, not suggestions.

1.2 SUMMARY
   A. This Section outlines the levels of telecommunications rooms and distribution points. It is a guide for each type of room, and the requirements and necessary fit up equipment for each.

PART 2 - PRODUCTS

2.1 COMMON REQUIREMENTS
   A. Rack layout and mounting
      1. Standard room layouts are located on the plans and in the appendices.
   B. Rack and wall mounting locations
      1. Rack and wall space use is pre-designated at the design stage. Before mounting any equipment on a wall or in a rack, the location must be verified by the Div 27 sub-contractor and the Data Center Operations.

2.2 ADDITIONAL TECHNOLOGY ROOM SPECIFIC REQUIREMENTS (TDR)
   A. Definition
      1. Technology distribution rooms (TDRs) house a variety of technology systems and system components.
         a. There shall be a minimum of one TDR on each floor of the facility. TDRs shall be provided throughout the facility as necessary to meet the 292-foot (90-meter) maximum cable distance required for Ethernet cables.
            1) A maximum 250-foot radius is recommended to allow for corners and vertical cable travel.
         b. This room is where the signals from the servers or phone switches (PBX) are split out and routed to the individual user’s office or workspace.

2.3 TECHNOLOGY EQUIPMENT CENTER (TEC)
   A. Definition
      1. The technology equipment center (TEC) houses the main networking equipment and the application servers and data storage devices that serve the building.
         a. Each hospital shall have at least one TEC space that is not used for any purposes other than data storage, processing, and networking.

2.4 TELECOMMUNICATION SERVICE ENTRANCE ROOM (TSER)
   A. Definition
      1. The telecommunications service entrance room (TSER) houses the point at which data and voice circuits and services enter the facility and outdoor cabling interfaces with the building infrastructure.
         a. Each hospital shall have at least one TSER that is dedicated to the telecommunications function and related support facilities.

2.5 SECURITY / AUDITABLE ACCESS CONTROL REQUIREMENTS
   A. The access control system shall be auditable

PART 3 - EXECUTION

3.1 COMMON REQUIRED CHARACTERISTICS FOR TDR, TEC & TSER
   A. Security – Common
1. Any visitor, vendor, or contractor requiring access to a Technology Room, who does not have appropriate approvals or clearances, must be escorted by a properly credentialed tech from the appropriate system.

2. The main technology equipment shall be secured in a dedicated, locked Technology Room.

3. Unused access jacks should be disconnected from the patch panels, and unused switch ports disabled.

4. Technology Rooms shall be dedicated to the data and telecommunications functions.

5. Access to the Technology Room shall be restricted to authorized service personnel and shall not be shared with building services that may interfere with the main networking interfaces, the networking equipment, the application servers, data storage devices, and telecommunications equipment systems.

6. Technology Rooms shall not be used for building maintenance services, custodial services, or be used for general storage.

7. Security cameras may be installed in each Technology Room upon owner’s preference.
   a. At entrances
   b. At the end of each row of equipment racks
   c. In electrical and mechanical rooms serving the Technology Room

8. Cable shall be installed according to the standards herein at each of the designated locations.

9. Access to a Technology Room shall be restricted and controlled by an auditable access control system. The access control system shall comply with the requirements of this document.

10. All secure data areas must be secured by an auditable badge reader system.
    a. Refer to plans or quotes for detailed information
    b. Approved supplier:
       Intermountain Lock and Security Supply / 3106 S Main St / Salt Lake City, UT 84115 / 801-486-0079
    c. Owner of security locks and badge readers:
       Intermountain Healthcare Data Center
    d. For programming on the Medeco XT Electronic Keys contact:
       Intermountain Healthcare Data Center

B. Physical Environment
   1. The Technology Room shall be located in a dry area not subject to flooding and should be as close as possible to the electrical service room in order to reduce the length of the bonding conductor to electrical grounding system.
   2. The Technology Room shall be located in an accessible, non-sterile area.
   3. Access to the Technology Room shall be directly off a corridor and not through another space.
   4. The Technology Room shall be located to avoid large ducts, beams, and other building elements that may interfere with proper cable routing and may limit future access.
   5. Mechanical and electrical equipment or fixtures not directly and exclusively related to the support of the Technology Room shall not be installed in, pass through, or enter the Technology Room.
   6. Technology Rooms will have an epoxy sealed concrete floor
      a. or static dissipative flooring
   7. Technology rooms shall not be located on exterior walls.
   8. Technology rooms shall not have windows or other exterior openings.

3.2 TECHNOLOGY DISTRIBUTION ROOM (TDR) / DATA CLOSET

A. Purpose:
   1. The TDR (Technology Distribution Room) shall be a ‘per floor’ serving facility.
   2. The TDRs shall be provided throughout the building and located to facilitate the 90m (290 ft.) permanent link for Ethernet applications.
      a. Note that the AIA/State requirements specify that the minimum size for a TDR is 12’ by 14’; and recommend 12’ by 16’ to allow for growth.
      b. See appendix for other systems that may be installed in this space, and appendix for capacity, required clearances, and layout.
      c. When permissible, doors shall swing out of the room to provide maximum available space and rapid egress.
3. The TDRs shall be primarily equipped to contain telecommunications equipment, cable terminations, and associated cross-connects.
4. If space permits, the TDR may host other telecommunications related services per specific permission from the owner and in compliance with codes and regulations.
a. See Appendix for other systems potentially installed in this space.

B. Electrical Environment:
1. Separation from sources of EMI shall be in accordance with ANSI/TIA/EIA-569-C and local codes.
2. Communication grounding/earthing and bonding shall be in accordance with applicable codes and regulations. It is recommended that the requirements of IEC/TR3 61000-5-2 - Ed. 1.0, ANSI-J-STD-607-C, or both be observed throughout the entire cabling system.
   a. All racks, equipment frames, furniture, flooring, ductwork within the IT space shall be bonded to the Central Ground bar provided and installed by Division 26.
      1) No AC electrical equipment bonding will be done at the Central Ground Bar. AC electrical grounding and bonding will be done according to the NEC.
3. Some TDRs will require redundant power and data feeds. See plans and drawings.
4. Lighting in the TDRs should be a minimum of 500 lx (50-foot candles) at the lowest point of termination.
   a. Light switch should be easily accessible when entering the room.
   b. Lighting will be fed from the generator system or have fixtures with battery backup.
5. A minimum of two dedicated duplex or two dedicated simplex electrical outlets, each on a separate 120V 20A circuit, should be provided for equipment power. Additional convenience duplex outlets should be placed at 1.8 m (6 ft) intervals around the perimeter walls.
   a. Only twist lock receptacles will be used for rack power points. Type 6-30R
6. All power is to originate from the facilities generator backup system with one system (A-B) originating from the critical system.
7. All circuits serving the TDR and the equipment within it shall be dedicated to serving the TDR.
8. TDRs shall be connected by a backbone of insulated, #6 (minimum) to 3/0 AWG stranded copper cable between all technology rooms. This cable shall be provided and installed by Division 26.

C. Mechanical Environment
1. Reliable cooling shall be provided.
   a. Based on criticality tiering structure individual rooms may require redundant, concurrently maintainable cooling systems.
   b. Tier structure level shall be determined from the design guide.
2. Heat load shall be calculated at 4KW per equipment rack
3. Temperature and humidity in the TDR shall be controlled to an operating range of 64 to 75 degrees F (18 to 24 degrees C) with 30 to 55 percent relative humidity.

D. Equipment
1. The Horizontal Cross-connect shall consist of rack mounted wiring blocks or panels for termination of copper cables or rack mount interconnect centers or fiber management panels/trays for the termination of optical fibers.
   Cross-connect spaces shall include the labeling of hardware for providing circuit identification and patch cords or cross-connect wire used for creating circuit connections at the cross-connect. Labeling shall comply with ANSI-TIA 606.
2. Each TDR shall be connected to the TEC (Technology Equipment Center) to provide a building-wide network and communications system.
3. All racks, cabinets, sections of cable tray, and metal components of the technology system that do not carry electrical current shall be grounded.
4. Racks shall be installed with their fronts towards the room door.

3.3 TECHNOLOGY EQUIPMENT CENTER (TEC) / DATA ROOM

A. Purpose
1. The TEC (Technology Equipment Center) equipment subsystem consists of shared (common) electronic communications equipment in the TEC or the TSER (Telecommunication Service Entrance Room) and the transmission media required to terminate this equipment on distribution hardware.
2. The TEC shall be equipped to contain telecommunications equipment, cable terminations, and associated cross-connects.
3. Each facility shall have at least one TEC space that is not used for any purposes other than data storage, processing, and networking and that meets the minimum requirements of this section.
4. Combination of the TEC and the telecommunications service entrance room (TSER) shall be permitted.

B. Electrical Environment
1. The TDR and TEC electrical environments shall match with the following exceptions:
2. All circuits serving the TEC and the equipment within it shall be dedicated to serving the TEC.

C. Mechanical Environment
1. TEC and TER have the same mechanical environment.
2. Reliable cooling shall be provided.
3. Heat load shall be calculated at 4KW per equipment rack.
4. Temperature and humidity in the TEC shall be controlled to an operating range of 64 to 75 degrees F (18 to 24 degrees C) with 30 to 55 percent relative humidity.

D. Equipment
1. Each TEC shall be connected to the TSER (Telecommunications Service Entrance Room) to provide an enterprise-wide network and communications system.
2. All racks, cabinets, sections of cable tray, and metal components of the technology system that do not carry electrical current shall be grounded.
3. Racks shall be installed with their fronts towards the door.

E. Fire Suppression
1. A TEC shall have a pre-action fire suppression system installed.
2. Heads within a TEC shall be 200 degrees as permitted by the AHJ.

3.4 TELECOMMUNICATION SERVICE ENTRANCE ROOM (TSER) / D-MARC

A. Purpose
1. The TSER (Telecommunications Service Entrance Room) equipment subsystem shall consist of shared (common) electronic communications equipment in the TEC or the TSER required to interface this equipment and distribution hardware to the transmission media of enterprise Wide Area Network (WAN) infrastructure.

2. The TSER shall be equipped to contain telecommunications equipment, cable terminations, and associated cross-connects.
   a. Note that the AIA/State guidelines specify that the minimum size for a TSER is 12’ by 14’.
   b. Doors shall swing out of the room to provide maximum available space and rapid egress.
      1) Exception: where prohibited by fire or safety code.
   3. The TSER shall be dedicated to the telecommunications function.

B. Electrical Environment
1. The TDR and TEC electrical environments shall match with the following exceptions:

C. Mechanical Environment
1. Reliable cooling and heating shall be provided.
2. Temperature and humidity in the TSER shall be controlled to an operating range of 64 to 75 degrees F (18 to 24 degrees C) with 30 to 55 percent relative humidity.

D. Equipment
1. The TSER (Telecommunications Service Entrance Room) shall be connected to the specified WAN equipment to provide connectivity to the enterprise-wide network and communications system.
2. All racks, cabinets, sections of cable tray, and metal components of the technology system that do not carry electrical current shall be grounded.
3. Racks shall be installed with their fronts towards the door.

END OF SECTION
SECTION 27 11 16 – CABINETS, RACKS, FRAMES AND ENCLOSURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. Cabinets and racks specifications are in TIA569-C and in the ET pages of the plans
   B. Requirements of the following Division 26 section apply to this section
      1. Basic electrical requirements
      2. Basic electrical materials and methods
      3. Grounding, earthing, and bonding

PART 2 - PRODUCTS

2.1 APPROVED PRODUCT

A. Open Racks
   1. For rack-mounted installations in a telecommunications room the installer shall use a 19 inch by 3-inch-deep equipment rack.
      a. Exception: Where other size cabinets are specified by design team at owner’s direction
      b. Refer to Appendix #8 and blueprints for approved part numbers.
   2. Typical Standard Layout
      a. Layout is 10” vertical manager, then 19” rack, then 10” vertical manager, then 19” rack, then 10” vertical manager.
      b. Where more than 2 racks are called for, maintain the pattern of 10” vertical wire management on the ends, and 10” vertical management between racks.
   3. Specifications:
      a. Have vertical mounting channels as side rails.
      b. Have standard ANSI/EIA-310-C mounting holes having a full mounting space on front and back of rails. Cable routing openings shall be available in the front and rear of the channels.
      c. Have floor mounting holes and a ground lug for 0-6-gauge ground cable provided.

B. Cabinets
   1. Standard Cabinet
      a. Refer to Appendix #8 and blueprints for approved part numbers
   2. Wall Mount Cabinet
      a. Refer to Appendix #8 and blueprints for approved part numbers
   3. Blade UPS Cabinet
      a. Refer to Appendix #8 and blueprints for approved part numbers
   4. Rack Mount UPS Cabinet - Slotted Top
      a. Refer to Appendix #8 and blueprints for approved part numbers
   5. Fiber Enclosures
      a. All interconnect centers, panels and trays (units) shall provide cross-connect, inter-connect, splicing capabilities and contain cable management for supporting and routing the fiber cables/jumpers.
      b. Part #:
         1) Siemon Rack Mount Interconnect Center (RIC3-48-01) (Required)
            a) Quick-Pack adapter RIC-F-LCU12-01
            b) Fiber Jumper Refer to Appendix #8 and blueprints for approved part numbers
      c. Field measure to specified length
      d. Specifications:
         1) Feature compact 3 RMS (133.5mm [5.25 in.]) design
         2) Have integrated key-lockable front and rear transparent doors with single-finger latches and spring release hinges for removal.
3) Have a sliding tray that can slide out the front and rear of the enclosure and be secured at multiple working positions as well as be fully removable for increased access.

4) Have cable access points for fiber jumpers entering and exiting the unit with rotating grommets to facilitate cable loading and to minimize micro bending stress.

5) Have labeling that can be viewed with doors open or closed and meets or exceeds ANSI/TIA/EIA-606-B requirements and also be laser printable.

e. Splice enclosures shall be approved on a case-by-case basis.

PART 3 - EXECUTION

3.1 NOT USED
SECTION 27 11 19 - TERMINATION BLOCKS AND PATCH PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. Requirements of the following Division 26 sections apply to this section
   1. Basic electrical requirements
   2. Basic electrical materials and methods
   3. Grounding, earthing, and bonding

PART 2 - PRODUCTS

2.1 APPROVED PRODUCT
A. Patch Panels
   1. Part #:
      a. Refer to drawings for current approved part numbers
      b. Provide blank fillers where appropriate
   2. Specifications
      a. To include Z-MAX™ Panel outlets.
      b. Be available in angled configurations.
      1) Angle unless specified otherwise.
      c. Come equipped with integrated rear wire management system
      d. Be provided with high visibility Snap-on magnifying label holders that contain paper labels or Z-MAX icons for port identification.

PART 3 - EXECUTION

3.1 INSTALLATION
A. For angled patch panels, the terminations shall cross in the back to the opposite path of the patch panel to maximize available cable bend radius.

See illustration below in this section:
SECTION 27 11 23 - CABLE MANAGEMENT AND LADDER RACK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary
      Conditions and Division 01 Specification Sections, apply to this Section.
   B. Specifications throughout all Divisions of the Project Manual are directly applicable to this
      Section, and this Section is directly applicable to them, including but not limited to the listing
      found in Section 27 00 00.

1.2 DEFINITIONS
   A. INTRA-BUILDING / BUILDING CABLING
      1. The cable route within a building, connecting closet to closet or closet to the equipment
         room is referred to as the Intra-building/Building Backbone Subsystem. It links the Campus
         Distributor (CD)/ Main Cross-connect (MC) in the equipment room to Building Distributor
         (BD)/Intermediate Cross-connects (IC) and Floor Distributor (FD)/Horizontal Cross-connects
         (HC) in the Telecommunications Rooms (TR). It consists of the backbone transmission media
         between these locations and the associated connecting hardware terminating this media.
   B. INTER-BUILDING / CAMPUS CABLING
      1. When a distribution system encompasses more than one building, the components that
         provide the link between buildings constitute the Inter-building/Campus Backbone
         Subsystem. This subsystem includes the backbone transmission media, associated
         connecting hardware terminating this media, and electrical protection devices to mitigate
         harmful voltages when the media is exposed to lightning and/or high voltage power surges
         that pass through the building cable. It is normally a first-level backbone cable beginning at
         the main cross-connect in the equipment room of the hub building and extending to the
         intermediate cross-connect in the equipment room of a satellite building. Campus Backbone
         Subsystems require optical fiber cable to be installed to support high speed data
         applications.

PART 2 - PRODUCTS

2.1 PERMITTED BACKBONE MEDIA
   A. Siemon is the approved standard. Corning fiber may be substituted where Siemon product has
      unreasonable delay times or doesn't make the required product. (Contractor to order early
      enough to allow Siemon at least a 2 - 3-week lead time.)
      1. Substitution must be pre-approved by ICT (Infrastructure Cabling Team Management).
   B. Cables allowed for use in the backbone include:
      1. 4-pair 100 Ω balanced twisted-pair copper in Categories 6, 6A & 7, (F/UTP, F/FTP, S/FTP)
         multi-pair 100 Ω balanced twisted-pair copper
      2. Hybrid or bundled 100 Ω balanced twisted-pair copper
      3. Multimode optical fiber 50/125μm (OM2), including 50/125μm Laser Optimized (OM3).
         Note: 62.5/125μm (OM1) is not recommend for backbone cabling due to the limited
         distance for gigabit and 10 gigabit applications and not recognized within the TIA942-A for
         40/100 Gbp/s.
      4. Single-mode (OS1, OS2, OM4) optical fiber cables. (Data Centers must be OM4 or better)
   C. The cable shall support voice, data and imaging applications. The bending radius and pulling
      strength requirements of all backbone cables shall be observed during handling and installation.
   D. Multi-pair twisted pair cable is intended to support analog voice applications and shall be tested
      for continuity only.
   E. In addition to meeting the applicable performance specifications, all copper and optical fiber
      cable shall be appropriate for the environment in which it is installed.
2.2 MEDIA PRODUCTS
A. COPPER
   1. The total channel length between the Campus Distributor/Main Cross-connect and to any Floor Distributor/Horizontal Cross-connect shall not exceed the following length limits for copper cabling:
      a. 2,000 m (6,560 ft) for balanced twisted-pair for PBX/Class A (100 kHz) applications.
      b. 200 m (656 ft) for balanced twisted-pair for Class B (≤ 1 MHz) applications.
      c. 100 m (328 ft) for balanced twisted-pair categories 6, 6A & 7 (per Backbone segment when providing a two-level Backbone).

B. MULTIMODE OPTICAL FIBER
   1. See Siemon website for supportable fiber distances
   2. See project drawings and manufacturer’s rep to confirm current part numbers and specified product.
   3. APPROVED PRODUCT
      a. Part #: Siemon 9BB5(X)000B-T312A (R=OFNR) (P=OFNP) Note: 000B=Fiber Strand Count. Siemon XGLO Laser Optimized 50/125μm Fiber required.
      b. Or armored equal (submittal required.)
      c. Performance:
         1) Laser qualified 50/125μm multimode fiber optical fiber cables shall be in compliance with the following standards ISO/IEC 11801:2002 OM3, ANSI/TIA-568-C.3, ANSI/TIA-568-C.1 and Telcordia GR-409-CORE as well as the guaranteed application distances, attenuation, bandwidth, and group index of refraction requirements.
      d. Specifications:
         1) Shall support 10GBASE-SX for all horizontal workstations, risers and short length backbone (<300 m) locations.
         2) Constructed for overfilled launch (OFL) and restricted mode launch (RML) bandwidth to ensure compatibility with both LED and laser light sources.
         3) Have an Aqua Outer Jacket and be available in cable ratings including OFNR and OFNP.

C. SINGLE MODE OPTICAL FIBER
   1. See Siemon website for supportable fiber distances
   2. See project drawings and manufacturer’s rep to confirm current part numbers and specified product.
   3. Single-mode optical fiber cable shall be used for 1st and 2nd Level Backbone applications only.
   4. APPROVED PRODUCT
      a. Part #: 9BB8P012G-E205A (12 Strand); 9BB8P024LE205A (24 Strand)
      b. Part #: 9BC8P012G-E205A (12 Strand); 9BC8P024L-E205A (24 Strand)
      c. Performance
         1) Have OS1 and OS2 optical performance characteristics as determined by ANSI/TIA-568C.03 and ISO 11801-2010 2nd edition.
      d. Specifications
         1) Have a Yellow colored round lead free cable jacket available in both OFNR and OFNP constructions.

PART 3 - EXECUTION
3.1 TOPOLOGY
A. The Backbone cabling shall use a conventional hierarchal star topology.
   1. There shall be no more than two (2) levels of cross-connects between the campus distributor/main cross-connect (CD/MC) and any given floor distributor/horizontal cross-connect (FD/HC).
2. From the FD/HC no more than one cross-connect shall be passed through to reach the CD/MC.
    B. Splicing of copper cables shall be kept to a minimum.
    C. Splicing of F/UTP and S/FTP copper cables is not permitted.

3.2 TYPICAL TDR BACKBONE
   A. A typical TDR backbone for a hospital campus shall consist of:
      1. Redundant (2 ea.) 12 strand single-mode fiber each routed in a separate path
      2. One 50 pair copper feed line

END OF SECTION
SECTION 27 13 00 - BACKBONE CABLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and this Section is directly applicable to them, including but not limited to the listing found in Section 27 00 00.

1.2 DEFINITIONS

A. Intra-Building / Building Cabling

1. The cable route within a building, connecting closet to closet or closet to the equipment room is referred to as the Intra-building/Building Backbone Subsystem. It links the Campus Distributor (CD)/Main Cross-connect (MC) in the equipment room to Building Distributor (BD)/Intermediate Cross-connects (IC) and Floor Distributor (FD)/Horizontal Cross-connects (HC) in the Telecommunications Rooms (TR). It consists of the backbone transmission media between these locations and the associated connecting hardware terminating this media.

B. Inter-Building / Campus Cabling

1. When a distribution system encompasses more than one building, the components that provide the link between buildings constitute the Inter-building/Campus Backbone Subsystem. This subsystem includes the backbone transmission media, associated connecting hardware terminating this media, and electrical protection devices to mitigate harmful voltages when the media is exposed to lightning and/or high voltage power surges that pass through the building cable. It is normally a first-level backbone cable beginning at the main cross-connect in the equipment room of the hub building and extending to the intermediate cross-connect in the equipment room of a satellite building. Campus Backbone Subsystems require optical fiber cable to be installed to support high speed data applications.

PART 2 - PRODUCTS

2.1 PERMITTED BACKBONE MEDIA

A. Cables allowed for use in the backbone include:

1. 4-pair 100 Ω balanced twisted-pair copper in Categories 6, 6A & 7, (F/UTP, F/FTP, S/FTP) multi-pair 100 Ω balanced twisted-pair copper

2. Hybrid or bundled 100 Ω balanced twisted-pair copper

3. Multimode optical fiber 50/125μm (OM2), including 50/125μm Laser Optimized (OM3). Note: 62.5/125μm (OM1) is not recommend for backbone cabling due to the limited distance for gigabit and 10 gigabit applications and not recognized within the TIA942-A for 40/100 Gbp/s.

4. Single-mode (OS1, OS2, OM4) optical fiber cables.

B. The cable shall support voice, data and imaging applications. The bending radius and pulling strength requirements of all backbone cables shall be observed during handling and installation.

C. Multi-pair twisted pair cable is intended to support analog voice applications and shall be tested for continuity only.

D. In addition to meeting the applicable performance specifications, all copper and optical fiber cable shall be appropriate for the environment in which it is installed.

2.2 MEDIA PRODUCTS

A. Copper
1. The total channel length between the Campus Distributor/Main Cross-connect and to any Floor Distributor/Horizontal Cross-connect shall not exceed the following length limits for copper cabling:
   a. 2,000 m (6,560 ft) for balanced twisted-pair for PBX/Class A (100 kHz) applications.
   b. 200 m (656 ft) for balanced twisted-pair for Class B (≤ 1 MHz) applications.
   c. 100 m (328 ft) for balanced twisted-pair categories 6, 6A & 7 (per Backbone segment when providing a two-level Backbone).

B. Multimode Optical Fiber
1. See Siemon website for supportable fiber distances
2. Approved Product
   a. Part #:  Siemon 9BB5(X)000B-T312A (R=OFNR)(P=OFNP) Note: 000B=Fiber Strand Count. Siemon XGLO Laser Optimized 50/125μm Fiber required.
   b. Or armored equal (submittal required.)
   c. Performance:
      1) Laser qualified 50/125μm multimode fiber optical fiber cables shall be in compliance with the following standards ISO/IEC 11801:2002 OM3, ANSI/TIA-568-C.3, ANSI/TIA-568-C.1 and Telcordia GR-409-CORE as well as the guaranteed application distances, attenuation, bandwidth, and group index of refraction requirements.
   d. Specifications:
      1) Shall support 10GBASE-SX for all horizontal workstations, risers and short length backbone (<300 m) locations.
      2) Constructed for overfilled launch (OFL) and restricted mode launch (RML) bandwidth to ensure compatibility with both LED and laser light sources.
      3) Have an Aqua Outer Jacket and be available in cable ratings including OFNR and OFNP.

C. Single Mode Optical Fiber
1. See Siemon website for supportable fiber distances
2. Single-mode optical fiber cable shall be used for 1st and 2nd Level Backbone applications only.
3. Approved Product
   a. Part #:  9BB8P012G-E205A (12 Strand); 9BB8P024LE205A (24 Strand)
   b. Part #:  9BC8P012G-E205A (12 Strand); 9BC8P024L-E205A (24 Strand)
   c. Performance
      1) Have OS1 and OS2 optical performance characteristics as determined by ANSI/TIA-568C.03 and ISO 11801-2010 2nd edition.
   d. Specifications
      1) Have a Yellow colored round lead free cable jacket available in both OFNR and OFNP constructions.

PART 3 - EXECUTION
3.1 TOPOLOGY
   A. The Backbone cabling shall use a conventional hierarchal star topology.
   1. There shall be no more than two (2) levels of cross-connects between the campus distributor/main cross-connect (CD/MC) and any given floor distributor/horizontal cross-connect (FD/HC).
   2. From the FD/HC no more than one cross-connect shall be passed through to reach the CD/MC.
B. Splicing of copper cables shall be kept to a minimum.
C. Splicing of F/UTP and S/FTP copper cables is not permitted.

3.2 TYPICAL TDR BACKBONE

A. A typical TDR backbone for a hospital campus shall consist of:
   1. Redundant (2 ea) 12 strand single-mode fiber each routed in a separate path
   2. One 50 pair copper feed line

END OF SECTION
SECTION 27 15 00 - HORIZONTAL CABLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
B. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and this Section is directly applicable to them, including but not limited to the listing found in Section 27 00 00.
C. Section 27 05 28 - Pathways for Communications Systems
D. Requirements of the following Division 26 Sections apply to this section:
   1. Basic Electrical Requirements
   2. Basic Electrical Materials and Methods
   3. Grounding

PART 2 - PRODUCTS

2.1 SUMMARY
A. This section includes requirements and guidelines for the installation of F/UTP, ScTP, and Fiber horizontal cabling.
   1. Horizontal cable and its connecting hardware provide the means of transporting signal between the telecommunications outlet/connector and the horizontal cross-connect located in the communications termination room. This cabling and its connecting hardware are called "permanent link," a term that is used in the testing protocols.

PART 3 - EXECUTION

3.1 HORIZONTAL CABLE
A. Quantity
   1. Two horizontal cables shall be routed to each work area. Cable connected to information outlets shall be CAT6A F/UTP, 4-pair, 100Ω balanced twisted-pair.
      a. A work area is approximately 100 sq. ft. and includes the components that extend from the telecommunications outlet/connector to the station equipment.
      b. Two (2) standard cables shall be run to each wireless access point location per current best practice.
      c. Three (3) standard horizontal cables shall be routed to each work area at IMG Reception Areas:
      d. One (1) standard horizontal cable may be run to the following locations:

         1) IMG Exam Rooms: Three horizontal cables shall be routed to each exam room. Two for the charting system, and the other near the exam table for possible future attachment of medical equipment.
         2) Each building control system enclosure as directed by the building controls vendor.
         3) Spaces dedicated to the storage, charging, and up/down loading of data for a single unit of medical equipment shall only require one horizontal cable.
         4) Each IP Video Surveillance Camera at each of the designated locations.

   2. For voice or data applications, 4-pair balanced twisted-pair or fiber optic cables shall be run using a star topology from the telecommunications room serving that floor to every individual information outlet. The customer prior to installation of the cabling shall approve all cable routes.
   3. Installation interfaces shall be T568B wiring standards,
B. Maximum Length
1. All horizontal cables, regardless of media type, shall not exceed 90 m (295 ft.) from the telecommunications outlets in the work area to the Floor Distributor/Horizontal Cross connect (FD/HC) located in the Telecommunication Room.

2. The combined length of jumpers, patch cords inclusive of equipment cables in the Floor Distributor/Horizontal Cross-connect shall not exceed 5m (16 ft.).

3. The maximum length of Work Area equipment cables shall be 5m (16 ft.) If a MuTOA (Multiple User Telecommunication Outlet) environment exists, then the maximum equipment cable shall not exceed 20m (66 ft.) (Lake Park Facility)

4. Terminate all conductors; no cable shall contain un-terminated elements. Make terminations only at indicated outlets, terminals, cross-connects, and patch panels

C. Minimum Length
   1. It is recommended that a minimum horizontal cable distance of 15m (49 ft.) shall be maintained between the telecommunications room and the work area. This will provide adequate Insertion Loss/Attenuation for applications over 1 Gig.
   2. For installations with consolidation points, a minimum horizontal cable distance of 15m (49 ft.) shall be maintained between the telecommunications room and consolidation point, and 5m (16 ft.) between the consolidation point and the work area. This will provide adequate Insertion Loss/Attenuation for applications over 1 Gig.

D. Splice Free
   1. Each run of balanced twisted-pair cable between Floor Distributor/Horizontal Cross-connect in the telecommunication room and the information outlet at the Work Area shall not contain splices.
   2. Bridged taps and splices shall not be installed in the horizontal cabling

E. Protection
   1. Horizontal distribution cables shall not be exposed in the work area or other locations with public access.
   2. Horizontal distribution cables shall not be run in under slab raceways that are damp or wet locations unless suitably rated for the environment.
      a. Under slab conduits that are outside of the building are considered wet locations.

3.2 SEPARATION
A. Separation from EMI sources
   1. Installation shall comply with BICSI TDMM and TIA/EIA-569-B for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.
   2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and EMI Source shall be as follows:
      a. EMI Source Rating Less Than 2 kVA: A minimum clearance of 5 inches.
      b. EMI Source Rating between 2 and 5 kVA: A minimum clearance of 12 inches.
      c. EMI Source Rating More Than 5 kVA: A minimum clearance of 24 inches.
   3. Separation between communications cables in grounded metallic raceways and unshielded power lines or EMI Source shall be as follows:
      a. EMI Source Rating Less Than 2 kVA: A minimum clearance of 2-1/2 inches.
      b. EMI Source Rating between 2 and 5 kVA: A minimum clearance of 6 inches.
      c. EMI Source Rating More Than 5 kVA: A minimum clearance of 12 inches.
   4. Separation between communications cables in grounded metallic raceways and power lines and EMI Source located in grounded metallic conduits or enclosures shall be as follows:
      a. EMI Source Rating Less Than 2 kVA: A minimum clearance of 2 inches.
      b. EMI Source Rating between 2 and 5 kVA: A minimum clearance of 3 inches.
      c. EMI Source Rating More Than 5 kVA: A minimum clearance of 6 inches.
   5. Separation between Communications Cables and Electrical Motors and Transformers, 5 kVA
or HP and Larger: A minimum clearance of 48 inches.
6. Separation between Communications Cables and Fluorescent Fixtures: A minimum clearance of 5 inches

B. Other Clearances
1. Horizontal pathways used for telecommunications cabling shall be dedicated for telecommunications use and not shared by other building services.
   a. Note: For cables of different categories (i.e. CAT5e, CAT6 & CAT6A UTP) running 10GBaseT applications it is necessary to separate those cables within the cable tray/raceway/wireway to protect against PSANEXT and PSANEXTFE coupling.
2. In a false ceiling environment, a minimum of 75 mm (3 in) shall be observed between the cable supports and the false ceiling.

3.3 PATHWAY
A. Materials
1. J-hooks are the minimum pathway device requirement by all low voltage contractors for use in open ceiling distribution. J-hooks shall not be spaced further than 5 ft. (1.5 m) apart with a recommendation of 3 ft. (1 m) spacing.
   a. Note: Construction may require distances to exceed the maximum and are considered an exception requiring approval of the DCO Infrastructure Cabling Team.
   b. J-hooks must be installed without exception. Free flight of cables in ceiling space is not acceptable.
2. Continuous conduit runs installed by the contractor should not exceed 30.5 m (100 ft.) or contain more than two (2) 90-degree bends without utilizing appropriately sized pull boxes.
3. Cable Tie Wraps
   a. Cable Tie Wraps are not permitted as a pathway device or support
   b. Tie wraps shall only be used to provide strain relief at termination points.
   c. Tie wraps shall not be over tightened to the point of deforming or crimping the cable sheath.

B. Constraints
1. All horizontal pathways shall be designed, installed and grounded to meet applicable local and national building and electrical codes and ordinances.
2. Horizontal cables shall be installed in “dry” locations that provide protection from moisture levels above the intended operating range of inside plant (ISP) cables. “Slab-on-Grade” building designs wherein pathways are installed underground on in the poured concrete slabs that are in direct contact with the soil are considered wet locations and hence are not permitted.
3. Horizontal pathways shall be installed or selected such that the minimum bend radius of horizontal cables is kept within manufacturer specifications both during and after installation.
4. A minimum of a 1” diameter conduit is recommended for new construction. Existing conduits will require the reduction of the number of cables placed in the conduit to meet the required fill ratio.
   a. The Contractor shall observe the bending radius and pulling strength requirements of the 4-pair balanced twisted-pair and fiber optic cable during handling and installation.
      1) 4-Pair UTP, F/UTP, S/FTP bend radius = 4 times outside diameter of cable under no-load conditions. 8 times the outside diameter under load (pulling 110 N/25 lbf.) conditions.
      2) Multi-pair or Hybrid cable bend radius = 10 times the outside diameter under all conditions.
3) 2-Fiber and 4 Fiber cables bend radius = 25mm (1 in.) under no-load conditions. 50mm (2 in.) under load (pulling 222 N 50 lbf)

5. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items.

6. Horizontal cabling shall contain no more than one transition point or consolidation point between the horizontal cross-connect and the telecommunications outlet/connector.

7. Do not install bruised, kinked, scored, deformed, abraded cable or otherwise damaged cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.

8. During Cold-Weather Installation, bring cable to room temperature before de-reeling. Heat lamps shall not be used for heating.

C. Capacity

1. The number of horizontal cables placed in a cable support or pathway shall be limited to the number of cables that will not alter the geometric shape of the cables.

2. Maximum pathway (cable tray/basket tray/wireway) capacity shall not exceed a calculated fill ratio of 50% to a maximum of 75 mm (3 in) inside depth.

3. Maximum conduit pathway capacity shall not exceed a 40% fill. However, perimeter and furniture fill are limited to 60% fill for move and changes. A 40% fill ratio is the maximum fill for CAT6A F/UTP cables.

4. All unused cables shall be removed
   a. Or labeled at both ends designating future purpose and locations of each end.

END OF SECTION
SECTION 27.15.13 – COPPER CABLE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
B. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and this Section is directly applicable to them, including but not limited to the listing found in Section 27.00.00.

1.2 PALLETTE
A. Color palette shall be in accordance with Section 27.05.53

1.3 SUMMARY
A. This Section covers approved F/UTP cable types
B. Systems shall be CAT6A F/UTP unless a written deviation has been approved.
C. CAT6A UTP and CAT6A F/UTP shall not be mixed on the same campus.
D. This cable shall be used for both voice and data applications and shall be plenum rated where required by code
   1. Clinical systems (orange) and wireless (yellow) cables shall be plenum rated.
E. Comply with ICEA S-90-661 for mechanical properties.
F. Comply with TIA/EIA-568-B.1 for performance specifications.
G. Comply with TIA/EIA-568-B.2, Category 6A. F/UTP

PART 2 - PRODUCT

2.1 APPROVED PRODUCT
A. TYPE 6A F/UTP (foil over unshielded twisted pair) - Siemon
   1. Part #:
      a. Refer to Appendix #8 for current approved part numbers
      b. Siemon 9A6P4-A5-(XX)-R1A® 6A F/UTP Plenum 4-Pair Cable (CMP)
      c. Siemon 9A6R4-A5-(XX)-R1A® 6A F/UTP Riser 4-Pair Cable (CMR)
   2. Specifications:
      a. Be available in standard jacket colors per Section 27.05.53.

2.2 ONLY BY ADVANCE APPROVED EXCEPTION (Case-by-Case)
A. Approved and signed Deviation form must be on-site and provided upon request.
B. TYPE 5e UTP (unshielded twisted pair) Siemon
C. Minor changes and or changes to existing plant TYPE 5e UTP (unshielded twisted pair) Siemon may request a grandfathered status by submitting and gaining approval using the deviation process.
   1. Use by written exception only when required by a specific application
   2. Authorization granted only by IS Operations per Deviation Process
   3. Part #:
      a. Siemon 9C5P4-E2-(XX)-RXA 5e UTP Plenum 4-Pair Cable (CMP)
      b. Siemon 9CSR4-E2-(XX)-RXA 5e UTP Riser 4-Pair Cable (CMR)

END OF SECTION
SECTION 27 15 43 – FACEPLATES AND CONNECTORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary
      Conditions and Division 01 Specification Sections, apply to this Section.
   B. Specifications throughout all Divisions of the Project Manual are directly applicable to this
      Section, and this Section is directly applicable to them, including but not limited to the listing
      found in Section 27 00 00.

1.2 PALLETTE
   A. Shall be white in color, with jacks that match the cable color that feed them.
   B. Exception: Match face plate colors as specified in Division 26 if specifically called out in contract
      documents.

1.3 DEFINITION
   A. Work-Area Cabling
   B. The work area is comprised of work area outlet/connectors, faceplates, outlet boxes and
      equipment cords. It acts as the interface to the horizontal cabling from the horizontal cross-
      connect (HC) to telephone, network equipment, wireless access points (WAP) and VOIP devices.

1.4 SUMMARY
   A. This Section covers approved F/UTP cable types

PART 2 - PRODUCT

2.1 APPROVED PRODUCT
   A. OUTLETS
      1. Part #:
         a. Refer to Appendix #8 for current approved part numbers
         b. Siemon F/UTP part #'s: Z6A-S(xx)
      2. Performance
         a. All 500 MHz CAT6A F/UTP information outlets designed for termination of 4-pair
            balanced twisted-pair CAT6A F/UTP copper cable must possess the following
            characteristics at the minimum:
            1) Exceed CAT6A F/UTP component compliance through the frequency range of 1 to
               250 MHz with usable bandwidth to 500 MHz.
      3. Features
         a. Provide full integration of cable shielding through the termination process of the outlet.
         b. Universal design allows the same outlet to be mounted in a flat or angled orientation.
            1) Intermountain standards require that all outlets be installed in the angled position.
         c. Be backwards compatible to allow lower performing categories of cables or connecting
            hardware to operate to their full capacity.
         d. Allow installation from the front or rear of the faceplate and allow for the jack to pass
            through the faceplate without re-termination.
         e. Have, as an option, an outlet, which can be mounted into an IEC 60603-7 compliant
            opening (keystone).
   B. FACEPLATES
      1. Part #:
         a. Refer to Appendix #8 for current approved part numbers
         b. Siemon part #’s: 10GMX Faceplates preferred. Three ports maximum per box.
            1) 10GMX-FPS-(02)-02 (2-port)
            2) MX-FP-S-03-02
a) Consult with Intermountain Healthcare for port count in (xx) field.

2. All faceplates installed, as part of this specification shall have these minimum features listed below:
   a. Be applicable to both fiber and copper applications.
   b. Allow module outlet/connectors to be removed from the front of the faceplate.
   c. Allow module outlet/connector to pass through faceplates even after termination.
   d. Have write on designation labels for circuit identification together with a clear plastic cover.
   e. Have optional modular furniture adapters available.
   f. Have surface mount boxes and standoff rings available for both single and double gang faceplates.
   g. Be manufactured using UV resistant, high impact thermoplastic to prevent color fading and provide additional durability.

PART 3 - EXECUTION

3.1 WORK AREA TERMINATION
   A. All balanced twisted-pair cables wired to the telecommunications outlet/connector, shall have 4-pairs terminated in eight-position modular outlets in the work area. All pairs shall be terminated.
   B. Outlet/connector back boxes shall be a minimum 4-11/16 square box (4-11/16” x 4-11/16” x 2 7/8”) for new construction to accommodate the CAT6A connectors. Existing back boxes will require a faceplate stand-off and/or a faceplate that can accommodate a bezel to extend the CAT6A jack out to allow the installation of the CAT6A connectors.
   C. The telecommunications outlet/connector shall be securely mounted at planned locations.
   D. The height of the telecommunications faceplates shall be to applicable codes and regulations.

3.2 PHYSICAL STRESS
   A. The maximum cable bend radii and pulling tensions shall not exceed manufacturer’s specifications.
      1. 4-Pair F/UTP, S/FTP bend radius = 4 times outside diameter of cable under no-load conditions. 8 times the outside diameter under load (pulling 110 N/25 lbf.) conditions.
   B. Multi-pair or Hybrid cable bend radius = 10 times the outside diameter under all conditions. Manufacturer pulling tensions shall be used.
      1. 2-Fiber and 4 Fiber cables bend radius = 25mm (1 in.) under no-load conditions. 50mm (2 in.) under load (pulling 222 N 50 lbf)

3.3 SLACK – SERVICE LOOP - ROUTING
   A. In the work area, a minimum of 300 mm (12 in) should be left for balanced twisted-pair cables, while 1 m (3 ft) be left for fiber cables.
   B. In telecommunications rooms a minimum of 3m (10 ft) of slack should be left for all cable types. This slack must be neatly managed on trays or other support types.

END OF SECTION
SECTION 27 16 19 – PATCH CABLES

PART 1 - GENERAL

1.1 SUMMARY

a. This section is issued as a guide for patch cable installations in the Data Center, wiring closets (TDR) and user areas where patch cables are required for connectivity to IP and TDM phones, and IP data connectivity needs for Intermountain Healthcare. All patch cables will support voice, data, and imaging applications within the Intermountain Healthcare Enterprise.

b. The integrity of the installed cabling plant must be insured by using matching and quality patch cables. All patch cables shall be included in the low voltage contract and will be required to match or exceed the existing level of the installed structured cabling system.

c. Factory Terminated patch cords are required. These use pneumatic termination tools ensuring consistent quality and are tested and guaranteed to be matched and tuned for performance within the specified category cabling channel.

d. Patch cables in data rooms (TDR) shall not be less than CAT6A F/UTP stranded.

PART 2 - PRODUCTS

2.1 APPROVED PRODUCT

A. Part #:

1. Siemon F/UTP part #: ZM6A-S (XX)-(XX)
   a. Color of cords are to match corresponding cable. Use 1st (xx) to Specify length. Use 2nd (xx) for color.

B. Performance

1. All Category 6A modular equipment cords shall conform to the following minimum performance standards:
   a. Be factory assembled and 100% transmission tested with laboratory grade network analyzers for proper performance up to 500MHz.
   b. Be augmented category 6 component compliant out to 250 MHz with operational bandwidth to 500 MHz.

C. Features

1. Be backwards compatible with lower performing categories
2. Be equipped with modular 8-position plugs on both ends, wired straight through with standards compliant wiring.
3. Have a boot that features an ultra slim design for high density applications and snag free operation.

PART 3 - EXECUTION

3.1 PALLETTE

A. Patch Cable Color Codes

1. The Intermountain Healthcare Enterprise standard for patch cable color is in Section 27 05 53.
2. The patch cable color shall match the feed cable color to identify the service provided.
3. Exception: Patch cables between devices at work stations optionally may be Black in color.

B. Patch Cord Labeling Requirements

1. Patch cords/Equipment cords shall be labeled the same as the Horizontal cable with a mechanically generated label within 300mm (12 in) of each end of the patch cord. Label configuration to be determined by Intermountain Healthcare.

C. Contractor furnished
1. The quantity of patch cords to be provided shall be specified in the plans.
   a. If not included, count 1 for each data jack, 1 for each closet port, 1 for each telephone set

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. The Primary Division 27 subcontractor shall be accountable to closely coordinate the Over Head Paging system with the General Contractor.
   1. Div 27 is accountable for including the cabling, equipment, and installation thereof in their work; based upon the project drawings.
   B. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
   C. Requirements of the following Division 26 Sections apply to this Section:
      1. Basic Electrical Requirements.
      2. Basic Electrical Materials and Methods.

1.2 ACCOUNTABILITY

1.3 SUMMARY
   A. This Section includes the installation of an overhead paging system that shall be accessible through the telephone system. It includes requirements for paging system components including, but not limited to, the following:
      1. Speaker systems.
      2. Wiring
   B. This section requires that rough-in materials for this section be provided by the Division 26 installer for installation under Division 26. Rough-in materials include but are not limited to conduit, junction boxes, alternative raceway, and device enclosures. Cable for this section is to be provided by the Division 27 installer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
   A. Manufacturers: Subject to compliance with requirements, provide products by one of the following (for each type of product) as listed in the drawings and these specifications:
      1. Atlas Sound
      2. Bogen
      3. Lowell
      4. Quam
      5. Peavey _ Architectural Acoustics
      6. TOA

2.2 SYSTEM REQUIREMENTS
   A. General: Provide complete and fully functional overhead paging systems using materials and equipment of types, sizes, ratings, and performances as indicated. Use materials and equipment that comply with referenced standards and manufacturers' standard design and construction in accordance with published product information. Coordinate the features of materials and equipment so they form an integrated system with components and interconnections matched for optimum performance of specified functions.

2.3 EQUIPMENT AND MATERIALS
   A. General: Provide all solid-state components fully rated for continuous duty at the ratings indicated or specified. Select equipment for normal operation on input power supplied at 105-130 V, 60 Hz.
   B. Loudspeakers shall be an 8” dual cone type with a 10-ounce, ceramic magnet. Power handling rating shall be 5 watts continuous with a sensitivity of 94 dB at 1 meter/1 watt and frequency response of +/- 5 dB from 80 to 15,000 Hz. The speaker shall have an impedance of 8 ohms and

245  Section 27 51 13
be equipped with a 70-volt matching transformer with power taps from 0.5 to 4 watts. Recessed ceiling mounted speaker assemblies shall mount on an Atlas Sound T720-8-A or similar baffle on a T95-8 series or similar enclosure.

**PART 3 - EXECUTION**

### 3.1 EXAMINATION

A. Examine conditions, with the Installer present, for compliance with requirements and other conditions affecting the performance of the Overhead Paging System work.

B. Do not proceed until unsatisfactory conditions have been corrected.

C. Verify compliance of the following items before beginning sound equipment installation.

1. No cables spliced except at standard barrier terminal blocks inside equipment cabinet.
2. Cables marked at each end with permanent wire labels such as Brady or equal.
3. Isolated ground run back to main electrical panel from paging equipment cabinet.
4. Specified conduit, cables, speaker enclosures and equipment cabinets are properly installed.

### 3.2 INSTALLATION

A. General: Install system in accordance with NFPA 70 and other applicable codes. Install equipment in accordance with manufacturer's written instructions.

B. Speakers:

1. Confirm polarity of speaker before installation and wire to maintain uniform polarity.
2. Mount transformers with screws securely to speaker brackets or enclosures.

3. Neatly mount speaker grilles, panels, connector plates, etc., tight, plumb, and square unless indicated otherwise on drawings.
4. Provide brackets, screws, adapters, springs, rack mounting kits, etc., recommended by manufacturer for correct assembly and installation of speaker assemblies and electronics components.
5. Identification:

   a. Legibly identify user operated system controls and system input/output jacks using engraved, permanently attached laminated plastic plates or imprinted Lexon labels. Label equipment and controls within equipment cabinet using similar labels or "Kroy" type labels.

C. Repairs: Wherever walls, ceilings, floors, or other building finishes are cut for installation, the contractor shall be responsible to repair, restore, and refinish to original appearance.

### 3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Services: Provide services of a factory authorized service representative to supervise the field assembly and connection of components and the pre-testing, testing, and adjustment of the system.

B. Pre-testing: Upon completing installation of the system, align, adjust, and balance the system and perform a complete pretest. Determine the conformance of the system to the requirements of the Drawings and Specifications. Correct deficiencies observed. Replace malfunctioning or damaged items with new, and retest until materials satisfactory performance and conditions are achieved.

### 3.4 COMMISSIONING

A. Occupancy Adjustments: When requested by the Architect or the Sound/Acoustical Consultant within one year of date of substantial completion, provide on-site assistance in adjusting sound levels, resetting matching transformer taps, and adjusting controls to suit actual occupied conditions. Provide two trips for this purpose.
3.5 CLEANING AND PROTECTION

A. Prior to final acceptance, clean system components and protect from damage and deterioration.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Refer to manufacturer’s Design and Installation Document.
PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
   B. Requirements of the following Division 26 Sections apply to this Section:
      1. Basic Electrical Requirements.
      2. Basic Electrical Materials and Methods.

1.2 SUMMARY
   A. This Section includes the installation of a complete distributed antenna system (DAS).
   B. This section requires that rough-in materials for this section be provided by the Division 26 installer for installation under Division 26. Rough-in materials include but are not limited to conduit, junction boxes, alternative raceway, and device enclosures. Cable for this section is to be provided by the DAS (Distributed Antenna System) installer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
   A. Manufacturers: Subject to compliance with requirements, provide products by:
      1. Zinwave
   B. Approved vendor & Installer
      1. Hunt Electric - 1863 W. Alexander Street | Salt Lake City, UT 84119 | phone 801.975.8844

2.2 SYSTEM REQUIREMENTS
   A. General: Provide complete and fully functional DAS system using materials and equipment of types, sizes, ratings, and performances as indicated. Use materials and equipment that comply with referenced standards and manufacturers' standard design and construction in accordance with published product information. Coordinate the features of materials and equipment so they form an integrated system with components and interconnections matched for optimum performance of specified functions.

2.3 EQUIPMENT AND MATERIALS
   A. General: Provide all solid-state components fully rated for continuous duty at the ratings indicated or specified. Select equipment for normal operation on input power supplied.
   B. A DAS Head End TDR should be planned.

C. Architecture
   1. Head End Equipment consists of
      a. Zinwave Hub(s) which is a modular chassis and holds capacity for 8 Remotes (fiber connections). Each Hub can serve as a Main Hub (with Carrier Interface) or as a Secondary Hub located in IDFs. It is 3U and consumes 56 Watts of 110Vac power, a fully loaded hub consumes 200 Watts. There are 8 ports in the front for fiber connectivity and 4 ports in the rear used for injecting RF Sources and in the capacity of the Secondary Hub to receive fiber connectivity from the Main Hub.
      b. Optical Modules- (Hot Swappable) are made to be inserted into the Hub and provides fiber connectivity to each remote or from the main hub to a secondary hub. When
connecting a Secondary Hub, the Optical Module is placed in the A Position of the 4 ports located in the rear of the Hub. Each module consumes 8 Watts of 110Vac.

c. Service Modules- (Hot Swappable) are for connecting RF Sources into the DAS and consist of 2 Female N Connectors. Each module consumes 20 Watt of 110Vac power. The Main Hub will hold up to 4 Service Modules.

d. Power Supply, Rack Mounted- produces 48Vdc through CAT5 part of Composite Cable to each remote. Each power supply will support up to 8 Remotes. Power Supply is 2U and consumes 43Watts of 110Vac.

1) The 48V power is a 2 U 19inch rack mount unit which will support up to 8 Optical Remote Units.

2) Each Remote Unit is connected via an RJ45 connector which will support a cable run of at least 200m of standard Cat5e cable.

2. Composite Cable for Zinwave DAS

a. This special cable is made for Hunt Electric and consists of a 6 Strand Single Mode Fiber with 2 CAT5 cables wrapped in a Plenum rated outer jacket that is brown in color. This cable connects the hub to each remote and will be terminated into LIU’s at each end. The CAT5 component provides the power connectivity to each remote and connects the Rack Mounted Power supply, collocated with the hub, to each Remote. This cable provides redundancy and is MIMO ready. Maximum Fiber loss per link is 5dBo typical link is 550M MMF (500Mhz.km@1300nm) and 2000M SMF.

3. Remote Location

a. Zinwave Remote is (11”x9”x3” 5lbs) and all connectivity (power and data) comes from the composite cable. The Remote has two antenna ports, one for TX and one for Rx. Horizontal separation of 20’ is required between antennas. This physical separation is the special sauce that allows the Zinwave to use any signal form 150Mhz-2700Mhz. There will be two Plenum Rated Cables (12-17’) from the Remote to each antenna. Located with the Remote will be a small 4 or 5 port box with connectivity for the Single Mode Fiber and CAT5 cable. Jumpers will connect this box to the Remote.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install system in accordance with NFPA 70 and other applicable codes. Install equipment in accordance with manufacturer’s written instructions, and UL, ETL, CSA and other applicable listings.

3.2 FIELD QUALITY CONTROL

A. Pre-testing: Upon completing installation of the system, align, adjust, and balance the system and perform a complete pretest. Determine the conformance of the system to the requirements of the Drawings and Specifications. Correct deficiencies observed. Replace malfunctioning or damaged items with new, and retest until materials satisfactory performance and conditions are achieved.

3.3 COMMISSIONING

A. Occupancy Adjustments: When requested by the Architect or the Electrical Consultant within one year of date of substantial completion, provide on-site assistance in adjusting levels to suit actual occupied conditions. Provide two trips for this purpose.

3.4 CLEANING AND PROTECTION

A. Prior to final acceptance, clean system components and protect from damage and deterioration.

END OF SECTION
DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

28 10 00 ELECTRONIC ACCESS CONTROL AND INTRUSION DETECTION
  ○ No specific requirements

28 16 00 ACCESS CONTROL SYSTEM
  ○ Where temperature tracking systems are used, owner is to follow the instructions below:
    ○ For current and future construction projects new buildings, the white glove delivery, scheduling and set up with Claflin or Supply Chain (Tammy, Kellen, and Adam), these refrigerators will remain under SCO’s scope of work.
    ○ These Med Refrigerators will need to be delivered to the clinics three weeks ahead of the building opening if to have them ready and set up for medications. This is the time these refrigerators need to be working and gives owner time to set up the Temp Trak system.
    ○ Owner needs to know at least six weeks before the clinic is open the number of Med Refrigerators that will be coming in, their size, location, and what is being put into them, ie: Vaccines, Flu, or meds, etc. to give SCO time to order the Temp Trak alarm equipment and get it set up into the system.
    ○ Owner will also need to have the IT set up so that the refrigerators can be data logging at least two weeks before opening a clinic if to have use of the refrigerators on time and before they can be used for Vaccines, Flu or meds, etc.

28 20 00 ELECTRONIC SURVEILLANCE
  ○ The building security system includes surveillance cameras that are IP devices and connect directly to the Intermountain data network
    ○ Cabling requirements and installation shall be in the scope of work of Division 27, however it requires close coordination with the contractors of both Divisions 26 (conduit and boxes) and 28 (surveillance devices and equipment)
    ○ This will include all conduit, cabling, and equipment that will be coordinated and compatible with any existing campus security systems. Card readers and entry devices will also be part of the security system scope of work. Card reader and camera locations will be identified by the owner.
    ○ Any cabling for IP card readers and entry devices connected to the Intermountain data network should be covered in the Division 27 scope of work.

28 30 00 ELECTRONIC DETECTION AND ALARM
  ○ The fully automated building fire alarm system needs to be annunciated in a location with any other security system panels at the phone switch board already on campus or at a continuously monitored location (24-hour manned nurse station, for example) within the facility.
  ○ All emergency lights, fire detection, and alarm systems are to be designed to be self-testing.

28 40 00 ELECTRONIC MONITORING AND CONTROL
  ○ No specific requirements
DIVISION 31 - EARTHWORK

31 10 00 SITE CLEARING
   - No specific requirements

31 20 00 EARTH MOVING
   - No specific requirements

31 30 00 EARTHWORK METHODS
   - No specific requirements

31 40 00 SHORING AND UNDERPINNING
   - No specific requirements

31 50 00 EXCAVATION SUPPORT AND PROTECTION
   - No specific requirements

31 60 00 SPECIAL FOUNDATIONS AND LOAD-BEARING ELEMENTS SURCHARGING
   - Care should be taken to recognize and appropriately schedule for any surcharging of the site soils that may be required.

31 70 00 TUNNELING AND MINING
   - No specific requirements
DIVISION 32 - EXTERIOR IMPROVEMENTS

32 10 00 BASES, BALLASTS, AND PAVING SITE PAVING
- Pavers used on the grounds should be level, easy to maintain, and durable.
- They should be a color that will not easily show staining and should weather well.
- ADA/ANSI considerations should be addressed where necessary.

RETAINING WALL SYSTEMS
- Proper structural support should be provided for retaining wall systems.
- Retaining walls will be identified and detailed on the structural drawings and located on the site civil drawings.

32 30 00 SITE IMPROVEMENT
- Low water-required native plants should be considered as part of the landscape design.
- City code regarding green space coverage should also be honored.
- Low-maintenance landscaping designed for all seasons is preferred.
- Fully grown tree height needs to be considered for those trees located in the direct flight path of helicopters.

32 70 00 WETLANDS
- No specific requirements

32 80 00 IRRIGATION
- Design team should review location of sprinkler heads in relation to the exterior site signage and the building itself.
- Care should be taken to avoid irrigation over-spray on signs and buildings.
- Drip irrigation with integral emitters such as Netafim piping should be considered in order to reduce water use.

32 90 00 PLANTING
- No specific requirements
DIVISION 33 - UTILITIES

33 10 00 WATER UTILITIES
  - No specific requirements

33 20 00 WELLS
  - No specific requirements

33 30 00 SANITARY SEWERAGE UTILITIES
  - No specific requirements

33 40 00 STORM DRAINAGE UTILITIES
  - Storm drainage basins shall be specified and designed to retain water underground in sumps as much as possible. Where basins allow retention of water above grade provide suitable rock fill and fabric underlayment to reduce growth of plant materials within the basin.

33 50 00 FUEL DISTRIBUTION UTILITIES
  - No specific requirements

33 60 00 HYDRONIC AND STEAM ENERGY UTILITIES
  - No specific requirements

33 70 00 ELECTRICAL UTILITIES
  - No specific requirements

33 80 00 COMMUNICATIONS UTILITIES
  - No specific requirements
DIVISION 34 - TRANSPORTATION

34 10 00 GUIDEWAYS / RAILWAYS
   - No specific requirements

34 20 00 TRACTION POWER
   - No specific requirements

34 40 00 TRANSPORTATION SIGNALING AND CONTROL EQUIPMENT
   - No specific requirements

34 50 00 TRANSPORTATION FARE COLLECTION EQUIPMENT
   - No specific requirements

34 70 00 TRANSPORTATION CONSTRUCTION AND EQUIPMENT
   - No specific requirements

34 80 00 BRIDGES
   - No specific requirements

34 90 00 HELIPAD
   - Helipads must meet all requirements set by the Federal Aviation Administration (FAA), and all designs must be submitted to the FAA for review and approval.
   - Please refer to the Design Guidelines for further information on helipads.
APPENDIX 01 – DEVIATION REQUEST PROCESS

PART 1 - GENERAL

1.1 DEFINITIONS

A. Cable Plant Deviation
   1. A business need to not fully comply with the requirements of the “Division 27 – Communications and Structured Cabling Specification document”

B. Cable Plant Deviation Request form.
   1. The document is available from the Facilities Planning team, the Data Center Ops team, or the Infrastructure Cabling team.
   2. Usage:
      a. The deviation request form shall be used if there is a business need to not comply with the requirements of the “Division 27 – Communications and Structured Cabling Specification document”
      b. The deviation request form should also be used to propose a change to that document. Always verify that you are using the current version of the Standard before requesting a modification.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and this Section is directly applicable to them, including but not limited to the listing found in Section 27 00 00.

C. Will soon be available in the IS service Catalog.

PART 2 - PROCESS

2.1 STANDARDS MODIFICATION

A. Check the box and explain why the standard should be modified.

2.2 ALTERNATE PRODUCT

A. The deviation form must be completed, submitted through channels, and approved prior to any deviation from the specifications. This includes issuing change orders.

2.3 AUTHORIZED SIGNATURES

A. Both the Standards Holder and the Operations Manager are required for a deviation to be valid.

2.4 DEVIATION REVIEW PROCESS STEPS

A. First be sure that there is an actual need. Then be certain that your manager, supervisor, or project manager agrees with the requested deviation. Be sure to state this or obtain their signature on the deviation form. By doing so you are confirming that your supervisor or project manager has approved.

B. The requestor will then complete sections 1, 2, and 3 of the deviation form.
1. The requestor should then digitally sign in the designated location at the end of Section 3. Do not write in the sections below 3.

C. Forward the saved copy of this form to the Standards Holder via email. If the word “Deviation” is the first word in the message subject line, we’ll try to give it high priority.
1. Mail to: melissa.lopez2@imail.org

D. The Standards Holder will then review and evaluate the request. The requestor should be prepared to provide plans, specifications, and competitive bids if requested. Any email threads or meeting discussions regarding the issue will be taken into consideration.

E. The Standards Holder will then cast an Approve or Deny vote and forward the request to the Operations Management for a decision.

F. When the decision has been made by the Operations Manager, the Standards Holder will then notify the requestor by returning the completed and signed form via email.

G. An approved deviation will have the final disposition button ‘Approved’ and be signed by at least 2 people. One will be from the Standards Holder, and the other from the Operations Director or above. Other signatures may be required for specific features and areas such as Safety, Security, Print, Medical group, etc.

PART 3 - EXECUTION

3.1 POST DECISION EXECUTION

A. Denied
1. If the requester is not satisfied with the decision, they may file an appeal with the I.S. Operations AVP, who will then escalate the issue to the appropriate business leaders as needed. The decision from the appeal is final.

B. Approved
1. If a deviation is approved for contracted material, labor, or method; the facilities project manager will arrange for fulfillment or contract adjustment as needed via appropriate contract channels such as change orders.

END OF SECTION
APPENDIX 02 – DOCUMENT REFRESH PROCESS

PART 1 - GENERAL
1.1 NOT USED

PART 2 - PRODUCTS
2.1 APPROVED PRODUCT
   A. The purpose of this section is to help ensure a current standards document.
   B. The product delivered will be a current revision or version of the Cable Plant Standards Document.
   C. All changes must be approved by Enterprise Infrastructure Cabling team.

PART 3 - EXECUTION
3.1 REVIEWS AND UPDATES
   A. Minor updates
      1. The Enterprise Infrastructure Cabling Manager will review the document at least quarterly.
         a. Changes that do not significantly affect scope of work, or contract pricing will be made, and the Rev number will be updated. (i.e. updated part numbers, etc.)
         b. Significant changes will be made and added to the Change Log for review and approval of the Plant Cabling Initiative Team.
            1) When approved, they will be submitted to the EARB for approval; and then implemented in the new Version.
   B. Major updates
      1. The Plant Cabling Initiative Team will review the entire document at least once every three years.
         a. This review will coincide with the release of new versions of NFPA70 (National Electrical Code) (2014, 2017, etc. - to be completed by the end of each designated year))
         b. The review will cover standards adjustments that may be deemed necessary and ensure compliance with applicable codes and standards.
      2. Upon completion of the reviews and updates, the standards document will be submitted for approval by the EARB.

END OF SECTION
## TIA-1179 Recommended Work Area Densities

<table>
<thead>
<tr>
<th>Environment</th>
<th>Function</th>
<th>Recommended Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Services</td>
<td>Patient Room, Nurses Stations</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Administration, Registration, Library</td>
<td>Med</td>
</tr>
<tr>
<td>Caregiver</td>
<td>Nurse Station</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Clean Utility, Nourishment, Charting, Workroom, Galley, Read Room</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Exam Room, Soiled Utility</td>
<td>Low</td>
</tr>
<tr>
<td>Diagnostic &amp; Treatment</td>
<td>MRL Simulation, Linear Accelerator, CT Scan &amp; control rooms, Procedure and Operating Rooms, Lab</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Fluoroscopy, Radiograph, X-Ray, Radiation Processing</td>
<td>Low</td>
</tr>
<tr>
<td>Surgery, Procedure, Operating Rooms</td>
<td>Intensive Care Rooms, Operating Room</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Anesthesia, Patient Prep, Holding and Recovery, Sterile and sub-sterile Zone</td>
<td>Medium</td>
</tr>
<tr>
<td>Emergency</td>
<td>Observation, Procedure Rooms</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Evaluation, Exam Rooms</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Ambulance Bay</td>
<td>Low</td>
</tr>
<tr>
<td>Critical Care</td>
<td>ICU, Neonatal ICU, Recovery</td>
<td>High</td>
</tr>
<tr>
<td>Ambulatory Care</td>
<td>Out-Patient Surgery Rooms</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Procedure Rooms, Mammography, Exam Rooms</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Biopsy, X-Ray, Patient Holding</td>
<td>Low</td>
</tr>
<tr>
<td>Women's Health/Maternity</td>
<td>Labor / Delivery Room, Infant Bass</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Nursery</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Ultrasound Lactation</td>
<td>Low</td>
</tr>
<tr>
<td>Service/Support</td>
<td>Anesthesia Area</td>
<td>High</td>
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<tr>
<td></td>
<td>Blood Bank Area, Pharmacy Area</td>
<td>Medium</td>
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<tr>
<td>Facilities</td>
<td>Security Office Command Center</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Fire Command</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Janitor, Electrical, Communication, Building Utility, Elevator Machine, Mechanical, Specialty Storage</td>
<td>Low</td>
</tr>
<tr>
<td>Operations</td>
<td>Admin, Conf Room, Food Service, Central Sterile</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>General, Cafeteria, Locker, Showers Laundry, Lounge, On Call Suite, Retail Areas, General Office Areas</td>
<td>Low</td>
</tr>
</tbody>
</table>

TIA-1179 Healthcare Facility Telecommunications Infrastructure Standard includes recommended telecommunication outlet/connector densities at the work areas for different healthcare environments. Within the various environments, the TIA-1179 recommended outlet density varies depending on the function performed at that location, as shown in the table below. TIA-1179 defines outlet/connector densities in ranges, which are significantly broader in scope than commercial cabling standards. Since adding outlets after initial construction can be complex and disruptive to a healthcare facility, the standard recommends that designers select a number between the midpoint and upper end of the range if no other guidance or direction is provided. The outlet density ranges are as follows:

- Low—2 to 6 outlets in each area
- Medium—6 to 14 outlets in each area
- High—greater than 14 outlets in each area

END OF SECTION
APPENDIX 04 – REFERENCE STANDARDS

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

A. Codes and Standards (Most recent editions with addenda/TSB, etc.) All materials, installation and workmanship shall meet or exceed the applicable requirements and standards addressed within the references listed below:

1. ANSI/TIA-568-C.0 and addenda” Generic Telecommunications Cabling for Customer Premises - Part 1: General Requirements”
2. ANSI/TIA-568-C.1 and addenda” Commercial Building Telecommunications Cabling Standard - Part 1: General Requirements
3. ANSI/TIA-568-C.2 and addenda” Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted-Pair”
5. ANSI/TIA/EIA-569-B and addenda” Commercial Building Standard for Telecommunications Pathways and Spaces”
6. ANSI/TIA/EIA-606-B-1 and addenda” Administration Standard for the Telecommunications Infrastructure of Commercial Buildings”
7. ANSI-J-STD-607-B and addenda” Commercial Building Grounding and Bonding Requirements for Telecommunications”
8. IEEE 803.3at PoE Plus and Next Gen PoE CFI March 2013 and IEEE P802.3ba latest draft revision and amendments.
11. ANSI/TIA/EIA-526-14A” Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant”
13. ANSI/TIA-942-A Data Center Standard Incorporate TIA-942 Addendum 1 (coaxial cables and E1, T1, E3, T3 circuit distances) - Incorporate TIA-942 Addendum 2 (RF interference, lighting levels, revised temperature & humidity, addition of Cat 6A, revised Tiering) and ONVIF 2.0 Profiling concept.
15. IEC/TR3 61000-5-2 - Ed. 1.0 and amendments “Electromagnetic compatibility (EMC) - Part 5: Installation and mitigation guidelines - Section 2: Earthing and cabling”
16. ISO/IEC 11801:2010 Ed2.0 and amendments” Information technology - Generic cabling for customer premises”
17. CENELEC EN 50173:2000 and amendments” Information Technology - Generic cabling systems”
18. AIA Guidelines for Hospital Telecommunication Facilities
19. Construction Specification Institute Master Format
20. BICSI: Comply with the most current editions of the following BICSI manuals:
   a. BICSI - Telecommunications Distribution Methods Manual
   c. BICSI – Network Design Reference Design Manual
21. Underwriters Laboratories (UL) Cable Certification and Follow-Up Program.
22. National Electrical Manufacturers Association (NEMA)
23. American Society for Testing Materials (ASTM)
26. Institute of Electrical and Electronic Engineers (IEEE)
27. UL Testing Bulletin
29. Local, county, state and federal regulations and codes in effect as of date of installation.
30. Equipment of foreign manufacture must meet U.S. codes and standards. It shall be indicated in the proposal the components that may be of foreign manufacture, if any, and the country of origin.

END OF SECTION
PART 1 - GENERAL

1.1 RELATED TERMS

A. Codes and Standards (Most recent editions with addenda/TSB, etc.) All materials, installation and workmanship shall meet or exceed the applicable requirements and standards addressed within the references listed below:

1. Basket Cable Tray: A fabricated structure consisting of wire mesh bottom and side rails.
3. CBC: Coupled Bonding Conductor
4. CFCl: Customer Furnished Customer Installed
5. Cable Run - A single cable to a single location
6. Cable Drop - Two cables to a single location
7. Cable Tri Drop - Three cables to a single location
8. CT Coupler A type of wall connector made by the Siemon Company
9. DCO: Data Center Operations
10. Div.1: Division 1 General and Performance Requirements
11. Div. 23: Division 23 Heating, Ventilating, and Air Conditioning
12. Div. 22: Division 22 Plumbing
13. Div. 26: Division 26 Electrical
14. Div. 27: Division 27 Communications and Audio Visual
15. Div. 28: Division 28 Electronic Safety and Security
16. E.E.: Electrical Engineer
17. EMI: Electromagnetic Interference
18. F/UTP: Foil over Unshielded Twisted Pair. Individual pairs are unshielded.
19. GC: General Contractor
20. GE: Ground Equalizer
21. Horizontal Cabling: The cable and connecting hardware utilized to transport communications signals
22. ICT: Infrastructure Cabling Team
23. IDF: Intermediate Distribution Frame (Horizontal Distribution)
24. LAN: Local Area Network
25. MDF: Main Distribution Frame
26. MDR: Main Distribution Room
27. N/A: Not Applicable
28. NIC: Not in Contract
29. OFCI: Owner Furnished Contractor Installed
30. OFOI: Owner Furnished Owner Installed
31. OTDR: Optical Time Domain Reflectometer
32. Outlet/Connectors: A connecting device in the work area on which horizontal cable or outlet cable terminates.
33. RCDD: Registered Communications Distribution Designer
34. RFI: Radio Frequency Interference
35. TBA or TBD: To Be Determined
36. TDR: Technology Distribution Room
37. TEC: Technology Equipment Center
38. TGB: Telecommunications Ground Bus Bar
39. TMBC: Telecommunications Main Bonding Conductor
40. TMGB: Telecommunications Main Grounding Bus Bar
41. TR: Telecommunications Room
42. TSER: Telecommunications Service Entrance Room
43. UTP: Unshielded Twisted Pair
44. Work Area: approx. 100 sq. ft. equipped for work station equipment

DCO = Data Center Operations - Boe.Sausedo@imail.org
ICT = Infrastructure Cabling Team – Melissa.lopez2@imail.org

END OF SECTION
APPENDIX 06 – MATERIAL SUPPLIERS

PART 1 - GENERAL

1.1  RELATED TERMS

A. Siemon Authorized Suppliers are listed below. To help prevent counterfeiting and support warranties, known, factory authorized distributors are recommended.

1. Approved Suppliers of Siemon cable, patch panels, jacks, and parts:

**Anixter**

Randi Whittaker

Inside Sales  
Main Phone: (801) 973-2121
3775 W. California Ave. Ste 400  
Fax: (801) 973-4472
Salt Lake City, UT 84104 US  
Email: randi.whittaker@anixter.com

Karl Bartlam

End User/Outside Sales  
Main Phone: (801) 973-2121
3775 W. California Ave. Ste 400  
Fax: (801) 973-4472
Salt Lake City, UT 84104 US  
Email: karl.bartlam@anixter.com

**Graybar Electric**

Elizabeth Vaughn

Inside Sales  
Main Phone: (801) 656-3016
2841 South 900 West  
Fax: (801) 973-4314
Salt Lake City, UT 84119 US  
Email: Elizabeth.Vaughn@graybar.com

Ben Bilanzich

Contractor Outside Sales  
Main Phone: (801) 656-3133
2841 South 900 West  
Fax: (801) 973-4314
Salt Lake City, UT 84119 US  
Email: Ben.Bilanzich@graybar.com

**WESCO / CSC**

Brian Walters

Inside Sales  
Main Phone: (801) 975-0600
3210 South 900 West  
Fax: (801) 907-4450
Salt Lake City, UT 84119 US  
Email: Bwalters@gosc.com
Adam Tueller
Contractor Outside Sales            Main Phone: (801) 975-0600
3210 South 900 West            Direct: (801) 618-6665
Salt Lake City, UT 84119 US            Email: Atueller@wesco.com

B. The Siemon Company is represented locally by: Rob_Long@siemon.com

END OF SECTION
APPENDIX 07 – SIEMON CERTIFIED INSTALLATION FIRMS

PART 1 - GENERAL

1.1 RELATED TERMS

A. NOTE: Cable installers have rigorous requirements to be certified for Siemon cables and products. Validation of certification is required prior to accepting a bid.

B. The firms selected to bid must be pre-approved by the local facility IT manager. Installation firms desiring to do work for Intermountain Healthcare must be selected from the official CI list below.

C. Current Siemon Approved/Certified Cable Installers for Siemon Network Cable. This list is up to date as of 2016-07-19.

1. **Orion Integration Group**: 8880 W. Barnes Street, Boise, ID 83709 / Phone 208 321 8000

2. **ACS Systems**: 925 North Main St. Meridian, ID 83642 / Phone 208 331 8554

3. **IES Commercial**: 1960 S. Milestone, Suite D, Salt Lake City, UT 84104
   a. Jason King – Branch Manager / Phone 801 975 8182 / Fax 385 242 7366 / Mobile 801 381 1508 // [Jason.King@iescomm.com](mailto:Jason.King@iescomm.com) / [www.iescomm.com](http://www.iescomm.com)
   b. Boyd Evans – Project Manager / Phone 801 975 8191 / Fax 385 242 7366 / Mobile 801 381 1518 // [Boyd.Evans@iescomm.com](mailto:Boyd.Evans@iescomm.com) / [www.iescomm.com](http://www.iescomm.com)

4. **Cache Valley Electric**: 1338 S. Gustin Rd., Salt Lake City, UT 84104
   a. Travis Grant – Acct. Manager / Phone 801 908 4170 / Fax 801 908 7401 / Mobile 801 870-7226 // Email: [Travis.Grant@cve.com](mailto:Travis.Grant@cve.com) / [www.cve.com](http://www.cve.com)
   b. Brad Readicker – Acct. Manager / Phone 801 908 2686 / Fax 801 908 7401 // [Brad.Readicker@cve.com](mailto:Brad.Readicker@cve.com) / [www.cve.com](http://www.cve.com)

5. **Data Tech Professionals**: 1199 S 520 W, Payson, UT 84651
   a. Jesse Pierce – President / Phone 801 960 2202 / Mobile 801 420 0463 / Email: [Jesse@datatechprofessionals.com](mailto:Jesse@datatechprofessionals.com) / [www.datatechprofessionals.com](http://www.datatechprofessionals.com)

6. **Data Plus**: 769 Middlegate Road, Henderson, NV 89118 / 702 795 3282

7. **Mojave Electric**: 3755 W. Hacienda Ave., Las Vegas, NV 89118 / Phone 702 798 2970

8. **The Morse Group**: 3874 Silvestri Lane, Las Vegas, NV 89120 / Phone 702 257 4400

END OF SECTION
APPENDIX 08 – LEAD WALL PENETRATIONS

PART 1 - GENERAL

1.1 RELATED TERMS

Procedure Name: New Port and Electrical Box Installation Lead Lined Walls

Document Detail Information: (This section must be completed in full.)

<table>
<thead>
<tr>
<th>Implements Policy:</th>
<th>Click here to enter policy title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Owner</td>
<td>Craig Allen, Safety Security</td>
</tr>
<tr>
<td></td>
<td>Environment Health Director,</td>
</tr>
<tr>
<td></td>
<td>Central Office</td>
</tr>
<tr>
<td></td>
<td>Jeremy Hawk Medical Physicist</td>
</tr>
<tr>
<td></td>
<td>Radiation Safety Coordinator</td>
</tr>
<tr>
<td>Content Consultant(s):</td>
<td>Jeremy Hawk, Radiation</td>
</tr>
<tr>
<td></td>
<td>Safety Office</td>
</tr>
<tr>
<td></td>
<td>Medical Physicist</td>
</tr>
<tr>
<td></td>
<td>Imaging</td>
</tr>
<tr>
<td></td>
<td>John Ellis, Facilities Management</td>
</tr>
<tr>
<td></td>
<td>Director, Central Office</td>
</tr>
<tr>
<td></td>
<td>Steve Kelly, System Project</td>
</tr>
<tr>
<td></td>
<td>Facility Design Manager, Planning</td>
</tr>
<tr>
<td></td>
<td>Wayne Welling, Cabling, IS</td>
</tr>
</tbody>
</table>

Date of Final Draft: 12/29/2015

Who Reviewed Content?

| Keywords (must have at least 3): | Searchable Keywords (e.g., PHI, EMTALA, Coding) |

1.2 PURPOSE

A. Maintain radiation safety controls in lead lined walls during installation of new power and data outlets in existing lead lined walls.
1.3 SCOPE
A. Intermountain Hospitals, Intermountain Clinics Medical Group

1.4 DEFINITIONS
A. Lead Lined Walls – Structural element designed to provide a barrier to block radiation penetrate beyond the designated space.

B. Maintenance Manager – The person responsible for plant maintenance operations or his or her delegate.

C. Radiation Safety Coordinator – The person responsible for Radiation Safety or his or her delegate. Medical Physicist.

D. Worker – The person responsible for completing work within the lead lined wall. This includes Intermountain employees as well as any outside supplier or contractor.

1.5 PROVISIONS
A. Prior to any work within a lead lined wall, the Worker reports to the Radiation Safety Coordinator, Maintenance Manager and completed a review of planned work “ACWP” Identification of specific description related to the lead lined wall planned work.

1. Intermountain workers, outside suppliers or contractors hired to work in any Intermountain facility must contact the Maintenance Manager and Radiation Safety Coordinator prior to beginning work to discuss the project and ensure that the planned work will not interfere with facility operations, maintenance, or other projects.

2. Failure to scheduled and complete the planning meeting described above may results in the delay or rescheduling of work. Outside suppliers or contractors are responsible for any costs incurred because of their failure to schedule and complete this meeting.

B. The Radiation Safety Coordinator, Maintenance Manager and the worker conduct a pre-work inspection of the areas in which work is to be performed. This inspection identified the following:

1. Areas of special concern or sensitivity, including those noted or described on the facility Life Safety records and drawings, and Radiation Safety records and drawings.

2. Appropriate areas or structures to use for support of any work, as applicable.

3. Existing deficiencies in Barriers.

4. The as act assemblies impacted by the work.

5. The type of shielding material acceptable in the area.
   a. Lead lined boxes.
   b. Lead lined wall “inside wall” installation and, or
   c. Lead shielding for wall installation of “outside wall” maintaining radiation safety barriers.

6. The exact condition of the areas upon completion of work.

C. Upon completion of the work and before closing the wall, the worker, Radiation Safety Coordinator and Maintenance Manager conduct a post-work inspection of the area in which the work was performed. This inspection verifies the following:
1. No tools, supplies or debris are left within the walls.
2. Lead lining is installed to maintain radiation safety protection according to regulatory requirements.
3. All work affecting radiation safety lead barriers has been properly sealed.
4. The overall condition of the area meets the expectation outline in the per-work inspection.

D. The Maintenance Manager and Radiation Safety Coordinator signs and logs the completed “ACWP”.

1.6 EXCEPTIONS
A. None.

1.7 PRIMARY SOURCES
A. List the regulatory references upon which the procedure is based (cite the code, the title and the statute).

1.8 SECONDARY MATERIALS
A. Radiation Safety Policy
B. Above Ceiling Work Permit
C. Lead lined wall requirements as defined by Radiation Safety Building Requirements
TYPICAL BACKING OF ELECTRICAL OR OTHER OPENINGS

END OF SECTION
PART 1 - GENERAL

1.1 RELATED SECTIONS

A. The installer shall be responsible to verify all calculations and capacities, and to ensure the proper part has been selected per plans and specifications.

B. This table is for convenience only. It is not the official specification.

PART 2 - NOT USED

PART 3 - EXECUTION

3.1 Capacity table

<table>
<thead>
<tr>
<th>Capacities for Structured Cabling</th>
<th>Cable dimensions:</th>
<th>Min bend</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cross-section</td>
<td>Diameter (&quot;&quot;) / term/pull</td>
</tr>
<tr>
<td>CAT5e</td>
<td>0.025</td>
<td>0.18 / .8”/1.5”</td>
</tr>
<tr>
<td>CAT6A F/UTP</td>
<td>0.066</td>
<td>0.29 / 2.0”/3.0”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conduit/Sleeve/J-hook fill:</th>
<th>Number of cables:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade size</td>
<td>Cross-section</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>0.196</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>0.442</td>
</tr>
<tr>
<td>1&quot;</td>
<td>0.785</td>
</tr>
<tr>
<td>2&quot;</td>
<td>3.14</td>
</tr>
<tr>
<td>3&quot;</td>
<td>7.07</td>
</tr>
<tr>
<td>4&quot;</td>
<td>12.56</td>
</tr>
</tbody>
</table>

| EZ-Path:                        |                   |
| 2" ("100% fill")               | 4                 | 1.3               | 52    | 19          |
| 3" ("100% fill")               | 9                 | 2.7               | 108   | 40          |
| 4" ("100% fill")               | 16                | 6.4               | 240   | 90          |

| Tray:                           |                   |
| 6" d x 6" w                     | 36                | 14.4" sq          | 550   | 150         |
| 6" d x 12" w                    | 72                | 28.8" sq          | 900   | 275         |

END OF APPENDIX 09
## 2. APPENDIX 10 - Low Voltage Installation Matrix – 2700 00

### PART 1 - GENERAL

1.1 RELATED SECTIONS

A. The written contract with the installer will govern actual responsibilities. Refer to the general and electrical contracts for details.

B. When the low voltage application is provided and installed by owner, the table below shall be followed.

C. Security Level (SEC LVL) legend at end of chart.

### PART 2 - GUIDELINE TABLE

<table>
<thead>
<tr>
<th>Application</th>
<th>Brief Description</th>
<th>Dept / Area</th>
<th>Customer Type</th>
<th>Usual Media</th>
<th>Installer</th>
<th>TEC</th>
<th>TDR</th>
<th>SEC LVL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network (LAN) / Wireless</td>
<td>Cabling for network data connectivity. PC's, Printers, Scanners, Network gear, servers, storage, BAS, misc net devices</td>
<td>Business, nursing, clinical</td>
<td>Business, Clinical</td>
<td>CATxx, fiber</td>
<td>Cabling, (CI)</td>
<td>Y</td>
<td>Y</td>
<td>IT</td>
</tr>
<tr>
<td>Telephone</td>
<td>Cabling for telephones: VOIP, TDM, Centrex, FAX, Modem, extending D-Marc's, T-1, etc.</td>
<td>Telecom</td>
<td>Clinical, Business, Guest</td>
<td>Riser, CATxx</td>
<td>Cabling</td>
<td>Y</td>
<td>Y</td>
<td>IT</td>
</tr>
<tr>
<td>Overhead Paging</td>
<td>Install wiring and speakers for overhead paging systems MAC work.</td>
<td>Telecom, CE</td>
<td>Business, Clinical, Safety</td>
<td>Jacketed pr, CATxx, multi-pair</td>
<td>Cabling</td>
<td>N</td>
<td>N</td>
<td>IT, VE</td>
</tr>
<tr>
<td>DAS</td>
<td>Distribution system for cell and other radio based services within a building.</td>
<td>Telecom, Business, Safety</td>
<td>Clinical, Business, Guest</td>
<td>COAX, Fiber</td>
<td>Radio by DAS, Cabling</td>
<td>Y</td>
<td>Y</td>
<td>IT, VE</td>
</tr>
<tr>
<td>Entertainment / TV</td>
<td>Cabling for television, music, digital signage (i.e. exterior signs and/or cafe menus and/or wayfinding, etc), and other entertainment or communications in areas other than patient treatment areas</td>
<td>Business, Guests</td>
<td>Business, Guests</td>
<td>2pr, COAX, custom</td>
<td>Cabling</td>
<td>N</td>
<td>N</td>
<td>EN, IT, VE</td>
</tr>
<tr>
<td>TeleHealth</td>
<td>Add, move network and related cables for various Telehealth systems as they develop</td>
<td>CE, Innovation Ctr</td>
<td>Clinical, Research</td>
<td>CATxx</td>
<td>Cabling, (CI)</td>
<td>Y</td>
<td>Y</td>
<td>IT</td>
</tr>
<tr>
<td>Infant / Pedes tracking</td>
<td>Patient and equipment RFID tracking systems</td>
<td>CE, Pedes, Nrsy, Maternity</td>
<td>Clinical, guest, Business, Safety</td>
<td>CATxx</td>
<td>Cabling, (CI)</td>
<td>Y</td>
<td>Y</td>
<td>IT, CE</td>
</tr>
<tr>
<td>Sortera Visi</td>
<td>Patient mobile physiological monitor</td>
<td>Clinical,</td>
<td>Clinical, Research</td>
<td>CATxx</td>
<td>Cabling, (CI)</td>
<td>N</td>
<td>N</td>
<td>IT, CE</td>
</tr>
<tr>
<td>Cerner / charting</td>
<td>EMR system, patient charting, decision support</td>
<td>Clinical, business, ancillary</td>
<td>Clinical</td>
<td>CATxx</td>
<td>Cabling</td>
<td>Y</td>
<td>Y</td>
<td>IT</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
<td>Departments</td>
<td>Cabling Size</td>
<td>Cabling</td>
<td>CE</td>
<td>IT</td>
<td>VE</td>
<td></td>
</tr>
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<td>--------------------------------</td>
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<td></td>
</tr>
<tr>
<td>Patient Monitoring</td>
<td>Install line for separate or combined telemetry / physiological monitoring antennas</td>
<td>Nursing, CE</td>
<td>Clinical</td>
<td>CATxx, COAX</td>
<td>Cabling, CE</td>
<td>Y</td>
<td>Y</td>
<td>CE, IT, VE</td>
</tr>
<tr>
<td>Nurse Call</td>
<td>Interconnection cables for beds, call buttons, emergency pulls, code blue switches, call indicators (dome lights/bells), and call masters</td>
<td>CE</td>
<td>Clinical</td>
<td>CATxx, 2pr</td>
<td>Nurse Call, Cabling</td>
<td>N</td>
<td>N</td>
<td>CE, VE</td>
</tr>
<tr>
<td>Patient Entertainment</td>
<td>Interconnection cabling between pillow speakers, TV's, DVD/VCR players for patient control in rooms and treatment areas</td>
<td>CE, Nursing</td>
<td>Patient Comfort</td>
<td>2pr. COAX, CATxx</td>
<td>Cabling, CE</td>
<td>N</td>
<td>N</td>
<td>CE</td>
</tr>
<tr>
<td>Clinical Engineering</td>
<td>Cabling and patches for various monitoring and activation systems, i.e. code blue, alert view, misc other systems as requested</td>
<td>CE</td>
<td>Clinical</td>
<td>various</td>
<td>CE, Cabling</td>
<td>Y</td>
<td>Y</td>
<td>CE, IT</td>
</tr>
<tr>
<td>IP Cameras</td>
<td>Install lines and back boxes for IP cameras</td>
<td>Safety and Security</td>
<td>Safety and Security</td>
<td>CATxx</td>
<td>Cabling, (CI)</td>
<td>Y</td>
<td>Y</td>
<td>SE, IT</td>
</tr>
<tr>
<td>Security</td>
<td>Install wiring and back boxes for various security items such as door cameras, releases, intercoms, door bells, panic buttons, dry contact alarms systems, entry alerts.</td>
<td>Safety and Security</td>
<td>Business and Safety</td>
<td>CATxx, Banana, multi-pair</td>
<td>Cabling, HW vendor</td>
<td>Y</td>
<td>Y</td>
<td>SE, IT</td>
</tr>
<tr>
<td>Access Control</td>
<td>Install wiring for door hardware vendor for access control devices and controllers; plus mag locks and releases</td>
<td>Safety and Security</td>
<td>Business and Safety</td>
<td>CATxx, Banana, multi-pair</td>
<td>Electrician, Cabling</td>
<td>Y</td>
<td>Y/N</td>
<td>SE, IT</td>
</tr>
<tr>
<td>BAS</td>
<td>Install monitor and control lines for BAS (building automation systems) including Johnson Controls, Siemens, Atkinson, and others</td>
<td>Eng</td>
<td>Plant</td>
<td>CATxx, 2pr</td>
<td>Building systems</td>
<td>Y</td>
<td>N</td>
<td>EN, VE, IT</td>
</tr>
<tr>
<td>Temp Trak</td>
<td>Specific point temperature monitoring, alarm, records</td>
<td>Clinical, food services</td>
<td>Clinical, guest, Business</td>
<td>CAT / Single pair</td>
<td>Eng / Electrician</td>
<td>N</td>
<td>N</td>
<td>EN</td>
</tr>
<tr>
<td>Fire Alarm</td>
<td>Wire interconnections for fire and smoke monitoring, alarm, annunciation, communications</td>
<td>Eng</td>
<td>Business and Safety</td>
<td>FA cable, pipe &amp; wire</td>
<td>Electrician</td>
<td>N</td>
<td>N</td>
<td>EN, VE</td>
</tr>
<tr>
<td>Embedded Pathways</td>
<td>Conduits, boxes, sleeves, and other pathways normally embedded in the building structure and/or finishes.</td>
<td>IT, CE, Eng, common spaces</td>
<td>IT, Communications</td>
<td>Conduits, boxes</td>
<td>Electrician</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Accessible Pathways</td>
<td>Cable tray, ladder, racks, J-hooks, other pathways that are accessible (i.e. above suspended ceilings.)</td>
<td>IT, CE, Eng, common spaces</td>
<td>IT, Communications</td>
<td>Cable tray, ladder, J-hook</td>
<td>Cabling, (CI)</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Misc IMG TBA</td>
<td>Various systems that are unique to IMG sites. To be listed</td>
<td>Clinical, IT</td>
<td>Clinical</td>
<td>TBA</td>
<td>TBA</td>
<td>NA</td>
<td>NA</td>
<td>IT</td>
</tr>
<tr>
<td>Application</td>
<td>Brief Description</td>
<td>Dept / Area</td>
<td>Customer Type</td>
<td>Usual Media</td>
<td>Installer</td>
<td>TEC</td>
<td>TDR</td>
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<td><strong>Security Level Legend</strong></td>
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<tr>
<td>Information Systems</td>
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<td>IT</td>
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<td>Safety &amp; Security</td>
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<td>SC</td>
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<td>Clinical Engineering</td>
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<td>CE</td>
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<tr>
<td>Plant Engineering</td>
<td></td>
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<td>EN</td>
<td></td>
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<tr>
<td>Escorted Vendor</td>
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<td></td>
<td>VE</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

END OF APPENDIX 10
PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Appendix 10 lists the various types of low voltage systems that are commonly installed in Data Centers (TEC), and Edge closets (TDR).

PART 2 - SUMMARY SPECIFICATIONS

2.1 Building Use

A. IMG Clinic or other free standing site
   1. Up to 300 data ports planned per TDM - OR - TEC / TSER combination

B. Hospital addition, or new facility
   1. Any site where there are over 300 data ports planned per TDM.
PART 3 - TYPICAL DRAWINGS

3.1 Building function

A. IMG CLINIC / Free standing site

1. Floor layout:
1. Rack equipment layout – sample – verify with DCO

<table>
<thead>
<tr>
<th>Rack 1</th>
<th>Rack 3</th>
<th>Rack 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>u42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>u41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>u40</td>
<td>50 Pair Riser Cable</td>
<td>GE DAS</td>
</tr>
<tr>
<td>u39</td>
<td>Blanking Panel</td>
<td></td>
</tr>
<tr>
<td>u38</td>
<td>Siemens 48 Port Panel</td>
<td></td>
</tr>
<tr>
<td>u37</td>
<td>Blanking Panel</td>
<td></td>
</tr>
<tr>
<td>u36</td>
<td>Siemens 48 Port Panel</td>
<td></td>
</tr>
<tr>
<td>u35</td>
<td>Blanking Panel</td>
<td></td>
</tr>
<tr>
<td>u34</td>
<td>Siemens 48 Port Panel</td>
<td></td>
</tr>
<tr>
<td>u33</td>
<td>Blanking Panel</td>
<td></td>
</tr>
<tr>
<td>u32</td>
<td>10&quot; Siemens 48 Port Panel</td>
<td>10&quot;</td>
</tr>
<tr>
<td>u31</td>
<td>CPI Blanking Panel</td>
<td>CPI</td>
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<tr>
<td>u30</td>
<td>Cable Siemens 48 Port Panel</td>
<td>Cable</td>
</tr>
<tr>
<td>u29</td>
<td>Mgr Blanking Panel</td>
<td>Mgr</td>
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<td>u28</td>
<td>Blanking Panel</td>
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<td>u27</td>
<td>Blanking Panel</td>
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<td>u26</td>
<td>Blanking Panel</td>
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<td>u24</td>
<td>Blanking Panel</td>
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<tr>
<td>u23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>u22</td>
<td>Panduit 4u Cable Manager</td>
<td>Panduit 4u Cable Manager</td>
</tr>
<tr>
<td>u21</td>
<td>Cable Manager</td>
<td></td>
</tr>
<tr>
<td>u20</td>
<td></td>
<td>Panduit 4u Cable Manager</td>
</tr>
</tbody>
</table>
B. HOSPITAL ADDITION / NEW FACILITY

1. Drawing below supports IT equipment and up to 700 ports (CAT6A F/UTP)
1. Typical rack layouts.
DOCUMENT CONTINUES UNDER SEPARATE COVER

– See PART 2 for design team only
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APPENDIX B

IMED CV CLINIC OWNER-PROVIDED
EQUIPMENT CUT SHEETS
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MG_IMC CV Clinic
Cover Sheet
2 gallon sharps disposal container with locking wall bracket. Red container, vertical drop lid, key lock. Provided at no charge with monthly service contract.
| Cardio-Vascular | Exam(15 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Exam(16 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Exam(17 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Exam(18 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Exam(19 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Exam(2 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Exam(20 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Exam(21 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Exam(3 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Exam(4 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Exam(5 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Exam(6 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Exam(7 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Exam(8 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Exam(9 of 21) | Project | Draft (New) | 1 |
| Cardio-Vascular | Infusion | Project | Draft (New) | 1 |
| Cardio-Vascular | Lab/Blood Draw (1 of 1) | Project | Draft (New) | 1 |
| Cardio-Vascular | Team Core 1 | Med Alcove(1 of 3) | Project | Draft (New) | 1 |
| Cardio-Vascular | Team Core 2 | Med Alcove(2 of 3) | Project | Draft (New) | 1 |
| Cardio-Vascular | Team Core 2 | Med Alcove(2 of 3) | Project | Draft (New) | 1 |
| Cardio-Vascular | Team Core 3 | Med Alcove(3 of 3) | Project | Draft (New) | 1 |
| Cardio-Vascular | Team Core 3 | Med Alcove(3 of 3) | Project | Draft (New) | 1 |
| Cardio-Vascular | Stress(1 of 3) | Project | Draft (New) | 1 |
| Cardio-Vascular | Stress(2 of 3) | Project | Draft (New) | 1 |
| Cardio-Vascular | Stress(3 of 3) | Project | Draft (New) | 1 |

**Total:** 37
Container Options

2, 3 & 4 Gallon Containers
Code # C-02RES-0203, C-03RES-0203, C-04RES-04
Our 2, 3 & 4 gallon containers are appropriate for patient rooms and medication areas where security and convenience are critical. The fill line and contents are readily visible through the container’s large window.

8 Gallon Container
Code # C-08-2004LR
For increased capacity, the 8 gallon container is utilized in intensive care, pharmacies, labs and the ER.

17 Gallon Container
Code # C-17
The 17 gallon container is appropriate for the OR, ER and labs where a higher volume of sharps waste is generated.
Cabinet, Bracket or Base Options

**Locking Wall Cabinet**
Code # OC-02-2004,
OC-03-2004, OC-04-2004
The locking wall cabinet allows a 2, 3 or 4 gallon container to be completely enclosed and secure. As an added safety feature, the key can not be removed unless the cabinet door is locked.

**Locking Wall Mount**
Code # 0203WMA
The locking wall bracket mounts to any vertical surface and accommodates the 2 or 3 gallon container.

**4 Gallon Locking Wire Wall Bracket**
Code # WB-04
An alternative offering to the Locking Wall Cabinet, the 4 gallon locking wire wall bracket is constructed of durable powder coated steel and can be utilized for areas with limited or obstructed wall space.

**Countertop Stability Base**
Code # 0203SB
To free up valuable wall space, our durable resin countertop stability base affixes a 2 or 3 gallon container to any flat, stable surface. The base can be attached to the surface with semi-permanent adhesive strips or screws.
## Product Codes

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
<th>Approximate Dimensions (Height x Depth x Width)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-02RES-0203</td>
<td>2 gallon container (red) with vertical drop lid</td>
<td>15.1&quot; x 4.73&quot; x 12.5&quot;</td>
</tr>
<tr>
<td>C-02RES-0203-OC</td>
<td>2 gallon container (red), vertical drop lid, outer cabinet (beige) and key</td>
<td></td>
</tr>
<tr>
<td>OC-02-2004</td>
<td>2 gallon outer cabinet only (beige)</td>
<td>15.5&quot; x 5.59&quot; x 14.5&quot;</td>
</tr>
<tr>
<td>C-03RES-0203</td>
<td>3 gallon container (red) with vertical drop lid</td>
<td>21.1&quot; x 4.73&quot; x 12.5&quot;</td>
</tr>
<tr>
<td>C-03RES-0203-OC</td>
<td>3 gallon container (red), vertical drop lid, outer cabinet (beige) and key</td>
<td>21.5&quot; x 5.59&quot; x 14.5&quot;</td>
</tr>
<tr>
<td>OC-03-2004</td>
<td>3 gallon outer cabinet only (beige)</td>
<td>19.25&quot; x 5.59&quot; x 14.5&quot;</td>
</tr>
<tr>
<td>0203LIDX</td>
<td>2 &amp; 3 gallon vertical drop lid</td>
<td>4.75 x 4.73&quot; x 12.5&quot;</td>
</tr>
<tr>
<td>0203WMA</td>
<td>2 &amp; 3 gallon locking wall mount (beige) and key</td>
<td>2.75&quot; x 5.75&quot; x 13&quot;</td>
</tr>
<tr>
<td>0203SB</td>
<td>2 &amp; 3 gallon countertop stability base (beige)</td>
<td>4.25&quot; x 7.01&quot; x 11.99&quot;</td>
</tr>
<tr>
<td>0203LIDX</td>
<td>4 gallon vertical drop lid</td>
<td>4.78&quot; x 6.85&quot; x 12.25&quot;</td>
</tr>
<tr>
<td>04HORZ-2007</td>
<td>4 gallon horizontal drop lid</td>
<td>4.78&quot; x 6.85&quot; x 12.25&quot;</td>
</tr>
<tr>
<td>C-04RES-04</td>
<td>4 gallon container (red) with vertical drop lid</td>
<td>21.25&quot; x 6.75&quot; x 11.75&quot;</td>
</tr>
<tr>
<td>C-04RES-04HORZ</td>
<td>4 gallon container (red) with horizontal drop lid</td>
<td>21.25&quot; x 6.75&quot; x 11.75&quot;</td>
</tr>
<tr>
<td>C-04RES-04-OC</td>
<td>4 gallon container (red), vertical drop lid, outer cabinet (beige) and key</td>
<td>21.81&quot; x 7.47&quot; x 14.5&quot;</td>
</tr>
<tr>
<td>C-04RES-04HORZ-OC</td>
<td>4 gallon container (red), horizontal drop lid, outer cabinet (beige) and key</td>
<td>21.81&quot; x 7.47&quot; x 14.5&quot;</td>
</tr>
<tr>
<td>OC-04-2004</td>
<td>4 gallon outer cabinet only (beige)</td>
<td>19.25&quot; x 7.47&quot; x 14.5&quot;</td>
</tr>
<tr>
<td>WB-04</td>
<td>4 gallon locking wire wall bracket (red) and key</td>
<td>7.12&quot; x 7.75&quot; x 13.62&quot;</td>
</tr>
<tr>
<td>C-08-2004LR</td>
<td>8 gallon container only (red)</td>
<td>19.7&quot; x 12.95&quot; x 11.25&quot;</td>
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<tr>
<td>08FT-2004</td>
<td>8 gallon funnel top lid</td>
<td>1.25&quot; x 11.25&quot; x 11.25&quot;</td>
</tr>
<tr>
<td>08TT-2004</td>
<td>8 gallon trap top lid</td>
<td>1&quot; x 11.25&quot; x 11.25&quot;</td>
</tr>
<tr>
<td>WB-08</td>
<td>8 gallon wire wall bracket (red)</td>
<td>21.5&quot; x 13.25&quot; x 14&quot;</td>
</tr>
<tr>
<td>D-08</td>
<td>8 gallon wire dolly (red)</td>
<td>23&quot; x 13&quot; x 13.5&quot;</td>
</tr>
<tr>
<td>DWS-08</td>
<td>8 gallon wire step-on dolly (red)</td>
<td>23&quot; x 16.5&quot; x 14.25&quot;</td>
</tr>
<tr>
<td>C-17</td>
<td>17 gallon container only (red)</td>
<td>24.75&quot; x 17.5&quot; x 13.25&quot;</td>
</tr>
<tr>
<td>L-17</td>
<td>17 gallon transport lid (black)</td>
<td>17.25&quot; x 12.62&quot;</td>
</tr>
<tr>
<td>L2-17</td>
<td>17 gallon 2 part slide top lid (black)</td>
<td>17.25&quot; x 12.62&quot;</td>
</tr>
<tr>
<td>LH-17</td>
<td>17 gallon hamper top lid (black)</td>
<td>17.25&quot; x 12.62&quot;</td>
</tr>
<tr>
<td>DWS-17</td>
<td>17 gallon wire step-on dolly (red) for 2 part slide top lid</td>
<td>29.75&quot; x 22.5&quot; x 14.5&quot;</td>
</tr>
<tr>
<td>DWSH-17</td>
<td>17 gallon wire step-on dolly (red) for hamper top lid</td>
<td>29.75&quot; x 22.5&quot; x 14.5&quot;</td>
</tr>
<tr>
<td>D-17</td>
<td>17 gallon black dolly (black)</td>
<td>9.75&quot; x 19&quot; x 14.25&quot;</td>
</tr>
</tbody>
</table>

There is good reason thousands of healthcare providers turn to Stericycle Bio Systems. We seek to protect people and reduce risk. Whether you’re a small or a large medical facility, a research facility, pharmaceutical or biotechnology facility, we can tailor our Stericycle Bio Systems Sharps Management Program to meet your sharps disposal needs.

**Stericycle Bio Systems – Experts in Sharps Management**

(888) 9-SHARPS

9 7 4 - 2 7 7 7

28161 N. Keith Drive
Lake Forest, IL 60045

www.stericycle.com
Vital Signs monitor with roll stand. NBP, Pulse Oximetry, Welch Allyn Predictive Temperature and Recorder. Features color LED touch screen, 2D barcode scanner, time-sync with hospital or network clock. Stores up to 800 patient records. LAN/Serial data export in HL7 format. Optional internal wireless WiFi.

Arch Sig: Yes
Arch Code: 2-Movable, Elect
Custom Code: Unassigned
Furnish Install: O/O

Spatially Sig: No
ADA: No
Antimicrobial: No
Type: Medical
Green: No

Width: 21.00 in (533 mm)
Depth: 21.00 in (533 mm)
Height: 42.75 in (1086 mm)
Max Weight: 25 lbs (11.3 kg)
Mounting: Floor-Mobile
Left: N/A
Right: N/A
Front: N/A
Back: N/A
Top: N/A
Bottom: N/A

Volts: 120
Hz: 60
Amps: 0.6
Phases: Single
BTU/hr: N/A
Emer. Power: No
Ded. Circuit: No
Watts: 72
Plug Type: Type B (NEMA 5-15)

Water - Cold: No
Gasses: No
Water - Hot: No
Drain: No
Water - Treated: No
Steam: No
Tech Connect: Yes
Vacuum - Dental / Medical: No / No

Seismic: No
Pre-approval: No

Uses Lithium ion smart battery, electrical requirements are for battery charging.

Optional wireless internal WiFi 802.11 a/b/g
Taking vital signs to the next level

Philips SureSigns VS4

Expand vital signs monitoring with the Philips SureSigns VS4. Respond to changing patient conditions by having the versatility to choose between frequent vitals mode and spot check mode within the same device. Simplify clinician workflow with an intuitive touch-screen interface and tools like QuickCapture and QuickCheck. QuickAlerts – SureSigns single parameter Early Warning Scoring (EWS) feature – supports caregivers in activating your hospital’s Rapid Response Team (RRT). The VS4 is simple to use and works easily with your existing network. It provides you with peace of mind and flexibility – all in a package that’s as easy to love as it is to use.

Key features

- **Touch screen** – color LED backlit screen
- **Internal WiFi** – 802.11 a/b/g option
- **Temperature Choices:** Predictive, tympanic, or temporal
- **QuickCheck:**
  - Caregiver authentication at the bedside
  - Patient record validation at the bedside
  - Patient record review before export to EHR
- **QuickCapture:**
  - Customize up to 20 observations and assessments entries
- **QuickAlerts:**
  - Supports Hospital Rapid Response Team
- **Ease-of-use enhancements for your IT, network informatics teams, and your caregivers**
- **2D barcode scanner accessory:** Programmable to support consistent and accurate patient ID entry
- **Time-sync with hospital or network clock**
- **Battery management,** including a clearly visible icon to show unit is plugged in and charging
- **Confirmation of exported records** easily seen in green
- **One-touch NBP on/off button**
- **Stores up to 800 patient records**
- **Uses same supplies as all Philips monitors**
- **Choice of Philips FAST-based or Masimo SET® SpO₂**
- **Microstream® etCO₂ option with Integrated Pulmonary Index (IPI)**
- **QuickNBP:**
  - For fast NBP measurements
- **Exergen TemporalScanner™ Thermometer:**
  - Accurate temperature with a gentle forehead scan
  - Cost savings of 90% over other thermometry methods
Make the most of patient monitoring

**Philips SpO₂ technology** includes a FAST-based SpO₂ algorithm and is compatible with a wide variety of adult, pediatric, and neonatal sensors.

- **AC power input** with power cord clip
- **Sturdy handle** and rugged housing for easy portability
- **Lithium ion battery**
- **USB port** for easy software upgrades and data export
- **Nurse call output**
- **LAN/Serial data export** in HL7 format

**Product Specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Width, Height, Depth</strong></td>
<td>W: 26cm (10.2in), H: 22cm (8.6in), D: 14.5cm (5.7in)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>3.6kg (8lb) – excluding optional recorder</td>
</tr>
<tr>
<td><strong>Screen</strong></td>
<td>21.3cm (8.4in) SVGA TFT-AM LCD display, 800 active pixels/line. Resolution: 600 active lines per frame. Viewing angle ±60 degrees</td>
</tr>
<tr>
<td><strong>NBP</strong></td>
<td>• Oscillometric using stepwise deflation pressure</td>
</tr>
<tr>
<td></td>
<td>– NBP interval choices</td>
</tr>
<tr>
<td></td>
<td>– Adult measurement range:</td>
</tr>
<tr>
<td></td>
<td>– Systolic: 30 – 270mmHg (4.0 – 36.0kPa)</td>
</tr>
<tr>
<td></td>
<td>– Diastolic: 10 – 245mmHg (1.3 – 32.7kPa)</td>
</tr>
<tr>
<td></td>
<td>– MAP: 20 – 225mmHg (2.7 – 34.0kPa)</td>
</tr>
<tr>
<td></td>
<td>– Pediatric measurement range:</td>
</tr>
<tr>
<td></td>
<td>– Systolic: 30 – 180mmHg (4.0 – 24.0kPa)</td>
</tr>
<tr>
<td></td>
<td>– Diastolic: 10 – 150mmHg (1.3 – 20.0kPa)</td>
</tr>
<tr>
<td></td>
<td>– MAP: 20 – 160mmHg (2.7 – 21.3kPa)</td>
</tr>
<tr>
<td></td>
<td>– Neonatal measurement range:</td>
</tr>
<tr>
<td></td>
<td>– Systolic: 30 – 130mmHg (4.0 – 17.0kPa)</td>
</tr>
<tr>
<td></td>
<td>– Diastolic: 10 – 100mmHg (1.3 – 13.3kPa)</td>
</tr>
<tr>
<td></td>
<td>– MAP: 20 – 120mmHg (2.7 – 16.0kPa)</td>
</tr>
<tr>
<td></td>
<td>– The NBP measurement has an accuracy over the ranges listed for the values:</td>
</tr>
<tr>
<td></td>
<td>– Maximum standard deviation: 8mmHg</td>
</tr>
<tr>
<td></td>
<td>– Maximum mean error: ±3mmHg</td>
</tr>
<tr>
<td></td>
<td>– Subsequent Cuff Inflation (in NBP Interval mode only):</td>
</tr>
<tr>
<td></td>
<td>– The subsequent inflation pressure is determined automatically depending on the previous measurement and patient type</td>
</tr>
<tr>
<td><strong>CO₂</strong></td>
<td>• Measurement range: 0mmHg – 150mmHg</td>
</tr>
<tr>
<td></td>
<td>• Total response time for adults: 3.9 seconds</td>
</tr>
<tr>
<td></td>
<td>• Accuracy: 0mmHg – 38mmHg: ±2mmHg</td>
</tr>
<tr>
<td></td>
<td>• 39 mmHg – 150mmHg: ±(5% of reading + 0.08% for every 1mmHg above 38mmHg)</td>
</tr>
<tr>
<td></td>
<td>• Respiration rate range: 1 – 150bpm</td>
</tr>
<tr>
<td></td>
<td>• Respiration accuracy: ±1rpm in the range of 0 – 70rpm, ±2rpm in the range of 71 – 120rpm, ±3rpm in the range of 121 – 150rpm.</td>
</tr>
</tbody>
</table>

**Also Available**

<table>
<thead>
<tr>
<th>Item</th>
<th>To Order</th>
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</thead>
<tbody>
<tr>
<td>SureSigns premium rollstand</td>
<td>989803176601</td>
</tr>
<tr>
<td>SureSigns standard rollstand</td>
<td>989803144001&lt;br&gt;21&quot; Base Diameter w/ 34&quot; Post</td>
</tr>
<tr>
<td>Wall mount</td>
<td>989803144011</td>
</tr>
<tr>
<td>2D barcode scanner</td>
<td>989803147821</td>
</tr>
<tr>
<td>2D barcode scanner holder</td>
<td>989803191611</td>
</tr>
<tr>
<td>HS-1 2D barcode scanner</td>
<td>989803176611</td>
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<tr>
<td>HS-1 barcode scanner roll-stand insert</td>
<td>989803184701</td>
</tr>
<tr>
<td>Serial interface adapter</td>
<td>989803159601</td>
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<tr>
<td>Wireless upgrade kit</td>
<td>989803181201</td>
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<tr>
<td>Tympanic temperature upgrade kit</td>
<td>863293</td>
</tr>
<tr>
<td>Predictive temperature upgrade kit</td>
<td>863294</td>
</tr>
</tbody>
</table>

Premium rollstand includes an easy-to-clean molded basket that can swivel for easy positioning in tight spaces, and dedicated sections for accessories such as a barcode scanner, cleaning wipes, NBP cuffs, extra disposable temperature covers, and the SpO₂ sensor.
### Ordering Information

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>863283</td>
<td>NBP, FAST-based SpO₂</td>
</tr>
<tr>
<td>A01</td>
<td>SpO₂ and NBP accessories included</td>
</tr>
<tr>
<td>A02</td>
<td>No accessories</td>
</tr>
</tbody>
</table>

#### Temperature

- **Welch Allyn Predictive**
  - Modes: predictive and monitored
  - Probe sites: oral, rectal or axillary
  - Range: 26.7 – 43.3°C (80 – 110°F)
  - Accuracy: ±0.1°C (±0.2°F) in monitoring mode

- **Covidien Tympanic**
  - Equivalency modes: ear (no adjustment), oral, core, and rectal (adjusted from ear)
  - Range: 33 – 42.0°C (91.4 – 107.6°F)
  - Accuracy (overall range): ±0.2°C (±0.4°F)
  - Measurement response time: ≤52 seconds

- **Exergen Temporal**
  - Temperature range: 16 – 43°C (60.8 – 109.4°F)
  - Accuracy: 0.1°C or 0.2F
  - Response time: approximately 1 second

#### Battery

- Lithium ion: 10.8 – 11.1V (with a “202” form factor)
- Operating time: four hours with NBP every 15 minutes

#### Data Output

- HL7 format, via Ethernet port
- Serial data

#### Patient Type

- Adult, pediatric, neonatal

---

Masimo is a registered trademark of Masimo Corporation
Microstream is a registered trademark of Oridion Medical Ltd.
Welch Allyn is a registered trademark of Welch Allyn Corporation
Covidien is a registered trademark of Covidien GA and COVIDIEN
Exergen is a registered trademark of Exergen Corporation
All other trademarks are property of their respective owner

*SureSigns VS4 has tested compatible with Cisco Compatible Extensions, Version 4. Go to www.cisco.com/go/compatibledisclaimer for complete disclaimer.*
**General Product Detail**

| Arch Sig: Yes | Spatially Sig: No |
| Arch Code: 2-Movable, Elect | ADA: Yes |
| Custom Code: Unassigned | Antimicrobial: No |
| Furnish Install: O/O | Type: Non-Medical |
| Green: No |

**Physical Requirements**

| Width: 24.00 in (610 mm) | Left: 3.00 in (76 mm) |
| Depth: 12.88 in (327 mm) | Right: 3.00 in (76 mm) |
| Height: 12.13 in (308 mm) | Front: N/A |
| Max Weight: 29 lbs (13.2 kg) | Back: 1.00 in (25 mm) |
| Mounting: Counter/Cart/Table/Pole | Top: 3.00 in (76 mm) |
| | Bottom: N/A |

**Product and Project Item Notes**

**Specification:**
Depth with Door Open = 31 7/8 in.

**Structural:**

**Electrical:**

| Volts: 120 | Watts: 1300 |
| Hz: 60 | Amps: 11.5 |
| Phase: Single | BTU/hr: N/A |
| KVA: | Ded. Circuit: No |
| Emer. Power: No | Plug Type: Type B (NEMA 5-15) |

**Utility and Technology Requirements**

| Water - Cold: No | Gasses: No |
| Water - Hot: No | Drain: No |
| Water - Treated: No | Steam: No |
| Vent: No | Vacuum - Dental / Medical: No / No |
| Tech Connect: No |

**Structural Requirements**

| Seismic: No | Pre-approval: |

**Location**

<table>
<thead>
<tr>
<th>Department</th>
<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardio-Vascular</td>
<td>Break Room (1 of 1)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total: 2
PEM31DF
GE Profile™ Series 1.1 Cu. Ft. Microwave Oven

Dimensions and Installation Information (in inches)

<table>
<thead>
<tr>
<th>Exterior Dimensions* (in inches)</th>
<th>W x H x D</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 x 12-1/8 x 12-7/8</td>
<td></td>
</tr>
</tbody>
</table>

*Height includes feet. Depth does not include handle and excludes receptacle plug, + 1/2"-3/4".

Optional Accessory Trim Kits for GE Microwave Ovens
For a custom built-in appearance, these kits allows built-in installation of the countertop microwave oven into a wall or cabinet alone, and is U. L. approved for installation over a GE single electric wall oven. These kits should not be installed over a gas wall oven.

<table>
<thead>
<tr>
<th>Accessory trim kit</th>
<th>“Z”</th>
<th>Max height</th>
<th>Trim kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>27” Deluxe</td>
<td>26-7/8”</td>
<td>16-1/2”</td>
<td>JX827DFWW/BB</td>
</tr>
<tr>
<td>30” Deluxe</td>
<td>29-7/8”</td>
<td>16-1/2”</td>
<td>JX830DFWW/BB</td>
</tr>
</tbody>
</table>

Installation Information: This information is not intended to be used for installing unit described. Before installing, consult installation instructions packed with product for current dimensional data.

Note: Undercabinet Installation
Install countertop microwave ovens in just a few easy steps with the mounting template, which provides all the necessary measurements. Installation may vary depending on cabinets. These microwave ovens can be installed on practically any wood or metal cabinets.

Note: 120V, 60-cycle, grounded power receptacle location optional on back within cabinet opening.

Not to be used over a thermal oven.
Undercabinet mounting kit Pub. No. JXA019K for Spacemaker II microwave oven models available at additional cost.

For answers to your Monogram®, Cafe™ Series or Profile™ Series appliance questions, visit our website at geappliances.com or call GE Answer Center® service, 800.626.2000.
PEM31DF
GE Profile™ Series 1.1 Cu. Ft. Microwave Oven

Features and Benefits
• 1.1 cu. ft. capacity - 800 Watts (IEC-705 test procedure)
• Sensor cooking controls - Automatically adjusts time and power
• Optional built-in trim kit - Custom appearance and built-in convenience
• Optional hanging kit - Frees up counter space
• Weight and time defrost - Simply enter the weight of the food, and the oven automatically sets the optimal defrosting time and power level or set your desired time or defrosting
• Turntable on/off - Controls turntable operation
• Control lockout - Helps prevent accidental activation
• Add 30 seconds - Add 30 seconds of microwave cooking time
• Kitchen timer - Minute timer helps keep you on track
• Timer on/off - Minute timer helps keep you on track
• Model PEM31DFWW – White
• Model PEM31DFCC – Bisque
• Model PEM31DFBB – Black
Pharmacy refrigerator with one glass door. 115V electrical. 20.2 cu. ft. capacity, 6 Roll-Out baskets. Temperature range 2°C to 10°C. Temperature controller with Alarm/Monitor features LED digital display, programmable operating temperature range, single temperature probe, programmable high and low temperature alarms with visual and audible indicators. Side-wall access port with interior and exterior plugs. Access port located in top of cabinet for external monitoring probe(s). Dual, swivel locking casters, key lock and dry contact alarm connections. Bacteria-resistant powder coated interior, exterior and door handle. ENERGY STAR Certified. Right hinge standard, list price will change if optional left hinge ordered. Left hinge must be specified at time of purchase (hinge change must be done at time of manufacturing).

<table>
<thead>
<tr>
<th>General Product Detail</th>
<th>Electrical Requirements</th>
<th>Utility and Technology Requirements</th>
<th>Structural Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arch Sig: Yes</td>
<td>Volts: 115</td>
<td>Water - Cold: No</td>
<td>Seismic: Yes</td>
</tr>
<tr>
<td>Arch Code: 2-Movable, Elect</td>
<td>Watts: 863</td>
<td>Water - Hot: No</td>
<td>Pre-approval:</td>
</tr>
<tr>
<td>Custom Code: Unassigned</td>
<td>Hz: 60</td>
<td>Water - Treated: No</td>
<td></td>
</tr>
<tr>
<td>Furnish Install: O/O</td>
<td>Amps: 7.5</td>
<td>Vent: No</td>
<td></td>
</tr>
<tr>
<td>Type: Medical</td>
<td>Phase: Single</td>
<td>Vacuum - Dental / Medical: No / No</td>
<td></td>
</tr>
<tr>
<td>Antimicrobial: Yes</td>
<td>BTU/hr: N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADA: No</td>
<td>KVA: Ded. Circuit: Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spatially Sig: No</td>
<td>Emer. Power: Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADA: No</td>
<td>Plug Type: Type B (NEMA 5-15)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Physical Requirements
- Width: 29.50 in (749 mm)
- Depth: 32.50 in (826 mm)
- Height: 78.75 in (2000 mm)
- Max Weight: 522 lbs (236.8 kg)
- Mounting: Floor
- Left: N/A
- Right: N/A
- Front: N/A
- Back: 3.00 in (76 mm)
- Top: 8.00 in (203 mm)
- Bottom: N/A

Product and Project Item Notes
- Specification: Dimensions include door handle, electrical panel, and evaporation tray.
- Requires 15 amp dedicated ground circuit.

<table>
<thead>
<tr>
<th>Location</th>
<th>Department</th>
<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardio-Vascular</td>
<td>Medication</td>
<td></td>
<td></td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Total: 1
# Model
## Horizon Series™ HPR120 Upright Pharmacy Refrigerator

## Specifications
### Application, Rating and Electrical Data
<table>
<thead>
<tr>
<th>Application</th>
<th>Storage of medical and scientific products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Volume</td>
<td>20.2 cu ft (572 L)</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>2° to 10°C</td>
</tr>
<tr>
<td>Electrical Power</td>
<td>115V 60Hz, 230V 50Hz, 230V 60Hz</td>
</tr>
<tr>
<td>Maximum Current</td>
<td>7.5 FLA / 4.2 FLA / 4.2 FLA</td>
</tr>
<tr>
<td>Building Supply Rating</td>
<td>15 amp dedicated ground circuit</td>
</tr>
<tr>
<td>Power Plug / Power Cord Length</td>
<td>NEMA 5-15 hospital grade plug (115V)</td>
</tr>
<tr>
<td></td>
<td>CEE 7/7 plug (230V 50Hz)</td>
</tr>
<tr>
<td></td>
<td>NEMA 6-15 hospital grade plug (230V 60Hz)</td>
</tr>
<tr>
<td></td>
<td>8-10 ft (2439-3048 mm)</td>
</tr>
<tr>
<td>Certification / Agency Listing</td>
<td>QPS (Certified to UL and CSA Standards)</td>
</tr>
<tr>
<td></td>
<td>ENERGY STAR® Certified</td>
</tr>
<tr>
<td>Indoor/Outdoor Use</td>
<td>Indoor use only</td>
</tr>
<tr>
<td>Application Environment</td>
<td>Non-corrosive, non-flammable, non-explosive, 15°C to 32°C (59°F to 90°F)</td>
</tr>
</tbody>
</table>

### Refrigeration System
| Refrigeration System       | Forced-air circulation                    |
|                           | .33 HP hermetic / 1                       |
| Condenser Type / Number    | Air-cooled fin and tube / 1               |
| Expansion Device           | Cap tube                                  |
| Evaporator Type            | Air-cooled fin and tube                   |
| Defrost Method             | Automatic                                 |
| Refrigerant Charge         | R134A Non-CFC                             |

### Performance Data
| Uniformity                | +/-1°C at 4°C Setpoint                    |

### Warranty
| Rel.i™ (US/Canada)       | 5 years compressor, 2 years parts, 1 year labor |
| Outside US/Canada        | Consult your local representative          |

### Controller
| Interface                | LED digital display, °C or °F              |
| Power Switch             | On/Off - All Circuit breaker - 230V only  |
| Controller Type          | Microprocessor-based controller with alarm/monitor |
| Security                 | Lockable door, optional keypad access      |
| Control Sensor           | RTD                                       |
| High / Low Alarms        | Fully adjustable                          |
| Door Ajar Alarm          | Yes                                       |
| Power Failure Alarm      | Yes                                       |
| Min/Max Display and Reset | Yes                                       |
| Battery Back-up          | 9-volt non-rechargeable                    |

### Dimensions and Construction
| Interior (w x h x d)     | 24.75 x 58.25 x 24.25 in 629 x 1480 x 616 mm |
| Exterior (w x h x d)     | 29.5 x 78.75 x 29.5 in 750 x 2001 x 750 mm   |
| Overall Exterior (w x h x d) | 29.5 x 78.75 x 32.5 in 750 x 2001 x 826 mm |
| Insulation               | Minimum of 2” (51mm) non-CFC foamed urethane insulation |
| Exterior / Interior Finish | Bacteria-resistant powder coating           |
| Doors                    | 1, Dual-pane glass                         |
| Access Ports             | Sidewall with interior and exterior plugs  |
|                          | Top for external monitoring probe(s)       |
| Interior Storage / Capacity | 1 epoxy coated shelf 22 x 23 in (559 x 585 mm) |
|                          | 6 epoxy coated baskets 21 x 21.25 in (534 x 540 mm) |
|                          | 100 lb (46 kg) max capacity / shelf or basket |
| Lighting                 | Adjustable LED on/off switch              |
| Casters                  | Standard / swivel locking                  |
| Integrated Access Control | Optional - Electromagnetic lock via digital keypad |
| Net Weight               | 522 lb (237 kg)                            |
| Shipping Weight          | 615 lb (279 kg)                            |
| Clearance Requirements   | Minimum of 8” (203mm) above and 3” (76mm) behind unit |
| Options / Accessories    | Chart Recorder, Floor & Wall Bracket Kit, Remote Alarms, Leveling Feet, Stainless Steel Interior, Remote Lock Adapter Kit, Extended Warranty |
Door Handles and Adapters for Omnicell® FlexLock

Special accessories are available for facilities that install the Omnicell FlexLock on Helmer upright refrigerators, undercounter refrigerators, and undercounter freezers.

**FlexLock Compatible Door Handles (Upright Models)**

The door handle features a cutout and spacer which enable the FlexLock to wrap around the front and side of the door.

- Available for single door upright refrigerators
  - 11, 20, 25, and 26.5 cu ft (326, 572, 714 and 750 l)
- Compatible with glass and solid doors
- Factory or field installation

**FlexLock Adapter Kit (Undercounter Models)**

The adapter kit includes an extension bar that mounts to the door of the unit, allowing the FlexLock to be properly installed.

- Adapter kits available for undercounter refrigerators and freezers (5 cu ft / 142 l)
- Compatible with glass and solid doors; powder coated and stainless steel exteriors
- Factory installed or field installation kits available

### Description

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Omnicell FlexLock Adapter Kit</strong>, Factory installed, 5 cf (142 l) (for UC Refrigerators and Freezers)</td>
</tr>
<tr>
<td><strong>Omnicell FlexLock Compatible Door Handle</strong>, Factory installed, 11 cf (326 l)</td>
</tr>
<tr>
<td><strong>Omnicell FlexLock Compatible Door Handle</strong>, Factory installed, 20, 25 and 26.5 cf (572, 714 and 750 l)</td>
</tr>
<tr>
<td><strong>Omnicell FlexLock Adapter Kit</strong>, Field installation, 5 cf (142 l) (for UC Refrigerators and Freezers)</td>
</tr>
<tr>
<td><strong>Omnicell FlexLock Compatible Door Handle</strong>, Field installation, 11 cf (326 l)</td>
</tr>
<tr>
<td><strong>Omnicell FlexLock Compatible Door Handle</strong>, Field installation, 20, 25 and 26.5 cf (572, 714 and 750 l)</td>
</tr>
</tbody>
</table>

Note: Adapter kits and compatible door handles do not include the medication dispensing lock.

**Cut-out of Door Handle for Upright Refrigerators**

Upright Omnicell® FlexLock Compatible Door Handle

Undercounter Adapter
(Shown with Omnicell® FlexLock)

www.helmerinc.com | 800.743.5637
Intermountain Healthcare
MG_IMC CV Clinic
Specification Coversheet

Description: Scale, Clinical, Adult, Digital, Floor
Manufacturer: Health o Meter (708) 377-0600
Vendor: CME
Model: 500KGAD Eye Level Digital Scale w/ Power Adapter

Adult clinical digital floor scale. 200 kg. capacity. Features low platform, 0.1 kg resolution, LCD display, EMR connectivity via USB, 2-wheels, calculates body mass index (BMI) and with built-in height rod provides height measurements from 30 to 84.25 (inches). Functions: BMI, zero, tare, hold/release, auto zero, auto off, parent/child weighing function. Includes 6 AA batteries and adapter ADPT31. Optional Pelstar wireless technology.

General Product Detail

<table>
<thead>
<tr>
<th>Arch Sig</th>
<th>Spatially Sig</th>
<th>Arch Code</th>
<th>ADA</th>
<th>Custom Code</th>
<th>Antimicrobial</th>
<th>Furnish Install</th>
<th>Type</th>
<th>Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>2-Movable, Elect</td>
<td>No</td>
<td>Unassigned</td>
<td>No</td>
<td>O/O</td>
<td>Medical</td>
<td>No</td>
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</table>

Electrical Requirements

<table>
<thead>
<tr>
<th>Volts</th>
<th>Watts</th>
<th>Hz</th>
<th>Amps</th>
<th>BTU/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>24</td>
<td>60</td>
<td>0.2</td>
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Utility and Technology Requirements

<table>
<thead>
<tr>
<th>Water - Cold</th>
<th>Gasses</th>
<th>Water - Hot</th>
<th>Drain</th>
<th>Water - Treated</th>
<th>Steam</th>
<th>Vent</th>
<th>Vacuum - Dental / Medical</th>
<th>Tech Connect</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
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</tr>
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</table>

Structural Requirements

<table>
<thead>
<tr>
<th>Seismic</th>
<th>Pre-approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Structural:

Electrical:

Plumbing:

Mechanical:

Location

<table>
<thead>
<tr>
<th>Department</th>
<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardio-Vascular</td>
<td></td>
<td>Standing Scale Alcove(1 of 4)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Cardio-Vascular</td>
<td></td>
<td>Standing Scale Alcove(2 of 4)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td></td>
<td>Standing Scale Alcove(3 of 4)</td>
<td>Project</td>
<td>Draft (New)</td>
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<td></td>
</tr>
<tr>
<td>Cardio-Vascular</td>
<td></td>
<td>Standing Scale Alcove(4 of 4)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Total: 4
Built-in Height Rod
The easy-to-use height rod provides height measurements from 30" to 84 ¼" / 76 cm - 214 cm

EMR Connectivity
Scale has the ability to interface with a computer, EMR software or other electronic device via various Health o meter® Professional Connectivity Solutions

Value-Added Features
Operating functions (BMI, Zero, Tare, Hold/Release, Auto Zero, Auto Off, Parent / Child Weighing Function) included at no additional cost

Low Profile Platform
Low platform height requires only minimal step up, offering patient a more comfortable and stable weighing experience

Advantages

Built-in Height Rod
The easy-to-use height rod provides height measurements from 30" to 84 ¼" / 76 cm - 214 cm

Calculates Body Mass Index (BMI)
Scale functions include the ability to calculate the patient’s BMI

The #1 selling physician scale in North America is also available in kilograms only. With a built-in height rod, the scale enhances workflow by measuring weight and height and calculating Body Mass Index without moving the patient.

See reverse side for additional specifications
Specifications

- Capacity: 220 kg
- Resolution: 0.1 kg
- EMR connectivity via USB, optional Pelstar wireless technology
- 1”/ 25 mm, LCD display
- Functions: BMI, Zero, Tare, Hold / Release, Auto Zero, Auto Off, Parent / Child Weighing Function
- Platform Size (w x d x h):
  13 ¾” x 16 ½” x 2 ¾” / 349 mm x 419 mm x 60 mm
- Product footprint (w x d x h):
  14 ⅝” x 21 ⅞” x 53 ¾” / 359 mm x 537 mm x 1362 mm
- Product weight: 21 lb / 9 kg
- Height rod: 30” - 84 ¼” / 76 cm - 214 cm
- Height rod graduation: ¼” / 1 mm
- 2 wheels for ease of movement
- 6 AA batteries included, optional 120V adapter (order # ADPT31)
- 2 year limited warranty

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>500KGAD</td>
<td>500KG with adapter ADPT31 included</td>
</tr>
<tr>
<td>SS-500KL</td>
<td>ScaleSurance 2 year extended warranty for 500 models*</td>
</tr>
<tr>
<td>ADPT31</td>
<td>Optional 120V adapter</td>
</tr>
<tr>
<td>PLUGSET30</td>
<td>Plug adapters for use outside North America</td>
</tr>
<tr>
<td>PELSTARONE-P</td>
<td>Wireless thermal printer</td>
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</tbody>
</table>

* Not available in all countries
**Intermountain Healthcare**

**MG IMC CV Clinic**

**Specification Coversheet**

- **Description:** Scale, Clinical, Adult, Wheelchair
- **Manufacturer:** Health o Meter ((708) 377-0600)
- **Vendor:** CME
- **Model:** 2600KG Digital Wheelchair Scale KG-Only

Digital wheelchair scale KG-Only. Features 454 kg capacity, Resolution: 0.1 kg, 1 1/2” High Contrast Color TFT-LCD screen with on-screen help menu, platform with casters and wheels for mobility, ramp and platform fold for storage, EMR connectivity. Functions: BMI, zero, tare, hold/release, recall, reweigh, auto zero, auto off, time/date, variable auto off time, audible/mute sound option. includes one ramp that attaches to either side for left or right access. 32.25in.D x 36in.W x 2.50in.H platform. Optional second ramp available. Battery powered with 6 D batteries (not included) or 100-240V adapter (included). 2 year warranty, Eligible for ScaleSurance 2 year extended warranty.

<table>
<thead>
<tr>
<th>General Product Detail</th>
<th>Electrical Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arch Sig: No</td>
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</tr>
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<td>KVA:</td>
</tr>
<tr>
<td></td>
<td>Ded. Circuit: No</td>
</tr>
<tr>
<td></td>
<td>Emer. Power: No</td>
</tr>
<tr>
<td></td>
<td>Plug Type: Type B (NEMA 5-15)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width: 48.25 in (1226 mm)</td>
</tr>
<tr>
<td>Depth: 49.50 in (1257 mm)</td>
</tr>
<tr>
<td>Height: 44.00 in (1118 mm)</td>
</tr>
<tr>
<td>Max Weight: 93 lbs (42.2 kg)</td>
</tr>
<tr>
<td>Mounting: Floor</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Utility and Technology Requirements</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Water - Treated: No</td>
</tr>
<tr>
<td>Vent: No</td>
</tr>
<tr>
<td>Tech Connect: No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Structural Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seismic: No</td>
</tr>
<tr>
<td>Pre-approval:</td>
</tr>
</tbody>
</table>

**Product and Project Item Notes**

- **Specification:**
  - Power Source: 100-240V adapter included, 6 D batteries (not included).
- **Structural:**
- **Electrical:**
- **Plumbing:**
- **Mechanical:**

**Location**

<table>
<thead>
<tr>
<th>Department</th>
<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
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<tbody>
<tr>
<td>Cardio-Vascular</td>
<td></td>
<td>WheelChair Scale Alcove</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Total:** 1
Advantages

- **EMR Connectivity**
  Scale interfaces with a computer, EMR software or other electronic device via various Health o meter® Professional Connectivity Solutions

- **Calculates Body Mass Index (BMI)**
  Scale functions include the ability to calculate the patient’s BMI

- **Versatile Platform**
  Wide and low profile platform accommodates wheelchairs and also provides a comfortable weighing experience for bariatric patients

- **Interactive Display**
  High-contrast color screen provides a user-friendly interface

- **Casters and Folding Ramps for Easy Portability and Storage**
  4 wheels including 2 casters afford ease of movement and the folding ramps make it simple to store

- **On-Screen Help Menu**
  Guides users through operating functions and provides easy access to multiple settings

- **Value-Added Features**
  Operating functions (BMI, Zero, Tare, Pre-tare, Hold/Release, Reweigh, Recall, Auto Zero, Auto Off, Time/Date, Variable Auto Off Time, Audible/Mute Sound Option) included at no additional cost
## Specifications

- **Capacity:** 454 kg
- **Resolution:** 0.1 kg
- **Platform Size** (w x h x d):
  - 36" x 32 ¼" x 2 ½" / 914 mm x 819 mm x 64 mm
- **Ramp Size** (w x d):
  - 32 ¼" x 9 ¾" / 819 mm x 248 mm
- **Product Footprint 2600KG/2600KG-BT** (w x h x d):
  - 48 ¼" x 43 ¾" x 49 ¾" / 1222 mm x 1114 mm x 1254 mm
- **Product Footprint 2610KG/2610KG-BT** (w x h x d):
  - 56 ¾" x 43 ½" x 49 ¾" / 1441 mm x 1114 mm x 1254 mm
- **Product Weight 2600KG/2600KG-BT:** 93 lb / 42 kg
- **Product Weight 2610KG/2610KG-BT:** 98 lb / 44 kg
- **Display:** 1 ½" / 38 mm High-Contrast Color TFT-LCD Screen
- **Wheels:** 4 (2 casters)
- **Power Source:** 100-240V adapter included, 6 D batteries (not included)
- **Connectivity:** USB, optional Pelstar wireless technology
- **Functions:** BMI, Zero, Tare, Pre-tare, Hold/Release, Reweigh, Recall, Auto Zero, Auto Off, Time/Date, Variable Auto Off Time, Audible/Mute Sound Option
- **2 year limited warranty**

### Model & Description

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2600KG</td>
<td>Digital wheelchair ramp scale, kilograms only</td>
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<tr>
<td>2600KG-BT</td>
<td>2600KG with Pelstar wireless technology</td>
</tr>
<tr>
<td>2610KG</td>
<td>Digital wheelchair with dual ramps, kilograms only</td>
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<tr>
<td>2610KG-BT</td>
<td>2610KG with Pelstar wireless technology</td>
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<tr>
<td>SS-2600KL</td>
<td>ScaleSurance 2 year extended warranty for 2600KG &amp; 2600KG-BT*</td>
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<tr>
<td>SS-2610KL</td>
<td>ScaleSurance 2 year extended warranty for 2610KG &amp; 2610KG-BT*</td>
</tr>
<tr>
<td>ADPT30</td>
<td>Adapter included, item # for replacement or spare</td>
</tr>
<tr>
<td>PLUGSET30</td>
<td>Plug adapters for use outside North America</td>
</tr>
<tr>
<td>B2600RAMP</td>
<td>Optional secondary ramp for 2600KG &amp; 2600KG-BT</td>
</tr>
<tr>
<td>PELSTARONE-P</td>
<td>Wireless thermal printer</td>
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*Not available in all countries*
## General Product Detail

<table>
<thead>
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<tr>
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<td>Custom Code</td>
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<td>Antimicrobial</td>
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<tr>
<td>Furnish Install</td>
<td>O/O</td>
</tr>
<tr>
<td>Type</td>
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## Electrical Requirements

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<td>Amps</td>
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<tr>
<td>Phase</td>
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</tr>
<tr>
<td>BTU/hr</td>
<td>N/A</td>
</tr>
<tr>
<td>KVA</td>
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<tr>
<td>Ded. Circuit</td>
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<td>Emer. Power</td>
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<td>Plug Type</td>
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## Utility and Technology Requirements

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<td>Gasses</td>
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<td>Water - Hot</td>
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<td>Drain</td>
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<td>Water - Treated</td>
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<tr>
<td>Steam</td>
<td>No</td>
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<tr>
<td>Vent</td>
<td>No</td>
</tr>
<tr>
<td>Vacuum - Dental / Medical</td>
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<tr>
<td>Tech Connect</td>
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## Structural Requirements

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## Physical Requirements

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<td>Depth</td>
<td>14.50 in (368 mm)</td>
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<td>Max Weight</td>
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<td>Mounting</td>
<td>Floor</td>
</tr>
<tr>
<td>Left</td>
<td>N/A</td>
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<tr>
<td>Right</td>
<td>N/A</td>
</tr>
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<td>Front</td>
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<td>Back</td>
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<tr>
<td>Top</td>
<td>N/A</td>
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## Product and Project Item Notes

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<th>Room#</th>
<th>Room</th>
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<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
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<tbody>
<tr>
<td>Cardio-Vascular</td>
<td>Office(1 of 9)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardio-Vascular</td>
<td>Office(2 of 9)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
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<td></td>
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<tr>
<td>Cardio-Vascular</td>
<td>Office(3 of 9)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Office(4 of 9)</td>
<td>Project</td>
<td>Draft (New)</td>
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<td></td>
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<tr>
<td>Cardio-Vascular</td>
<td>Office(5 of 9)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
<td></td>
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<tr>
<td>Cardio-Vascular</td>
<td>Office(6 of 9)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Office(7 of 9)</td>
<td>Project</td>
<td>Draft (New)</td>
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<td></td>
<td></td>
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<td>Cardio-Vascular</td>
<td>Office(8 of 9)</td>
<td>Project</td>
<td>Draft (New)</td>
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<td>Office(9 of 9)</td>
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<td>Reading Room(2 of 2)</td>
<td>Project</td>
<td>Draft (New)</td>
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<td>Cardio-Vascular</td>
<td>Shared Office(1 of 1)</td>
<td>Project</td>
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<tr>
<td>Cardio-Vascular</td>
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<td>Cardio-Vascular</td>
<td>Shared Workroom(2 of 4)</td>
<td>Project</td>
<td>Draft (New)</td>
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<td></td>
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<td>Project Type</td>
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<td>Count</td>
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<tr>
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<td>Shared Workroom (3 of 4)</td>
<td>Draft (New)</td>
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<td>Cardio-Vascular</td>
<td>Shared Workroom (4 of 4)</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Team Space (1 of 3)</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Team Space (2 of 3)</td>
<td>Draft (New)</td>
<td>8</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Team Space (3 of 3)</td>
<td>Draft (New)</td>
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<td><strong>Total:</strong></td>
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<td><strong>75</strong></td>
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</table>
2956 Wastebasket, Medium

Space-efficient and economical.

- Fits under standard desk height even when swing top is fully extended.
- All-plastic construction won't chip, rust or dent.
- Rolled rims add strength, and are easy to clean.

### AVAILABLE COLORS

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<thead>
<tr>
<th>Order #</th>
<th>Color</th>
<th>Product UPC/UCC Code</th>
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<td>FG295600</td>
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<td>FG295600</td>
<td>BLA</td>
<td>086876018837 / 10086876018834</td>
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<td>FG295600</td>
<td>BEIG</td>
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Gray
GRAY

Black
BLA

Beige
BEIG

### SPECIFICATIONS

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<th></th>
<th>U.S.</th>
<th>Metric</th>
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<tr>
<td>Length:</td>
<td>14.4 in</td>
<td>36.5 cm</td>
</tr>
<tr>
<td>Width:</td>
<td>10.2 in</td>
<td>26.0 cm</td>
</tr>
<tr>
<td>Height:</td>
<td>15.0 in</td>
<td>38.1 cm</td>
</tr>
<tr>
<td>Volume Capacity [Nom]:</td>
<td>28 1/8 qt</td>
<td>26.6 L</td>
</tr>
<tr>
<td>Volume Capacity [Max]:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carton Cube:</td>
<td>2.84 ft³</td>
<td>0.08 m³</td>
</tr>
<tr>
<td>Ship Weight/Carton:</td>
<td>22 1/2 lb</td>
<td>10.21 kg</td>
</tr>
</tbody>
</table>

Pack Quantity: 12
Cartons Per Pallet: 16
Material: LLDPE
Process: Injection Molding

### ADDITIONAL INFORMATION:

- Frequently Asked Questions

### Products in Deskside Wastebaskets and Tops

<table>
<thead>
<tr>
<th>Item #</th>
<th>Description</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
<th>Volume Capacity</th>
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</thead>
<tbody>
<tr>
<td>2950-73</td>
<td>Wastebasket Recycling Side Bin</td>
<td>10.6 in</td>
<td>7.25 in</td>
<td>11.5 in</td>
<td>8 1/8 qt</td>
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<tr>
<td>2952</td>
<td>Wastebasket, Vanity</td>
<td>9.9 in</td>
<td>6.75 in</td>
<td>10.1 in</td>
<td>8 1/8 qt</td>
</tr>
<tr>
<td>2955</td>
<td>Wastebasket, Small</td>
<td>11.4 in</td>
<td>8.25 in</td>
<td>12.1 in</td>
<td>13 5/8 qt</td>
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<tr>
<td>2956</td>
<td>Wastebasket, Medium</td>
<td>14.4 in</td>
<td>10.25 in</td>
<td>15.0 in</td>
<td>28 1/8 qt</td>
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<tr>
<td>2957</td>
<td>Wastebasket, Large</td>
<td>15.2 in</td>
<td>11.00 in</td>
<td>19.9 in</td>
<td>41 1/4 qt</td>
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<td>3071-20</td>
<td>Untouchable® Top/Soft Wastebasket Combo: 3067 Lid/2957 Wastebasket</td>
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<tr>
<td>3066</td>
<td>Untouchable® Top for 2956 Container</td>
<td>15.0 in</td>
<td>10.88 in</td>
<td>6.0 in</td>
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</tr>
<tr>
<td>3067</td>
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### Accessories for Wastebasket, Medium (2956):

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<th>Description</th>
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<th>Height</th>
<th>Volume Capacity</th>
<th>Width</th>
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<tbody>
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<td>10.88 in</td>
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### Consumables/Replacement Parts for 2956

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<th>Fits</th>
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<tr>
<td>5062-88</td>
<td>2952, 2955, 2956</td>
<td>Linear Low Density Can Liners</td>
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## General Product Detail

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<tr>
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<th>Arch Code:</th>
<th>ADA:</th>
<th>Custom Code:</th>
<th>Antimicrobial:</th>
<th>Furnish Install:</th>
<th>Type:</th>
<th>Green:</th>
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<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>3-Movable, Non-Elect</td>
<td>No</td>
<td>Unassigned</td>
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<td>O/O</td>
<td>Non-Medical</td>
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## Physical Requirements

<table>
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<th>Depth:</th>
<th>Height:</th>
<th>Max Weight:</th>
<th>Mounting:</th>
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<tr>
<td>11.00 in (279 mm)</td>
<td>15.25 in (387 mm)</td>
<td>20.00 in (508 mm)</td>
<td>2 lbs (0.9 kg)</td>
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<table>
<thead>
<tr>
<th>Left:</th>
<th>Right:</th>
<th>Front:</th>
<th>Back:</th>
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<td>N/A</td>
<td>N/A</td>
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## Product and Project Item Notes

### Specification:
- Cardio-Vascular
- Echo/EKG/PV(1 of 6)
- Project
- Draft (New)
- Qty: 1

### Electrical Requirements

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<th>Watts:</th>
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## Utility and Technology Requirements

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<tr>
<th>Water - Cold:</th>
<th>Gasses:</th>
<th>Water - Hot:</th>
<th>Drain:</th>
<th>Water - Treated:</th>
<th>Steam:</th>
<th>Vent:</th>
<th>Vacuum - Dental / Medical:</th>
<th>Tech Connect:</th>
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<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<td>No</td>
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## Structural Requirements

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<th>Pre-approval:</th>
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### Location

<table>
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<tr>
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<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
</tr>
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<tbody>
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<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Echo/EKG/PV(2 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<td>Echo/EKG/PV(3 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<td></td>
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<td>Echo/EKG/PV(4 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Echo/EKG/PV(5 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
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<td>Team Core 1</td>
<td>Med Alcove (1 of 3)</td>
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<td>Team Core 2</td>
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<td>Cardio-Vascular</td>
<td>Stress (3 of 3)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
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</tbody>
</table>

**Total: 38**
## 2957 Wastebasket, Large

Space-efficient and economical.
- Fits under standard desk height even when swing top is fully extended.
- All-plastic construction won’t chip, rust or dent.
- Rolled rims add strength, and are easy to clean.

### AVAILABLE COLORS

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<tr>
<th>Order #</th>
<th>Color</th>
<th>Product UPC/ UCC Code</th>
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<td>GRAY</td>
<td>086876019193 / 10086876019190</td>
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<td>FG295700</td>
<td>BLA</td>
<td>086876019179 / 10086876019176</td>
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<tr>
<td>FG295700</td>
<td>BEIG</td>
<td>086876019162 / 10086876019169</td>
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<table>
<thead>
<tr>
<th>Color</th>
</tr>
</thead>
<tbody>
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<td>Gray</td>
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<tr>
<td>BLA</td>
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<tr>
<td>BEIG</td>
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### SPECIFICATIONS

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<th>U.S.</th>
<th>Metric</th>
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<tr>
<td><strong>Length:</strong></td>
<td>15 1/4 in</td>
<td>38.7 cm</td>
</tr>
<tr>
<td><strong>Width:</strong></td>
<td>11 in</td>
<td>27.9 cm</td>
</tr>
<tr>
<td><strong>Height:</strong></td>
<td>19 7/8 in</td>
<td>50.5 cm</td>
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<tr>
<td><strong>Volume Capacity [Nom]:</strong></td>
<td>41 1/4 qt</td>
<td>39.0 L</td>
</tr>
<tr>
<td><strong>Volume Capacity [Max]:</strong></td>
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<tr>
<td><strong>Volume Capacity [Min]:</strong></td>
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<tr>
<td><strong>Carton Cube:</strong></td>
<td>3.38 ft³</td>
<td>0.10 m³</td>
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<tr>
<td><strong>Ship Weight/Carton:</strong></td>
<td>29.35 lb</td>
<td>13.31 kg</td>
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<tr>
<td><strong>Pack Quantity:</strong></td>
<td>12</td>
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<tr>
<td><strong>Cartons Per Pallet:</strong></td>
<td>16</td>
<td></td>
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<td><strong>Material:</strong></td>
<td>LLDPE</td>
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<tr>
<td><strong>Process:</strong></td>
<td>Injection Molding</td>
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### ADDITIONAL INFORMATION:

- Frequently Asked Questions

---

### Products in Deskside Wastebaskets and Tops

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<tr>
<th>Item #</th>
<th>Description</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
<th>Volume Capacity</th>
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<tbody>
<tr>
<td>2950-73</td>
<td>Wastebasket Recycling Side Bin</td>
<td>10.6 in</td>
<td>7 1/4 in</td>
<td>11 1/2 in</td>
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<tr>
<td>2952</td>
<td>Wastebasket, Vanity</td>
<td>9 7/8 in</td>
<td>6 3/4 in</td>
<td>10 1/8 in</td>
<td>8 1/8 qt</td>
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<tr>
<td>2955</td>
<td>Wastebasket, Small</td>
<td>11 3/8 in</td>
<td>8 1/4 in</td>
<td>12 1/8 in</td>
<td>13 5/8 qt</td>
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<tr>
<td>2956</td>
<td>Wastebasket, Medium</td>
<td>14 3/8 in</td>
<td>10 1/4 in</td>
<td>15 in</td>
<td>28 1/8 qt</td>
</tr>
<tr>
<td>2957</td>
<td>Wastebasket, Large</td>
<td>15 1/4 in</td>
<td>11 in</td>
<td>19 7/8 in</td>
<td>41 1/4 qt</td>
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<tr>
<td>3071-20</td>
<td>Untouchable® Top/Soft Wastebasket Combo: 3067 Lid/2957 Wastebasket</td>
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<tr>
<td>3066</td>
<td>Untouchable® Top for 2956 Container</td>
<td>15 in</td>
<td>10 7/8 in</td>
<td>6 in</td>
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<tr>
<td>3067</td>
<td>Untouchable® Top for 2957 Container</td>
<td>16 in</td>
<td>11 5/8 in</td>
<td>7 in</td>
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</table>
Countertop cubelet ice and water air-cooled dispenser. Produces up to 282 lbs/24 hours. Built-in storage capacity of 0.3 cu. ft./10 lbs. Features: Stainless steel exterior, push-button operation, CleanCycle24, Stainless steel auger with greaseless bearing, 2 second flush cycle every hour, Protected by H-GUARD Plus Antimicrobial Agent. R-404A Refrigerant. Optional stand: SD-270

**General Product Detail**

<table>
<thead>
<tr>
<th>Arch Sig: Yes</th>
<th>Spatially Sig: No</th>
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<td>Arch Code: 1-Fixed</td>
<td>ADA: No</td>
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<tr>
<td>Custom Code: Unassigned</td>
<td>Antimicrobial: Yes</td>
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<tr>
<td>Furnish Install: O/C</td>
<td>Type: Non-Medical</td>
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<td></td>
<td>Green: No</td>
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**Physical Requirements**

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<th>Width: 16.56 in (421 mm)</th>
<th>Left: 6.00 in (152 mm)</th>
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<tbody>
<tr>
<td>Depth: 24.13 in (613 mm)</td>
<td>Right: 10.00 in (254 mm)</td>
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<tr>
<td>Height: 31.69 in (805 mm)</td>
<td>Front: N/A</td>
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<tr>
<td>Max Weight: 162 lbs (73.5 kg)</td>
<td>Back: 6.00 in (152 mm)</td>
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<tr>
<td>Mounting: Counter/Cart/Table/Pole</td>
<td>Top: 20.00 in (508 mm)</td>
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<td>Bottom: N/A</td>
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**Electrical Requirements**

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<th>Watts: 978</th>
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<td>Amps: 8.5</td>
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<tr>
<td>Phase: Single</td>
<td>BTU/hr: 3532</td>
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<tr>
<td>KVA:</td>
<td>Ded. Circuit: Yes</td>
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<tr>
<td>Emer. Power: No</td>
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</tr>
<tr>
<td>Watts: 978</td>
<td>Amps: 8.5</td>
</tr>
</tbody>
</table>

**Utility and Technology Requirements**

| Water - Cold: Yes | Gasses: No |
| Water - Hot: No | Drain: Yes |
| Water - Treated: Yes | Steam: No |
| Vent: No | Vacuum - Dental / Medical: No / No |
| Tech Connect: No |

**Structural Requirements**

| Seismic: Yes | Pre-approval: |

**Location**

<table>
<thead>
<tr>
<th>Department</th>
<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
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Total: 1
DCM-270BAH
SANITARY CUBELET ICE MACHINE/DISPENSER

Features

➤ Durable stainless steel exterior
➤ Advanced CleanCycle24™ design
➤ Stainless steel auger with greaseless bearing

- Up to 282 lbs. of ice production per 24 hours
- Built-in storage capacity of 0.3 ft³/10 lbs.*
- 2 second flush cycle every hour
- Easy to chew, cubelet ice
- Flush cycle removes sediment for cleaner ice
- Protected by H-GUARD Plus Antimicrobial Agent
- Dispenses ice and water
- 6 ft. cord with a NEMA 5-15 plug
- R-404A Refrigerant

W x D x H
16 5/16” x 24 1/8” x 31 11/16”

SD-270
16 1/2” x 24” x 35 3/16”

DCM-270BAH
Air-Cooled

Shown with optional SD-270 Stand
*SD-270 door is reversible

DCM-270BAH
Air-Cooled

Ice Machine Shipping Dimensions
30 1/2” x 20 3/4” x 37 1/2”

Features

- Durable stainless steel exterior
- Advanced CleanCycle24™ design
- Stainless steel auger with greaseless bearing

- Up to 282 lbs. of ice production per 24 hours
- Built-in storage capacity of 0.3 ft³/10 lbs.*
- 2 second flush cycle every hour
- Easy to chew, cubelet ice
- Flush cycle removes sediment for cleaner ice
- Protected by H-GUARD Plus Antimicrobial Agent
- Dispenses ice and water
- 6 ft. cord with a NEMA 5-15 plug
- R-404A Refrigerant

Warranty:
3 Year Parts & Labor on entire machine.
5 Year Parts on Compressor; air-cooled condenser coil.
Valid in United States, Canada, Puerto Rico and U.S. Territories. Contact factory for warranty in other countries.

*Rated in accordance with AHRI Standard 820(I-P). Capacity based on 100% of total volume x 30 lb/ft³ average density of ice.

ICE PRODUCTION

<table>
<thead>
<tr>
<th>Condenser</th>
<th>Model</th>
<th>Air / Water Temp Lbs. per 24 hours 70° / 90°°F</th>
<th>Water Temp 90° / 70°F</th>
<th>Condenser Gal. per 100 lbs. 90° / 70°F</th>
<th>kWh Used per 100 lbs. 90° / 70°F</th>
<th>Max. Fuse Size or HACR Circuit Breaker</th>
<th>Amperage</th>
<th>Voltage</th>
<th>Heat Rejection BTU/hr.</th>
<th>Refrigerant Charge Amount</th>
<th>Net / Ship Weight (lbs.)</th>
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<tbody>
<tr>
<td>Air-Cooled</td>
<td>DCM-270BAH</td>
<td>282</td>
<td>215</td>
<td>N/A</td>
<td>7.6</td>
<td>15A</td>
<td>8.5A</td>
<td>115V/60/1</td>
<td>3,532</td>
<td>14.8 oz</td>
<td>152 / 170</td>
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Operating Limits

- Ambient Temp Range 45 - 100°F
- Water Temp Range 45 - 90°F
- Water Pressure 10 - 113 PSIG
- Voltage Range 104 - 127V

Service

- Allow 6" (15cm) clearance at rear and left side, 10" (25cm) at right side, and 20" (51cm) at top for proper air circulation and ease of maintenance/service should they be required.

Water Filter

Please refer to water filter specification sheet for recommendations.

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Intermountain Healthcare

MG_IMC CV Clinic

Specification Coversheet

Description: Mirror, Posture, Wall Mounted
Manufacturer: Performance Health ((630) 393-6000)
Vendor: Performance Health ((630) 393-6000)
Model: Single Section [5350-01]

Single-section, oak framed mirror 24"W x 70"H. Includes brackets for wall mounting.

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<th>Description</th>
<th>Vendor</th>
<th>Alt ID</th>
<th>CAD ID</th>
<th>Atta ID</th>
<th>Mfr #:</th>
<th>Vendor #:</th>
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</table>

General Product Detail

Arch Sig: Yes  Spatially Sig: No
Arch Code: 1-Fixed  ADA: No
Custom Code: Unassigned  Antimicrobial: No
Furnish Install: O/C  Type: Medical  Green: No

Electrical Requirements

<table>
<thead>
<tr>
<th>Volts: N/A</th>
<th>Watts: N/A</th>
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</thead>
<tbody>
<tr>
<td>Hz: N/A</td>
<td>Amps: N/A</td>
</tr>
<tr>
<td>Phase: N/A</td>
<td>BTU/hr: N/A</td>
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<td>Ded. Circuit: No</td>
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<tr>
<td>Emer. Power: No</td>
<td>Plug Type: N/A</td>
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Utility and Technology Requirements

<table>
<thead>
<tr>
<th>Water - Cold: No</th>
<th>Gasses: No</th>
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</thead>
<tbody>
<tr>
<td>Water - Hot: No</td>
<td>Drain: No</td>
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<tr>
<td>Water - Treated: No</td>
<td>Steam: No</td>
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<tr>
<td>Vent: No</td>
<td>Vacuum - Dental / Medical: No / No</td>
</tr>
<tr>
<td>Tech Connect: No</td>
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</tr>
</tbody>
</table>

Physical Requirements

<table>
<thead>
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<tr>
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<td>Height: 70.00 in (1778 mm)</td>
<td>Front: N/A</td>
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<td>Max Weight: 76 lbs (34.5 kg)</td>
<td>Back: N/A</td>
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<tr>
<td>Mounting: Wall</td>
<td>Top: N/A</td>
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<td>Bottom: N/A</td>
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Product and Project Item Notes

Specification:
Structural:
Electrical:
Plumbing:
Mechanical:

Location

<table>
<thead>
<tr>
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<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
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<tr>
<td>Cardio-Vascular</td>
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<td>Stress(2 of 3)</td>
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<td>Draft (New)</td>
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<td>Stress(3 of 3)</td>
<td>Project</td>
<td>Draft (New)</td>
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</tr>
</tbody>
</table>

Total: 3

Seismic: Yes
Pre-approval: Yes
Sammons Preston® Glass Mirrors

Item#: 535001

For educational and therapy programs where a reflective glass surface is preferred. Heavy plate glass with electroplated copper produces bright, distortion-free images. Oak laminate frame provides an attractive appearance.

The single-section mirror and each panel of the three-section mirror measure 24"W and 70"H and may be locked into position.

All mirrors include ANSI "Shatter Stop" safety backing.

535001 Sammons Preston Glass Mirrors
Weight: 75.24 lbs
**Description:** Refrigerator, Domestic with Freezer  
**Manufacturer:** GE Appliances  
(800) 626-2005  
**Vendor:** CME  
**Model:** Energy Star GTE18GTHBB (17.5 cu ft/ Black)


### General Product Detail

<table>
<thead>
<tr>
<th>Arch Sig:</th>
<th>Yes</th>
<th>Spatially Sig:</th>
<th>No</th>
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<tr>
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<td>ADA:</td>
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<tr>
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<td>Unassigned</td>
<td>Antimicrobial:</td>
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<tr>
<td>Furnish Install:</td>
<td>O/O</td>
<td>Type:</td>
<td>Non-Medical</td>
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### Electrical Requirements

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<td>60</td>
<td>Amps:</td>
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<tr>
<td>BTU/hr:</td>
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<tr>
<td>KVA:</td>
<td>Ded. Circuit:</td>
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<td>Emer. Power:</td>
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<tr>
<td>Plug Type:</td>
<td>Type B (NEMA 5-15)</td>
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### Physical Requirements

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<th>28.00 in (711 mm)</th>
<th>Left:</th>
<th>0.75 in (19 mm)</th>
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<tbody>
<tr>
<td>Depth:</td>
<td>32.50 in (826 mm)</td>
<td>Right:</td>
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<tr>
<td>Height:</td>
<td>67.50 in (1715 mm)</td>
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<tr>
<td>Max Weight:</td>
<td>192 lbs (87.1 kg)</td>
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<td>2.00 in (51 mm)</td>
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<tr>
<td>Mounting:</td>
<td>Floor</td>
<td>Top:</td>
<td>1.00 in (25 mm)</td>
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<tr>
<td>Bottom:</td>
<td>N/A</td>
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### Product and Project Item Notes

- **Specification:**  
  Height includes hinges, depth includes door handle.

- **Structural:**
- **Electrical:**
- **Plumbing:**
- **Mechanical:**

### Location

<table>
<thead>
<tr>
<th>Department</th>
<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
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<td>Project</td>
<td>Draft (New)</td>
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**Total:** 2
GE® ENERGY STAR® 17.5 Cu. Ft. Top-Freezer Refrigerator

Model# GTE18GTHBB

- #1 in Quality and Dependability - Among 14-18 cu. ft. refrigerators based on an independent study of property maintenance personnel. Source: The Stevenson Company, 2016—Market research company with over 20 years of experience in the appliance industry
- Upfront temperature controls - Easy-to-use controls regulate both fresh food and freezer sections
- Adjustable spillproof glass shelves - Hold up to 12 oz. of spilled liquids for easy cleanup and adjust to provide additional food-storage options
- Equipped for optional icemaker - Easily accommodates the installation of an icemaker
- Snack drawer - Conveniently stores favorite foods and allows for quick, easy access
- Adjustable-humidity drawers - Controls helps food stay fresh
- Large door storage - Offers ideal space for storing large containers in the door, freeing up valuable shelf space
- Can storage door shelf - Holds cans in the door for easy selection and quick access
- Adjustable wire freezer shelf - Easily adjusts between two positions to accommodate items of all shapes and sizes
- Spillproof freezer floor - Seamless design of the freezer floor wipes up easily for quick cleanup
- Quick door reversal - Easily adjust refrigerator and freezer doors to swing from the left or the right side

Have more questions? Please contact 1-800-626-2005

<table>
<thead>
<tr>
<th>FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Management Features</td>
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<td>Defrost Type</td>
</tr>
<tr>
<td>Control Type</td>
</tr>
<tr>
<td>Icemaker</td>
</tr>
<tr>
<td>Fresh Food Cabinet Shelves</td>
</tr>
<tr>
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<td>Fresh Food Door Shelves</td>
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<td>Freezer Features</td>
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<tr>
<td>Exterior Style</td>
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<td>Performance Features</td>
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<td></td>
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</table>
GE® ENERGY STAR® 17.5 Cu. Ft. Top-Freezer Refrigerator

Model# GTE18GTHBB

APPROXIMATE DIMENSIONS (HxDxW)
- 67 3/8 in x 32 1/2 in x 28 in

CAPACITY
- Total Capacity (cubic feet) 17.5 cu ft
- Fresh Food Capacity 13.51 cu ft
- Freezer Capacity 4.02 cu ft

Claims & Certifications
- ENERGY STAR® Qualified
- MADE IN AMERICA: 70 to 90% U.S. Content

WARRANTY
- Parts Warranty - Limited 1-year entire appliance
- Labor Warranty - Limited 1-year entire appliance
- Warranty Notes - See written warranty for full details

Have more questions? Please contact 1-800-626-2005
GTE18GTH
GE® ENERGY STAR® 17.5 Cu. Ft. Top-Freezer Refrigerator

Dimensions and Installation Information (in inches)

<table>
<thead>
<tr>
<th>Overall Dimensions</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Height to top of hinge (in.) A</td>
<td>67-3/8</td>
</tr>
<tr>
<td>Height to top of case (in.) B</td>
<td>66-7/8</td>
</tr>
<tr>
<td>Case depth without door (in.) C</td>
<td>26-5/8</td>
</tr>
<tr>
<td>Case depth less door handle (in.) D</td>
<td>30-1/2</td>
</tr>
<tr>
<td>Case depth with door handle (in.) E</td>
<td>32-1/2</td>
</tr>
<tr>
<td>Depth with fresh food door open 90° (in.) F</td>
<td>56-3/4</td>
</tr>
<tr>
<td>Width (in.) G</td>
<td>28</td>
</tr>
<tr>
<td>Width with door open 90° inc. door handle (in.) H</td>
<td>30-5/8</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Air Clearances</th>
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</thead>
<tbody>
<tr>
<td>Each side (in.)</td>
<td>3/4</td>
</tr>
<tr>
<td>Top (in.)</td>
<td>1</td>
</tr>
<tr>
<td>Back (in.)</td>
<td>2</td>
</tr>
</tbody>
</table>

For answers to your Monogram®, Cafe™ Series, Profile™ Series or GE® appliance questions, visit our website at geappliances.com or call GE Answer Center® service, 800.626.2000.

Listed by Underwriters Laboratories

Total volume and shelf area are calculated by the Association of Home Appliance Manufacturers’ standards.

As an ENERGY STAR® partner, GE has determined that this product meets the ENERGY STAR guidelines for energy efficiency.

imagination at work

Specification Revised 8/14
Features and Benefits

- 2014 ENERGY STAR® qualified
- Upfront temperature controls - Easy-to-use controls regulate both fresh food and freezer sections
- Adjustable spillproof glass shelves - Hold up to 12 oz. of spilled liquids for easy cleanup and adjust to provide additional food-storage options
- Equipped for optional icemaker - Easily accommodates the installation of an icemaker
- Snack drawer - Conveniently stores favorite foods and allows for quick, easy access
- Adjustable-humidity drawers - Controls helps food stay fresh
- Gallon door storage - Larger items are easily accommodated in the door -
- Can storage door shelf - Holds cans in the door for easy selection and quick access
- Adjustable wire freezer shelf - Easily adjusts between two positions to accommodate items of all shapes and sizes
- Spillproof freezer floor - Seamless design of the freezer floor wipes up easily for quick cleanup
- Model GTE18GTHWW – White
- Model GTE18GTHBB – Black
- Model GTE18GTHCC – Bisque
Countertop warming cabinet with glass door. 5.0 cu.ft capacity, 1 adjustable shelf, adjustable temperature 90-160 degrees Fahrenheit. Digital control panel features visual/audible alarm, digital adjustment, built-in temperature data recorder, with RTC- real-time clock, auto-tune to set temperature, calibration due date reminder, lost pass code view, graphical temperature trend view, and set temperature "lock-out". WIFI Ready.

### General Product Detail

| Arch Sig: | Yes | Spatially Sig: | No |
| Arch Code: | 2-Movable, Elect | ADA: | No |
| Custom Code: | Unassigned | Antimicrobial: | No |
| Furnish Install: | O/O | Type: | Medical |
| | | Green: | No |

### Physical Requirements

| Width: | 30.00 in (762 mm) | Left: | N/A |
| Depth: | 26.75 in (679 mm) | Right: | N/A |
| Height: | 24.50 in (622 mm) | Front: | N/A |
| Max Weight: | 160 lbs (72.6 kg) | Back: | N/A |
| Mounting: | Counter/Cart/Table/Pole | Top: | N/A |
| | | Bottom: | N/A |

### Electrical Requirements

- Volts: 120
- Watts: 750
- Hz: 60
- Amps: 7.5
- Phase: Single
- BTU/hr: 990
- KVA: 750
- Ded. Circuit: No
- Plug Type: Type B (NEMA 5-15)

### Utility and Technology Requirements

- Water - Cold: Yes
- Water - Hot: No
- Water - Treated: No
- Steam: No
- Drain: No
- Vent: No
- Vacuum - Dental / Medical: No / No
- Tech Connect: No

### Structural Requirements

- Seismic: No
- Pre-approval: No

### Product and Project Item Notes

| Specification: |
| Structural: |
| Electrical: |
| Plumbing: |
| Mechanical: |

### Location

<table>
<thead>
<tr>
<th>Department</th>
<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
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</thead>
<tbody>
<tr>
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<td>Equipment Alcove(2 of 2)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Total: | 1 |
MODELS 7925TG AND 7925TS

MODELS 7925TG and 7925TS warming cabinets are 24-1/2" high and primarily used for warming solutions. Quality and control features are the same as those on the larger models. An adjustable shelf comes standard. It is suggested that these units sit on an existing cabinet, or on a Blickman mobile stand. Easy-to-use, full numeric keypad with controls for setting internal temperature is conveniently located above door. To set up a solutions-only warming cabinet, the unit can be easily programmed by the user to heat only between 90°F and 110°F.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Part No.</th>
<th>Dimensions (Overall)</th>
<th>Interior Cu. Ft. Capacity</th>
<th>Shelves</th>
<th>AMPS</th>
<th>Total Wattage</th>
</tr>
</thead>
<tbody>
<tr>
<td>7925TG</td>
<td>14B7925243</td>
<td>30&quot;W 26 5/8&quot;D 24-1/2'H</td>
<td>5.05 cu. ft.</td>
<td>1</td>
<td>1</td>
<td>750</td>
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<tr>
<td>7925TS</td>
<td>14B7925200</td>
<td>30&quot;W 26 5/8&quot;D 24-1/2'H</td>
<td>5.05 cu. ft.</td>
<td>1</td>
<td>1</td>
<td>750</td>
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</tbody>
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MODELS 7927TG AND 7927TS

MODELS 7927TG and 7927TS warming cabinets are a compact size for when space is at a premium. These single compartment countertop warmers come standard with self-closing, magnetic gasket, adjustable tension doors. An adjustable shelf is available as an option. It measures 20-1/8" deep, allowing for placement on most counter or tabletop surfaces. Unit is fully self-contained with no heat vents. Temperature control ranges from 90°F to 160°F. To set up a solutions-only warming cabinet, the unit can be easily programmed by the user to heat only between 90°F and 110°F.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Part No.</th>
<th>Dimensions (Overall)</th>
<th>Interior Cu. Ft. Capacity</th>
<th>Shelves</th>
<th>AMPS</th>
<th>Total Wattage</th>
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</thead>
<tbody>
<tr>
<td>7927TG</td>
<td>14B7927243</td>
<td>24&quot;W 20 5/8&quot;D 24-1/2'H</td>
<td>2.87 cu. ft.</td>
<td>0</td>
<td>3.5</td>
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<tr>
<td>7927TS</td>
<td>14B7927200</td>
<td>24&quot;W 20 5/8&quot;D 24-1/2'H</td>
<td>2.87 cu. ft.</td>
<td>0</td>
<td>3.5</td>
<td>350</td>
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</tbody>
</table>

MODELS SW30TG AND SW30TS

MODELS SW30TG and SW30TS warming cabinets are designed for recessed or built-in installation. The most common application for this unit would be a built-in operating room wall console. May be used for warming solutions or blankets. Temperature control ranges from 90°F to 160°F. 160 x 180-pixel graphical display with dual colors (red/green). Built-in temperature data recorder with RTC.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Part No.</th>
<th>Dimensions (Overall)</th>
<th>Interior Cu. Ft. Capacity</th>
<th>Shelves</th>
<th>AMPS</th>
<th>Total Wattage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW30TG</td>
<td>14BSW30243</td>
<td>30&quot;W 20 5/8&quot;D 60&quot;H</td>
<td>13.22 cu. ft.</td>
<td>3</td>
<td>7.5</td>
<td>750</td>
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<tr>
<td>SW30TS</td>
<td>14BSW30200</td>
<td>30&quot;W 20 5/8&quot;D 60&quot;H</td>
<td>13.22 cu. ft.</td>
<td>3</td>
<td>7.5</td>
<td>750</td>
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</tbody>
</table>
General Product Detail

- **Arch Sig:** No
- **Spatially Sig:** No
- **Arch Code:** 3-Movable, Non-Elect
- **ADA:** No
- **Custom Code:** Unassigned
- **Antimicrobial:** No
- **Furnish Install:** O/O
- **Type:** Non-Medical
- **Green:** No

Physical Requirements

- **Width:** 20.00 in (508 mm)
- **Depth:** 11.00 in (279 mm)
- **Height:** 30.00 in (762 mm)
- **Max Weight:** 8 lbs (3.6 kg)
- **Mounting:** Floor
- **Left:** N/A
- **Right:** N/A
- **Front:** N/A
- **Back:** N/A
- **Top:** N/A
- **Bottom:** N/A

Product and Project Item Notes

Specification:
- Structural:
- Electrical:
- Plumbing:
- Mechanical:

Location

<table>
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<tr>
<th>Department</th>
<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
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<tbody>
<tr>
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<td>Break Room (1 of 1)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Conference Room</td>
<td>Conference Room (1 of 2)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Conference Room</td>
<td>Conference Room (2 of 2)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Patient Toilet</td>
<td>Patient Toilet (1 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Patient Toilet</td>
<td>Patient Toilet (2 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Patient Toilet</td>
<td>Patient Toilet (3 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
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<td>Patient Toilet</td>
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<td>Project</td>
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<td>Team Core 2</td>
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<tr>
<td>Cardio-Vascular</td>
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<td>Staff Toilet (1 of 2)</td>
<td>Project</td>
<td>Draft (New)</td>
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<td></td>
</tr>
</tbody>
</table>
3540 Slim Jim® Waste Container

The industry standard in space-saving waste management.

- Efficient size and shape fits tight spaces.
- Durable, all-plastic construction is easy to clean and provides long life.
- Most specified containers behind bars and desk side.
- Custom imprinting available; contact Rubbermaid Customer Service at (800) 347-9800 for details.

**AVAILABLE COLORS**

<table>
<thead>
<tr>
<th>Order #</th>
<th>Color</th>
<th>Product UPC/ UCC Code</th>
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<td>086876180725 / 10086876180722</td>
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<tr>
<td>FG354000 GRAY</td>
<td>GRAY</td>
<td>086876023350 / 10086876023357</td>
</tr>
<tr>
<td>FG354000 BRN</td>
<td>BRN</td>
<td>086876023343 / 10086876023340</td>
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<tr>
<td>FG354000 BLUE</td>
<td>BLUE</td>
<td>086876047561 / 10086876047568</td>
</tr>
<tr>
<td>FG354000 BLA</td>
<td>BLA</td>
<td>086876164855 / 10086876164852</td>
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<tr>
<td>FG354000 BEIG</td>
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<td>086876023336 / 10086876023333</td>
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**SPECIFICATIONS**

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<tr>
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<tr>
<td>Height:</td>
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<tr>
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<tr>
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</tr>
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<td></td>
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<tr>
<td>Volume Capacity [Min]:</td>
<td></td>
<td></td>
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<tr>
<td>Carton Length:</td>
<td></td>
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<tr>
<td>Carton Width:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carton Height:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carton Cube:</td>
<td>6.94 ft³</td>
<td>0.20 m³</td>
</tr>
<tr>
<td>Ship Weight/Carton:</td>
<td>32.87 lb</td>
<td>14.91 kg</td>
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</table>

| Pack Quantity: | 4 |
| Cartons Per Pallet: | 8 |

**ADDITIONAL INFORMATION:**

- Product Sell Sheets: RCP_FS548_Slim_Jim.pdf

**Products in Slim Jim® Containers**

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<tr>
<th>Item #</th>
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<tr>
<td>200</td>
<td>Wall Mount Receptacle w/ Concealed Lock &amp; Self Closing Push Doors</td>
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<td>39 in</td>
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### Accessories for 3540:

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<th>No.</th>
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<tbody>
<tr>
<td>2688-88</td>
<td>Slim Jim® Handle Top for Slim Jim® Containers</td>
</tr>
<tr>
<td>2692-88</td>
<td>Slim Jim® Bottle and Can Recycling Top for Slim Jim® Containers</td>
</tr>
<tr>
<td>2703-88</td>
<td>Slim Jim® Paper Recycling Top for Slim Jim® Containers</td>
</tr>
<tr>
<td>3551-88</td>
<td>Slim Jim® Trolley for 3540, 3541 Containers</td>
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<tr>
<td>9W16</td>
<td>Slim Jim® Confidential Document Container Lids for 3540, 3541 Containers</td>
</tr>
<tr>
<td>2673-60</td>
<td>Slim Jim® Swing Lid for Slim Jim® Containers</td>
</tr>
<tr>
<td>2674</td>
<td>Slim Jim® Hinge Lid for Slim Jim® Containers</td>
</tr>
<tr>
<td>3553</td>
<td>Slim Jim® Stainless Steel Dolly for Slim Jim® Containers</td>
</tr>
<tr>
<td>9C77</td>
<td>Slim Caddy - Maid Caddy for WaveBrake® Mopping Trolley</td>
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### 3540 is an Accessory to:

<table>
<thead>
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<th>No.</th>
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<th>Length</th>
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<th>Width</th>
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<tbody>
<tr>
<td>9T45</td>
<td>StockMate® ES Restocking Truck with Hinging Deck</td>
<td>63 in</td>
<td>19 1/4 in</td>
<td>19 1/4 in</td>
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<tr>
<td>9T50</td>
<td>StockMate® Restocking Truck, Standard Deck</td>
<td>63 in</td>
<td>33 5/8 in</td>
<td>19 1/8 in</td>
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<td>9T79</td>
<td>Double Capacity Cleaning Cart</td>
<td>51 3/4 in</td>
<td>44 in</td>
<td>22 in</td>
</tr>
<tr>
<td>9T52</td>
<td>StockMate® Restocking Truck, Standard Deck with Cardboard Management System, Polyurethane Wheel and Casters</td>
<td>63 in</td>
<td>64 1/4 in</td>
<td>18 in</td>
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<td>9T56</td>
<td>StockMate® Restocking Truck, Utility Deck, Olefin Wheels and Casters</td>
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<td>64 1/4 in</td>
<td>18 in</td>
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<td>9T72</td>
<td>High Capacity Cleaning Cart</td>
<td>49 3/4 in</td>
<td>38 3/8 in</td>
<td>21 3/4 in</td>
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<tr>
<td>9T73</td>
<td>Rubbermaid HYGEN™ Microfiber Cleaning Cart</td>
<td>48 1/4 in</td>
<td>44 in</td>
<td>22 in</td>
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<tr>
<td>9T74</td>
<td>Rubbermaid HYGEN™ Microfiber Cleaning Cart with Color-Coded Pails</td>
<td>48 1/4 in</td>
<td>44 in</td>
<td>22 in</td>
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<tr>
<td>9T75</td>
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<td>9T76</td>
<td>Compact Folding Housekeeping Cart</td>
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<td>22 in</td>
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<td>9T77</td>
<td>Turndown Housekeeping Cart</td>
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<td>44 in</td>
<td>22 in</td>
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<tr>
<td>9T78</td>
<td>High Security Housekeeping Cart</td>
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<td>53 1/2 in</td>
<td>22 in</td>
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<td>9W71</td>
<td>Mega BRUTE® Mobile Waste Collector - 3 Pack</td>
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<td>42 1/2 in</td>
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<tr>
<td>9W73</td>
<td>Mega BRUTE® Mobile Waste Collector - 1 Pack</td>
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<td>42 1/2 in</td>
<td>27 1/2 in</td>
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<tr>
<td>9T92</td>
<td>Triple Capacity Cleaning Cart</td>
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<td>9T34</td>
<td>Deluxe Paneled Compact Housekeeping Cart</td>
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<td>9T95</td>
<td>Deluxe Paneled Housekeeping Cart</td>
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<td>256B-73</td>
<td>Glutton® Recycling Container</td>
<td>25 1/2 in</td>
<td>31 1/8 in</td>
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### Consumables/Replacement Parts for 3540

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<tr>
<td>5009-88</td>
<td>3540, 3541, 3542-20</td>
<td>Linear Low Density Can Liners</td>
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</table>
Intermountain Healthcare
MG_IMC CV Clinic
Specification Coversheet

**Item ID:**

**Model:** Tango M2 Stress BP w/ ECG

Non-invasive blood pressure monitor. Features: ECG, 7-inch color LCD display, data retrieval (with 300 BP reading history and USB capabilities for measurement retrieval). Stat mode with automatic BP measurement. Auscultatory R-wave gating using K-sound analysis, for all static & active phases of stress testing. Oscillometric using pneumatic pressure for static measurements only.

---

### General Product Detail

<table>
<thead>
<tr>
<th>Arch Sig:</th>
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<tr>
<td>Arch Code:</td>
<td>2-Movable, Elect</td>
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<tr>
<td>Custom Code:</td>
<td>Unassigned</td>
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<tr>
<td>Furnish Install:</td>
<td>O/O</td>
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<tr>
<td>Type:</td>
<td>Medical</td>
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<tr>
<td>Green:</td>
<td>No</td>
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</tbody>
</table>

### Physical Requirements

| Width: | 6.90 in (175 mm) |
| Depth: | 4.50 in (114 mm) |
| Height: | 9.50 in (241 mm) |
| Max Weight: | 4 lbs (1.7 kg) |
| Mounting: | Counter/Cart/Table/Pole |
| Left: | N/A |
| Right: | N/A |
| Front: | N/A |
| Back: | N/A |
| Top: | N/A |
| Bottom: | N/A |

### Electrical Requirements

| Volts: | 120 |
| Watts: | 180 |
| Hz: | 60 |
| Amps: | 1.5 |
| Phase: | Single |
| BTU/hr: | N/A |
| KVA: | | |
| Emer. Power: | No |
| Plug Type: | Type B (NEMA 5-15) |

### Utility and Technology Requirements

| Water - Cold: | No |
| Water - Hot: | No |
| Water - Treated: | No |
| Drain: | No |
| Steam: | No |
| Vent: | No |
| Vacuum - Dental / Medical: | No / No |
| Tech Connect: | Yes |

### Structural Requirements

- **Seismic:** No
- **Pre-approval:**

### Funding Source

<table>
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<tr>
<th>Department</th>
<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
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<th>Qty</th>
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<td></td>
<td>Project</td>
<td>Draft (New)</td>
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</table>

**Total:** 3
Automated Blood Pressure Monitor
For Cardiac Stress and Exercise Testing
**SunTech Tango M2**

Our cardiac stress blood pressure (BP) monitoring products give you the confidence to know that patient movement, mechanical vibration and observer variability won't interfere with an accurate reading. Your focus can be where it matters most - on your patient.

Whether performing a test using a treadmill, ergometer, or pharmacological stress testing, the Tango M2 reliably monitors BP allowing you to focus on your patient. The Tango M2 was specifically designed to overcome noise, motion and physical difficulties associated with cardiac stress and exercise testing. The hands-free interface and SpO₂ measurement option make the Tango M2 a comprehensive cardiac testing center.

Recording an accurate and reliable BP measurement at the correct intervals during a test can be difficult and stressful for clinicians and lab technicians. That’s why the Tango M2 can be programmed to take an accurate reading at the proper time and initiate readings at the precise moment during each stage, increasing reliability of the measurements. Designed to be used with our Orbit-K Cuff, the Tango M2 utilizes our proprietary DKA algorithm, which provides exceptional performance in the difficult environment of the stress lab.

**Features & Benefits**

**Seamless Integration:** Automated communication with your stress system reduces the risk of transcription errors.

**Non-Exercise BP Mode:** Allows BP measurement during patient set-up and recovery without an ECG signal.

**Stat Mode:** Rapidly repeated automatic BP measurements for time sensitive and emergent situations.

**Color LCD:** Improved usability with a 7” color LCD display.

**Verified Measurements:** See the Korotkoff sounds using the onscreen display.

**Data Retrieval:** Easier troubleshooting with 300 BP readings stored in memory and USB capabilities for measurement retrieval.

**Field Upgrades:** USB port allows for field upgrades, making sure end-users always have the current software.
Options
- Single Patient Use (SPU) Kits for increased infection control
- Pulse oximetry (SpO₂)
- Internal ECG

General Specifications

**BP Measurement:** Auscultatory R-wave gating using K-sound analysis, for all static & active phases of stress testing. Oscillometric using pneumatic pressure for static measurements only.

**Measurement Range:**
- **DKA Mode**
  - Systolic: 40 - 270 mmHg
  - Diastolic: 20 - 160 mmHg
- **OSC Mode**
  - Systolic: 40 - 260 mmHg
  - Diastolic: 20 - 160 mmHg
- Heart Rate: 40 - 200 bpm

**Interfaces:** Integrates with all popular stress ECG systems using RS-232, BNC, ECG cable only for internal ECG & USB connections.

**ECG Source:** Primary - From integrated stress ECG system or other external source.
  Secondary - Internal ECG option using V2, V6, RL

**Power:** Input - 100-240 VAC @ 1.5A, 50-60 Hz.
  Output: +9 VDC @ 5A IEC 320 type input connector.
  Classification - Class I, continuous

**BP Sampling Intervals:** From integrated stress ECG system or other external source, or 1-20 minute intervals.

**Dimensions:** 24.0 cm x 17.4 cm x 11.5 cm (9.5" x 6.9" x 4.5")

**Weight:** 1.68 Kg (3.725 lb)

**Warranty:** 2 year standard warranty on monitor.

**Accuracy:** Equivalent to a trained observer using a cuff/stethoscope auscultation method per ANSI/AAMI/ISO 81060-2

Intermountain Healthcare  
**MG_IMC CV Clinic**  
**Specification Coversheet**

**Description:** Mat, Floor, Chair  
**Manufacturer:** ULINE  
(800) 295-5510  
**Vendor:** CME  
**Model:** Carpet Chair Mat - 36”x48” with lip (Ships Flat)  
**Alt ID:** 
**Mfr #:** H-1460  
**Vendor #:** CESS-A-H-1460  
**CAD ID:** C-386302  
**Item ID:**

### General Product Detail

- **Arch Sig:** No  
- **Spatially Sig:** No  
- **Arch Code:** 3-Movable, Non-Elect  
- **ADA:** No  
- **Custom Code:** Unassigned  
- **Antimicrobial:** No  
- **Furnish Install:** O/O  
- **Type:** Non-Medical  
- **Green:** No  

### Electrical Requirements

- **Volts:** N/A  
- **Watts:** N/A  
- **Hz:** N/A  
- **Amps:** N/A  
- **Phase:** N/A  
- **BTU/hr:** N/A  
- **KVA:** N/A  
- **Ded. Circuit:** No  
- **Emer. Power:** No  
- **Plug Type:** N/A

### Utility and Technology Requirements

- **Water - Cold:** No  
- **Gasses:** No  
- **Water - Hot:** No  
- **Drain:** No  
- **Water - Treated:** No  
- **Steam:** No  
- **Vent:** No  
- **Vacuum - Dental / Medical:** No / No  
- **Tech Connect:** No

### Physical Requirements

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<tr>
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</thead>
<tbody>
<tr>
<td>Depth:</td>
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<tr>
<td>Height:</td>
<td>Front:</td>
</tr>
<tr>
<td>Max Weight:</td>
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<tr>
<td>Mounting:</td>
<td>Top:</td>
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<td>Bottom:</td>
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### Structural Requirements

- **Seismic:** No  
- **Pre-approval:**

<table>
<thead>
<tr>
<th>Location</th>
<th>Department</th>
<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
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**Sorted by Atta ID**  
**05/07/2020 02:16 PM**  
**Page 1 of 2**
| Cardio-Vascular | Shared Workroom(3 of 4) Project | Draft (New) | 6 |
| Cardio-Vascular | Shared Workroom(4 of 4) Project | Draft (New) | 9 |
| Cardio-Vascular | Team Space(1 of 3) Project | Draft (New) | 14 |
| Cardio-Vascular | Team Space(2 of 3) Project | Draft (New) | 14 |
| Cardio-Vascular | Team Space(3 of 3) Project | Draft (New) | 12 |
| **Total:**           |                               |            | 92 |
**General Product Detail**

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**Physical Requirements**

| Width: | Left: |
| Depth: | Right: |
| Height: | Front: |
| Max Weight: | Back: |
| Mounting: | Top: |
| | Bottom: |

**Product and Project Item Notes**

**Specification:**

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**Location**

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<th>Department</th>
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<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
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**Total:** 1
Intermountain Healthcare
MG_IMC CV Clinic
Specification Coversheet

Description: Stool, Exam, Cushion-Seat
Manufacturer: Midmark Corporation    (800) 643-6275
Vendor: CME
Model: Ritter 273 Value Series w/ Back and Soft Rubber Casters

General Product Detail

<table>
<thead>
<tr>
<th>Arch Sig:</th>
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<th>Spatially Sig:</th>
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Electrical Requirements

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Physical Requirements

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Utility and Technology Requirements

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Structural Requirements

Seismic: No  Pre-approval: |

Product and Project Item Notes

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Intermountain Healthcare
MG_IMC CV Clinic
Specification Coversheet

**Description:** Dispenser, Hand Sanitizer, Wall Mount

**Manufacturer:** 3M Infection Prevention Division  ((651) 733-1110)
**Vendor:** 3M Infection Prevention Division  ((651) 733-1110)
**Model:** 3M Avagard D Instant

Wall bracket for Avagard Instant Hand Antiseptic (9222, 9222C, 9338, 9431 500 mL pump bottles.) Ships 16/case.

---

### General Product Detail

| Arch Sig: Yes | Spatially Sig: No |
| Arch Code: 1-Fixed | ADA: No |
| Custom Code: Unassigned | Antimicrobial: No |
| Furnish Install: O/C | Type: Non-Medical |
| | Green: No |

### Physical Requirements

- **Width:** 3.50 in (89 mm)
- **Depth:** 4.00 in (102 mm)
- **Height:** 8.50 in (216 mm)
- **Max Weight:** 1 lbs (0.5 kg)
- **Mounting:** Wall
- **Left:** N/A
- **Right:** N/A
- **Front:** N/A
- **Back:** N/A
- **Top:** N/A
- **Bottom:** N/A

### Electrical Requirements

- **Volts:** N/A
- **Watts:** N/A
- **Hz:** N/A
- **Amps:** N/A
- **Phase:** N/A
- **BTU/hr:** N/A
- **KVA:** N/A
- **Ded. Circuit:** No
- **Emer. Power:** No
- **Plug Type:** N/A

### Utility and Technology Requirements

- **Water - Cold:** No
- **Gasses:** No
- **Water - Hot:** No
- **Drain:** No
- **Water - Treated:** No
- **Steam:** No
- **Vent:** No
- **Vacuum - Dental / Medical:** No / No
- **Tech Connect:** No

### Structural Requirements

- **Seismic:** No
- **Pre-approval:**

---

### Product and Project Item Notes

**Specification:**

**Structural:**

**Electrical:**

**Plumbing:**

**Mechanical:**

**Location**

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**Total:** 32
3M™ Avagard™ Family of Hand Antiseptics
Wall Brackets and Dispensers

Are you looking for another way to support hand hygiene compliance?
Here are three reasons these wall brackets and dispensers can help:

• Promotes patient safety by putting an effective hand hygiene product right where your staff needs it.
• Color may increase awareness for hand hygiene compliance.
• Helps create awareness of hand hygiene, a key critical factor influencing adherence to protocol.*

* Backed by CDC, Joint Commission and the 3M Six Sigma Hand Hygiene Compliance Program in 5 facilities
## Ordering Information

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<td>3M™ Avagard™ D Wall Bracket (white)</td>
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*NEW* 9246 3M™ Avagard™ Foaming Wall Bracket (white) Use with 9321 – 500 mL pump bottle 3.43” w x 8.47” h x 3.81” d 16

To learn more, contact your 3M Representative, or call the 3M Health Care Helpline at 1-800-228-3957, or visit us at www.3M.com/avagard.
Description: Table, Imaging, Ultrasound

Vendor: Medical Positioning, Inc.  (816) 474-1555
Model: EchoTable 2251

Ultrasound imaging table. The EchoTable is the perfect built-to-suit model customized to fit your specific department needs. With an ergonomic design to support the health of your staff by reducing the risk of repetitive stress injury and its bariatric capability to increase department continuity of care the EchoTable is the ideal platform for all echocardiography procedures. Height adjustable from 24 to 34 inches. Dual imaging drop sections with patient back support. Patient weight capacity of 500 lbs. Optional 65° Fowler adjustment, ±15° Trendelenburg adjustment. 1 year warranty.

### General Product Detail

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Total: 9
**Echo Table™**

The ultimate platform for Cardiac Ultrasound

- Weight capacity up to 500 lbs
- 2-way sonographer drop section/
  Patient back support
- 15° Trendelenburg and
  15° Reverse Trendelenburg (optional)
- 65° Fowler positioning (optional)
- Imaging drop section
- 23” to 34” height
- Hand controller

Optional features may be shown. Actual color may vary depending on monitor resolution and print quality.
## STANDARD FEATURES

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<td>Sonographer Drop Section</td>
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<td>Control System:</td>
<td>Hand Controller</td>
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<td>Braking:</td>
<td>Individual Locking Casters</td>
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<td>Ergonomic Features:</td>
<td>2-Way Sonographer Drop Section/Patient Back Support</td>
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### Additional Features:

- Paper Roll Holder and Cutter

## PRODUCT SPECIFICATIONS

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## PRODUCT BENEFITS

- Optional Trendelenburg stabilizes patient blood pressure
- Optional Fowler positioning increases patient comfort
- Reduces repetitive strain injuries
- Bariatric capable

## OPTIONAL FEATURES

- Trendelenburg/Reverse Trendelenburg: 15°/15°
- Fowler (Head Up) Positioning: 65°
- Single Pedal Braking
- Safety Rails
- Sonographer Extension
- Foot Controller
- Safe-T-Wedge
- Pediatric/Geriatric Adapter
- IV Pole and Holder
- Padded Arm Board
Surface mounted paper towel dispenser. Translucent Smoke, plastic. Holds up to 400 C-fold, 600 multifold, or one package BigFold towels. Key lock.

### General Product Detail

| Arch Sig: Yes | Spatially Sig: No |
| Arch Code: 1-Fixed | ADA: No |
| Custom Code: Unassigned | Antimicrobial: No |
| Furnish Install: O/C | Type: Non-Medical |
| Green: Yes |

### Electrical Requirements

| Volts: N/A | Watts: N/A |
| Hz: N/A | Amps: N/A |
| Phase: N/A | BTU/hr: N/A |
| KVA: N/A | Ded. Circuit: No |
| Emer. Power: No | Plug Type: N/A |

### Utility and Technology Requirements

| Water - Cold: No | Gasses: No |
| Water - Hot: No | Drain: No |
| Water - Treated: No | Steam: No |
| Vent: No | Vacuum - Dental / Medical: No / No |
| Tech Connect: No |

### Structural Requirements

| Seismic: No | Pre-approval: |

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**Total:** 36
COMBI-FOLD PAPER TOWEL DISPENSER BY GP PRO (GEORGIA-PACIFIC), SMOKE, 1 DISPENSER

Description:
This durable and versatile plastic towel dispenser holds up to 400 C-Fold, 600 multifold, or one package of BigFold® towels to provide a cost-effective solution for washroom towel dispensing. This attractive see-through grey color complements any decor, and the covered key-lock design protects against waste and pilferage while making refilling towels quick and easy.

Features and Benefits:
1. Durable plastic construction
2. Holds up to 400 C-Fold, 600 multifold, or one pack BigFold® paper towels
3. Offers an economical and versatile approach to towel dispensing
4. The Sustainable Forestry Initiative® certified sourcing label is proof Georgia-Pacific is using fiber from responsible and legal sources.

PRODUCT DETAILS

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CASE SHIPPING INFO

| Case GTIN           | 10073310566501           |
| Case Gross Weight   | 3.140                    |
| Case Net Weight     | 2.22                     |
| Case Dimensions LxWxH| 16.000” x 11.500” x 6.000” |
| Case Volume         | 0.639 CFT                |

EACH SHIPPING INFO

| Each Gross Weight   | 3.140 LB                 |
| Each Net Wgt        | 2.220 LB                 |
| Each Dimensions LxWxH| 16.000” x 11.500” x 6.000” |
| Each Volume         | 0.639 CFT                |

UNIT SHIPPING INFO

| TI-QTY/Layer        | 10                       |
| Hi-Layers/Unit      | 8                        |
| Unit Qty            | 80                       |
| Unit Dimensions LxWxH| 48.000” x 39.000” x 48.000” |
Intermountain Healthcare

MG_IMC CV Clinic

Specification Coversheet

Automatic touch-free 10" paper towel dispenser. Features: 150-roll battery life, customizable settings including delayed dispensing, sheet length, and dispense method, Whisper Quiet technology. Color: Black

**General Product Detail**

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**Physical Requirements**

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**Product and Project Item Notes**

**Specification:**
Requires 4 D batteries or optional AC adapter.

**Utility and Technology Requirements**

| Water - Cold: | No |
| Water - Hot: | No |
| Water - Treated: | No |
| Steam: | No |
| Vent: | No |
| Vacuum - Dental / Medical: | No / No |
| Tech Connect: | No |

**Structural Requirements**

| Seismic: | No |
| Pre-approval: | |

**Electrical Requirements**

| Volts: | N/A |
| Watts: | N/A |
| Hz: | N/A |
| Amps: | N/A |
| Phase: | N/A |
| BTU/hr: | N/A |
| KVA: | N/A |
| Ded. Circuit: | No |
| Emer. Power: | No |
| Plug Type: | N/A |

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<td>Staff Toilet(2 of 2)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total:** 9
Specification Sheet: 59462A, 59460A, 59407A

enMotion® 10” Automated Touchless Paper Towel Dispenser

Installation

1. Assemble the two mounting brackets (#54019 sold separately) by connecting the sides. For accessories or replacement components, please call: 1-866-HELLO GP (1-866-435-5647)

2. With the arrows on the brackets pointing upwards, ensure that the top is level before securing assembled mounting bracket to wall with four (4) anchored screws using the keyhole slots indicated.

3. With the front cover open, press unit onto mounting bracket and down ensuring that all clips are engaged as indicated. Close cover.

Holes have been molded into the back of the dispenser housing if direct-to-wall mounting is desired.

Operation

This automated towel dispenser utilizes an 10” wide towel roll available at GPPRO.com (89460, 89470, 89480, 89485, and 89490). A blue light will illuminate on the front of the dispenser lens when a towel is successfully dispensed. In the event of a jam three lights will flash behind the sensor lens. When batteries are low a red light will illuminate behind the battery icon on the sensor lens. The dispenser is equipped with settings that allow adjustment of sheet length, dispenser delay, sensor range, and choosing between auto supply and motion mode. The dispenser has a rotating “carousel” feature that allows full utilization of partial rolls that help eliminate waste. Instructions on how to use this feature and how to adjust settings are present on the inside of the dispenser cover. The dispenser’s cover hinges at the bottom and opens a full 180 degrees. For questions about this dispenser or for replacement parts, please call: 1-866-HELLOGP (1-866-435-5647). www.gppro.com

Specifications

<table>
<thead>
<tr>
<th>COLORS</th>
<th>MODEL/ SKU NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>59462A: Black with translucent gray side windows.</td>
<td>Black: 59462A</td>
</tr>
<tr>
<td>59407A: White with translucent gray side windows.</td>
<td>White: 59407A</td>
</tr>
<tr>
<td>59460A: Light gray with translucent blue side windows.</td>
<td>Gray: 59460A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FINISH</th>
<th>MANUFACTURER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main body light texture. Gloss finish around paper chute.</td>
<td>GP PRO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POWER</th>
<th>DIMENSIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1: Four D-cell alkaline batteries (included)</td>
<td>14.7”W x 17.3”H x 9.5”D</td>
</tr>
<tr>
<td>Option 2: AC adapter - 120V Plug (59479A) or 24VAC-6V DC (59477A)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACCESS</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keyed at cover top (key included). Replacement key: 50504 Key bypass twist-to-open insert available: 50429</td>
<td>9lbs 10oz</td>
</tr>
</tbody>
</table>
Intermountain Healthcare
MG_IMC CV Clinic
Specification Coversheet

Description: Dispenser, Toilet Seat Cover
Manufacturer: Georgia Pacific  (866) 435-5647
Vendor: Georgia Pacific  (866) 435-5647
Model: Safe-T-Gard 1/2 Fold (Black)

Toilet seat cover dispenser. Holds 1/2 fold seat covers, black plastic.

General Product Detail

Arch Sig: Yes  Spatially Sig: No
Arch Code: 1-Fixed  ADA: No
Custom Code: Unassigned  Antimicrobial: No
Furnish Install: O/C  Type: Non-Medical  Green: No

Electrical Requirements

Volts: N/A  Watts: N/A
Hz: N/A  Amps: N/A
Phase: N/A  BTU/hr: N/A
KVA: N/A  Ded. Circuit: No
Emer. Power: No  Plug Type: N/A

Physical Requirements

Width: 16.38 in (416 mm)  Left: N/A
Depth: 2.50 in (64 mm)  Right: N/A
Height: 11.75 in (298 mm)  Front: N/A
Max Weight: 1 lbs (0.4 kg)  Back: N/A
Mounting: Wall  Top: N/A
Bottom: N/A

Utility and Technology Requirements

Water - Cold: No  Gasses: No
Water - Hot: No  Drain: No
Water - Treated: No  Steam: No
Vent: No  Vacuum - Dental / Medical: No / No
Tech Connect: No

Structural Requirements

Seismic: No  Pre-approval:

Product and Project Item Notes

Specification:
Structural:
Electrical:
Plumbing:
Mechanical:

Location

<table>
<thead>
<tr>
<th>Department</th>
<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardio-Vascular</td>
<td>Patient Toilet(1 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
<td></td>
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<tr>
<td>Cardio-Vascular</td>
<td>Patient Toilet(2 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Patient Toilet(3 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Patient Toilet(4 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Patient Toilet(5 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<td></td>
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<tr>
<td>Cardio-Vascular</td>
<td>Patient Toilet(6 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Staff Toilet(1 of 2)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Staff Toilet(2 of 2)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
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</table>

Total: 8
SAFE-T-GARD® 1/2-FOLD TOILET SEAT COVER DISPENSER BY GP PRO (GEORGIA-PACIFIC), BLACK, 1 DISPENSER

Description:
Our Safe-T-Gard seat cover dispensing system solution delivers clean, white seat covers for increased protection against germs at an economical cost. Our quality seat covers provide a low-cost alternative to wasteful makeshift seat covers comprising of expensive tissue paper and/or towels prepared by patrons when real seat covers are not provided. Furthermore, they reduce labor and maintenance costs associated with system clogs and restroom litter. Offer your patrons the protection and convenien...

Features and Benefits:
1. No Touch feature minimizes cross-contamination
2. Dispenses highly dispersible seat covers to reduce clogs caused by the use of costly alternatives, such as towels or tissues
3. Durable plastic dispenser with double-pack loading feature is easy to install and cost-effective to maintain

<table>
<thead>
<tr>
<th>PRODUCT DETAILS</th>
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<tbody>
<tr>
<td>Brand Owner</td>
</tr>
<tr>
<td>Brand</td>
</tr>
<tr>
<td>MFG #</td>
</tr>
<tr>
<td>UP-UPC</td>
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<tr>
<td>Items Per Each</td>
</tr>
<tr>
<td>Sheet W x L</td>
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<tr>
<td>Square CM (Per Sheet)</td>
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<tr>
<td>Square Inches (Per Sheet)</td>
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<tr>
<td>Case Total</td>
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<td>UNSPSC</td>
</tr>
<tr>
<td>Size LxWxH</td>
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<tr>
<td>Kosher</td>
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<td>Stat Factor</td>
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<td>Buy Multiple</td>
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<tr>
<th>CASE SHIPPING INFO</th>
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<tbody>
<tr>
<td>Case GTIN</td>
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<tr>
<td>Case Gross Weight</td>
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<tr>
<td>Case Net Weight</td>
</tr>
<tr>
<td>Case Dimensions LxWxH</td>
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<tr>
<td>Case Volume</td>
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<table>
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<th>EACH SHIPPING INFO</th>
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<tr>
<td>Each Gross Weight</td>
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<tr>
<td>Each Net Wgt</td>
</tr>
<tr>
<td>Each Dimensions LxWxH</td>
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<tr>
<td>Each Volume</td>
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<tr>
<th>UNIT SHIPPING INFO</th>
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<tbody>
<tr>
<td>TI-QTY/ Layer</td>
</tr>
<tr>
<td>Hi-Layers/Unit</td>
</tr>
<tr>
<td>Unit Qty</td>
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<tr>
<td>Unit Dimensions LxWxH</td>
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</table>
Clinical blood draw bariatric chair. Features: Fully Upholstered, 25 inch ERGO Seat Height, Extra Wide 30 inch Patient Width, Weight Capacity: 700 lbs, Dual articulating padded armrests can be adjusted horizontally and vertically.

### General Product Detail

| Arch Sig: | No | Spatially Sig: | No |
| Arch Code: | 3-Movable, Non-Elect | ADA: | No |
| Custom Code: | Unassigned | Antimicrobial: | No |
| Furnish Install: | O/O | Type: | Medical |
| Green: | No |

### Physical Requirements

| Width: | 44.00 in (1118 mm) | Left: | N/A |
| Depth: | 32.00 in (813 mm) | Right: | N/A |
| Height: | 42.00 in (1067 mm) | Front: | N/A |
| Max Weight: | 115 lbs (52.2 kg) | Back: | N/A |
| Mounting: | Floor | Top: | N/A |
| | | Bottom: | N/A |

### Electrical Requirements

- Volts: N/A
- Watts: N/A
- Hz: N/A
- Amps: N/A
- Phase: N/A
- BTU/hr: N/A
- KVA: N/A
- Ded. Circuit: No
- Emer. Power: No
- Plug Type: N/A

### Utility and Technology Requirements

- Water - Cold: No
- Water - Hot: No
- Drain: No
- Water - Treated: No
- Steam: No
- Vent: No
- Vacuum - Dental / Medical: No / No
- Tech Connect: No

### Structural Requirements

- Seismic: No
- Pre-approval: 

### Specification

- Extra Wide 30" Patient Width

### Structural

- Electrical:
- Plumbing:
- Mechanical:

### Location

<table>
<thead>
<tr>
<th>Department</th>
<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardio-Vascular</td>
<td></td>
<td>Lab/Blood Draw (1 of 1)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Total: 1
Intermountain Healthcare

MG_IMC CV Clinic

Specification Coversheet

**Description:** Dispenser, Toilet Paper, Surface Mount

**Manufacturer:** Georgia Pacific  ((866) 435-5647)

**Vendor:** Georgia Pacific  ((866) 435-5647)

**Model:** Compact 2-Roll Side-By-Side Coreless (Smoke)

Surface mounted, high capacity, 2-roll side-by-side coreless toilet paper dispenser. Color: Smoke. Features: Delivers up to 6,000 sheets 1-ply or 3,000 2-ply tissue, transfer paddle, key lock, 10 year warranty. ADA compliant when mounted properly. Optional mounting brackets available.

<table>
<thead>
<tr>
<th>General Product Detail</th>
</tr>
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<tbody>
<tr>
<td>Arch Sig: Yes</td>
</tr>
<tr>
<td>Arch Code: 1-Fixed</td>
</tr>
<tr>
<td>Custom Code: Unassigned</td>
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<tr>
<td>Furnish Install: O/C</td>
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<tr>
<td>Type: Non-Medical</td>
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<tr>
<td>Green: Yes</td>
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<table>
<thead>
<tr>
<th>Physical Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width: 10.12 in (257 mm)</td>
</tr>
<tr>
<td>Left: N/A</td>
</tr>
<tr>
<td>Depth: 6.75 in (171 mm)</td>
</tr>
<tr>
<td>Right: N/A</td>
</tr>
<tr>
<td>Height: 7.12 in (181 mm)</td>
</tr>
<tr>
<td>Front: N/A</td>
</tr>
<tr>
<td>Max Weight: 2 lbs (0.7 kg)</td>
</tr>
<tr>
<td>Back: N/A</td>
</tr>
<tr>
<td>Mounting: Wall</td>
</tr>
<tr>
<td>Top: N/A</td>
</tr>
<tr>
<td>Bottom: N/A</td>
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<table>
<thead>
<tr>
<th>Electrical Requirements</th>
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<tbody>
<tr>
<td>Volts: N/A</td>
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<tr>
<td>Watts: N/A</td>
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<tr>
<td>Hz: N/A</td>
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<tr>
<td>Amps: N/A</td>
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<tr>
<td>Phase: N/A</td>
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<tr>
<td>BTU/hr: N/A</td>
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<tr>
<td>KVA: N/A</td>
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<tr>
<td>Ded. Circuit: No</td>
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<tr>
<td>Emer. Power: No</td>
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<td>Plug Type: N/A</td>
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<table>
<thead>
<tr>
<th>Utility and Technology Requirements</th>
</tr>
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<tbody>
<tr>
<td>Water - Cold: No</td>
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<tr>
<td>Gasses: No</td>
</tr>
<tr>
<td>Water - Hot: No</td>
</tr>
<tr>
<td>Drain: No</td>
</tr>
<tr>
<td>Water - Treated: No</td>
</tr>
<tr>
<td>Steam: No</td>
</tr>
<tr>
<td>Vent: No</td>
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<tr>
<td>Vacuum - Dental / Medical: No / No</td>
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<tr>
<td>Tech Connect: No</td>
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<table>
<thead>
<tr>
<th>Structural Requirements</th>
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<tbody>
<tr>
<td>Seismic: No</td>
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<tr>
<td>Pre-approval:</td>
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**Specification:**

**Structural:**

**Electrical:**

**Plumbing:**

**Mechanical:**

**Location**

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<tr>
<th>Department</th>
<th>Room#</th>
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<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardio-Vascular</td>
<td>Patient Toilet(1 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardio-Vascular</td>
<td>Patient Toilet(2 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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</tr>
<tr>
<td>Cardio-Vascular</td>
<td>Patient Toilet(3 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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</tr>
<tr>
<td>Cardio-Vascular</td>
<td>Patient Toilet(4 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Patient Toilet(5 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
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<td>Patient Toilet(6 of 6)</td>
<td>Project</td>
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<tr>
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<td>Staff Toilet(1 of 2)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
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<td></td>
</tr>
</tbody>
</table>

**Total:** 8
COMPACT® 2-ROLL SIDE-BY-SIDE CORELESS HIGH-CAPACITY TOILET PAPER DISPENSER BY GP PRO (GEORGIA-PACIFIC), SMOKE, 1 DISPENSER

Description:
Attractive Compact double roll, side-by-side coreless bathroom tissue dispensing system provides up to six times the capacity of single standard 2-ply rolls while maintaining your professional look. This dispenser delivers 3000 sheets of quality 2-ply tissue or 6000 sheets 1-ply for continuous service and increased patron satisfaction. Featuring a transfer paddle to prevent access to a new roll before the current roll is completely used up, this dispenser offers one of the most cost-effective so...

Features and Benefits:

1. 3x the 2-ply Capacity: Delivers 3000 sheets of 2-ply or 6000 sheets of 1-ply toilet paper to help reduce run-out and improve customer satisfaction.
2. 95% Less Packaging: Compared to GP PROstandard toilet paper by eliminated cardboard cores, inner wraps and other corrugated materials.
3. 97% Satisfaction: 97% of customers who use Compact® Toilet Paper Dispensers are overwhelmingly satisfied with their performance.* (*Source: GP PROProprietary Research: CBT-15-127)
4. Easy To Install: Optional mounting brackets provide for easy installation and cleaning.
5. Easy To Maintain: Easy Install,locking dispenser helps prevents pilferage
6. Multiple Formats: Compact® Toilet Paper Dispensers are available in two-roll vertical, two-roll side-by-side,four-roll dispenser and single role format to accommodate the needs of any facility.
7. Reduces Waste: Transfer Paddle deters early access to new roll, reducing stub roll waste
8. Ten Year Warranty: We’re so confident in our Compact® Toilet Paper Dispensers, we guarantee them for a full 10 years. And that’s not just on new dispensers. We’ll even cover units that are already on the wall.
9. The Sustainable Forestry Initiative® certified sourcing label is proof Georgia-Pacific is using fiber from responsible and legal sources.

PRODUCT DETAILS
Brand Owner GEORGIA-PACIFIC
Brand COMPACT
MFG # 56784
Items Per Each 1
Sheet W x L 6.75 x 10.12
Square CM (Per Sheet) 440.709
Square Inches (Per Sheet) 68.31
Case Total 1
UNSPSC 47131710
Size LxWxH 6.750” x 10.120” x 7.120”
Kosher NO
Stat Factor 1
Buy Multiple 1.000 EA

CASE SHIPPING INFO
Case GTIN 00073310567846
Case Gross Weight 1.940
Case Net Weight 1.64
Case Dimensions LxWxH 11.750” x 7.625” x 7.188”
Case Volume 0.373 CFT

EACH SHIPPING INFO
Each Gross Weight 1.940 LB
Each Net Wgt 1.640 LB
Each Dimensions LxWxH 11.750” x 7.625” x 7.188”
Each Volume 0.373 CFT

UNIT SHIPPING INFO
TI-QTY/Layer 20
HI-Layers/Unit 6
Unit Qty 120
Unit Dimensions LxWxH 46.375” x 38.750” x 43.125”

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**Intermountain Healthcare**

**MG_IMC CV Clinic**

**Specification Coversheet**

Description: Ultrasound, Imaging, Cardiac, Portable  
Manufacturer: Philips Healthcare - Imaging Systems  (800-229-6417)  
Vendor: Philips Healthcare - Imaging Systems  (800-229-6417)  
Model: EPIQ CVx Premium

**General Product Detail**

Arch Sig: No  
Arch Code: 2-Movable, Elect  
Custom Code: Unassigned  
Furnish Install: O/O  
Type: Medical  
Spatially Sig: No  
ADA: No  
Antimicrobial: No  
Green: No

**Electrical Requirements**

Volts: 120  
Hz: 60  
Amps: 5  
Phase: Single  
BTU/hr: N/A  
KVA: 600  
Ded. Circuit: No  
Emer. Power: No  
Plug Type: Type B (NEMA 5-15)

**Physical Requirements**

Width: 23.90 in (607 mm)  
Depth: 43.00 in (1092 mm)  
Height: 67.50 in (1715 mm)  
Max Weight: 230 lbs (104.3 kg)  
Mounting: Floor-Mobile

**Utility and Technology Requirements**

Water - Cold: No  
Water - Hot: No  
Water - Treated: No  
Steam: No  
Vent: No  
Vacuum - Dental / Medical: No / No  
Tech Connect: Yes

**Structural Requirements**

Seismic: No  
Pre-approval: No

**Product and Project Item Notes**

Specification:  
Weight reflects without peripheral devices.  
Height is adjustable from 57.50 to 67.50 inches.  
Watts reflects typical. Watts could vary depending on system configuration.

**Structural**  
**Electrical**  
**Plumbing**  
**Mechanical**

**Location**

<table>
<thead>
<tr>
<th>Department</th>
<th>Room#</th>
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<th>Item Status</th>
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<th>Item Notes</th>
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<tbody>
<tr>
<td>Cardio-Vascular</td>
<td></td>
<td>Echo/EKG/PV(1 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
<td></td>
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<tr>
<td>Cardio-Vascular</td>
<td></td>
<td>Echo/EKG/PV(2 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<td>Cardio-Vascular</td>
<td></td>
<td>Echo/EKG/PV(3 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<td>Cardio-Vascular</td>
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<td>Echo/EKG/PV(4 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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<tr>
<td>Cardio-Vascular</td>
<td></td>
<td>Echo/EKG/PV(5 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
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**Total:** 5
8. Physical specifications

System dimensions

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<tbody>
<tr>
<td>Width</td>
<td>60.6 cm/23.9 in</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>146-171.5 cm/57.5-67.5 in</td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>109.2 cm/43 in</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>104.3 kg/230 lb without peripheral devices</td>
<td></td>
</tr>
</tbody>
</table>

System cart

- State-of-the-art ergonomic design for comfort and convenience
- Easy maneuverability and mobility
  - Wheel-lock and monitor adjustments that facilitate bedside exams
- Independent height adjustment of control panel and display monitor
- Easily accessed transducer connector ports, USB, and DVD media drive, if equipped
- Transducer and gel bottle holders
- Mobility through high-quality, shock-absorbing casters with foot pedal controls for:
  - 4-wheel swivel
  - 2-wheel swivel lock
  - 2-wheel brakes
- Integrated footrests
- Transducer connector and OEM bay illumination for easy visibility in scanning rooms
- Digitally-enhanced two-speaker high-fidelity stereo output with rear-mounted subwoofer
- On-board storage tray behind control panel touchscreen and in rear bay left and right storage drawers
- Universal peripheral bay that provides easy access for up to two on-board hardcopy or documentation devices
- Built-in A/C line conditioner that provides isolation from voltage fluctuations and electrical noise interference
- Three high-capacity fans with automatic speed adjustment to optimize cooling efficiency with minimal audible noise
Monitor

- Flat panel OLED display monitor
  - 54.9 cm/21.6 in wide format OLED display
  - High contrast ratio >22,550:1
  - Color gamut 108% Adobe RGB >1 billion colors
  - Maximum luminance 235 cd/m2
  - Flicker free technology
  - >178° viewing angle up/down and left/right
  - Mounted on fully articulating extension arm
  - Four-way articulation with 87.6 cm/34.5 in lateral and 17.8 cm/7 in vertical adjustment range
  - Nearly infinite positioning adjustments: height, swivel and tilt

Control panel

- Articulation facilitates nearly infinite positioning adjustments for excellent scanning ergonomics: height, swivel and tilt
  - Up and down 25.4 cm/10 in
  - Rotates 180° from center
  - Complete freedom for side-to-side slide movement, infinite positions
  - Operates on battery for adjustment during mobile exams
  - Retractable, backlit alphanumeric keyboard
  - Palm rest

Physio

- One three-lead ECG input
  - Gain, sweep rate and display position controls
  - Automatic heart rate calculation and display
  - Fault condition display
  - Cineloop locator displayed on one ECG input from an ECG source like stress ECG or ECG monitor

Peripherals

- The system supports up to two on-board peripheral devices (excluding report printers)
  - Video-recording peripherals, operated via system user interface
  - DVD recorder (cart-dependent)
  - Small format digital color printer (USB)
  - Small format digital B/W printer (USB)
  - Image fusion
  - Support for large format external color printer
  - Support for various Hewlett-Packard and Epson brand color and monochrome report printers (USB, externally mounted)

Input/output ports

- Export of measurement and analysis data to off-line reporting software packages (USB)
- Display port video export available for either full screen resolution of 1920x1080 (1080p) or display area 1024x768

Power requirements and video parameters

- 100V-240 V, 50 Hz/60 Hz – PAL/NTSC
- Integrated A/C line conditioning and battery back-up system
- Power consumption: <600 VA depending on system configuration

Electrical safety standards

- Electromechanical Safety Standards met
  - CAN/CSA 22.2 No. 60601-1, Medical Electrical Equipment: general requirements for basic safety and essential performance
  - IEC 60601-1, Medical Electrical Equipment: general requirements for basic safety and essential performance
  - IEC 60601-1-2, Collateral Standard, Electromagnetic compatibility – requirements and tests
  - IEC 60601-2-37, Particular Requirements for the basic safety and essential performance of ultrasonic medical diagnostic and monitoring equipment
  - ANSI/AAMI ES60601-1, Medical Electrical Equipment: general requirements for basic safety and essential performance

- Electromechanical Safety Standards met (EU Only)
  - EN60601-2-37, Particular requirements for the basic safety and essential performance of ultrasonic medical diagnostic and monitoring equipment

- Agency approvals
  - Canadian Standards Association (CSA)
  - CE Mark in accordance with the European Medical Device Directive issued by British Standards Institute (BSI)
Intermountain Healthcare
MG_IMC CV Clinic
Specification Coversheet

Description: Compression Unit, Extremity Pump, Rapid Inflation
Manufacturer: D. E. Hokanson, Inc.  ((425) 882-1689)
Vendor: D. E. Hokanson, Inc.  ((425) 882-1689)
Model: E20 Rapid Cuff with AG-101 Air Source

Extremity compression pump. System consists of E20 Rapid Cuff inflator and required AG101 Air Source. Provides compression for venous insufficiency or venous reflux testing. Vascular cuff can be inflated in less than 0.3 seconds; large digital readout displays cuff pressure accurately to within 1 mmHg over a range of 0 to 300 mmHg. The cuff can hold the preset pressure indefinitely. The NIVP3 software allows inflation times to be programmed. Must select either the 3-second timer or the footswitch, not included. Must also select cuffs to be used, not included.

General Product Detail

<table>
<thead>
<tr>
<th>Arch Sig</th>
<th>Spatially Sig</th>
<th>Arch Code</th>
<th>ADA</th>
<th>Custom Code</th>
<th>Antimicrobial</th>
<th>Furnish Install</th>
<th>Type</th>
<th>Green</th>
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<tbody>
<tr>
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<td>No</td>
<td>2-Movable, Elect</td>
<td>No</td>
<td>Unassigned</td>
<td>No</td>
<td>O/O</td>
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Physical Requirements

<table>
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<tr>
<th>Width</th>
<th>Depth</th>
<th>Height</th>
<th>Max Weight</th>
<th>Mounting</th>
<th>Left</th>
<th>Right</th>
<th>Front</th>
<th>Back</th>
<th>Top</th>
<th>Bottom</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.00 in (610 mm)</td>
<td>18.00 in (457 mm)</td>
<td>18.00 in (457 mm)</td>
<td>41 lbs (18.6 kg)</td>
<td>Counter/Cart/Table/Pole</td>
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<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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Electrical Requirements

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<th>Volts</th>
<th>Watts</th>
<th>Hz</th>
<th>Amps</th>
<th>Phase</th>
<th>BTU/hr</th>
<th>KVA</th>
<th>Ded. Circuit</th>
<th>Emer. Power</th>
<th>Plug Type</th>
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<tbody>
<tr>
<td>110</td>
<td>270</td>
<td>60</td>
<td>2.5</td>
<td>Single</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>No</td>
<td>Type B</td>
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Utility and Technology Requirements

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<tr>
<th>Water - Cold</th>
<th>Gasses</th>
<th>Water - Hot</th>
<th>Drain</th>
<th>Water - Treated</th>
<th>Steam</th>
<th>Vent</th>
<th>Vacuum - Dental</th>
<th>Medical</th>
<th>Tech Connect</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>/ No</td>
<td>No</td>
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</table>

Structural Requirements

<table>
<thead>
<tr>
<th>Seismic</th>
<th>Pre-approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>/</td>
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</tbody>
</table>

Product and Project Item Notes

Specification:
Dimension shown are reflective of cuff inflator (E20) sitting on top of air source (AG101).

Weight reflects total of both units.

Location

<table>
<thead>
<tr>
<th>Department</th>
<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
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</thead>
<tbody>
<tr>
<td>Cardio-Vascular</td>
<td></td>
<td>Stress(1 of 3)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Total: 1
Improve your duplex scanning for Venous Reflux or Venous Insufficiency with the Rapid Cuff Inflation System. Get reproducible results and catch the reflux missed when using either Valsalva or hand augmentation. The Hokanson E20 eliminates squatting to squeeze the patient’s leg, compressing all of the soft tissue, holding it for precisely the correct amount of time and rapidly releasing the pressure while you scan the leg for venous reflux. There is no need for a second person to do the compression, reducing the expense of performing this test. The E20 inflates any cuff in 0.3 sec, holds the pressure indefinitely or for whatever time your protocol needs and then instantaneously deflates the cuff. It works every time no matter the size of the cuff or limb. Simply dial in the pressure needed and push the button for inflation and then push the button to deflate.

The E20’s large digital readout displays cuff pressures accurately to within 1 mmHg over a range of 0 to 300 mmHg. The E20 requires a source of clean compressed air and the AG101 is the perfect companion. The AG101 has the capacity to allow the E20 to inflate a large contoured thigh cuff every 12 seconds indefinitely. Special care has been taken to make the compressor quiet, compact and dependable so it is ideally suited for your exam room.

For more information and other supporting documents please go to our website: www.hokanson.cc

Along with the Rapid Cuff Inflation System you select the option to have a 3-Second Timer or a Foot Switch and also the cuffs that you will need to meet your patient needs.

3-Second Timer

Set the pressure on the E20 and when you are ready to scan the leg just push the button on the 3-Second Timer and the cuff inflates in 0.3 second, holds the pressure for 3 seconds and then deflates instantaneously; it is accurate, reliable and easy. No need for a second person and no worries about the consistency or reproducibility and accuracy of the pressure, timing or results. Saves time, money and your back.

For more information and other supporting documents please go to our website: www.hokanson.cc
Foot Switch
The Foot Switch provides remote inflation/deflation whenever you need it. Stepping on the Foot Switch either inflates or deflates, keeping your hands free for other tasks.
For more information and other supporting documents please go to our website: www.hokanson.cc

Rapid Version Cuffs
Rapid Version Cuffs have large inner diameter tubing so the cuff can inflate and deflate almost instantaneously. They are not designed for taking standard blood pressures, or for use with Luer fittings.

<table>
<thead>
<tr>
<th>Rapid Version Straight Segmental Cuffs</th>
<th>Model</th>
<th>Overall Cuff Size</th>
<th>Cuff Application</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SC10DTM</td>
<td>11 x 85 cm</td>
<td>Upper arm and lower leg for plethysmography and venous reflux measurements.</td>
</tr>
<tr>
<td></td>
<td>SC12DTM</td>
<td>13 x 85 cm</td>
<td>Upper arm and lower leg for plethysmography and venous reflux measurements.</td>
</tr>
</tbody>
</table>

For large legs and arms that taper, this cuff gives a better fit with even pressure application around the limb. To use with the rapid cuff inflation system, cut off the Luer fittings on the large tubing.

<table>
<thead>
<tr>
<th>Contoured Cuffs</th>
<th>Model</th>
<th>Overall Cuff Size</th>
<th>Cuff Application</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CC17™</td>
<td>18 x 108 cm</td>
<td>Small to middle adult thigh for standard thigh blood pressures, plethysmography, segmental pressure measurements and pulse volume recordings, three cuff method.</td>
</tr>
<tr>
<td></td>
<td>CC22™</td>
<td>24 x 122.5 cm</td>
<td>Large adult thigh for standard thigh blood pressures, plethysmography, segmental pressure measurements and pulse volume recordings, three cuff method.</td>
</tr>
</tbody>
</table>

For more information and other supporting documents please go to our website: www.hokanson.cc
E20/AG101 Rapid Cuff Inflation System

The E20/AG101 can be used in conjunction with the EC6 for arterial inflow testing. The E20 provides nearly instantaneous venous outflow facilitating the EC6’s measurement of the arterial inflow rate. The E20/AG101 also deflates a cuff instantaneously so that it can be used for the maximum venous outflow (MVO) exam. The E20/AG101 may be used to perform reactive hyperemia, as its regulator will maintain the set cuff pressure as long as is desired. When used with the NVP3 Software for arterial inflow or MVO tests, you can automate the inflation, hold, deflation to meet the needs of your study’s protocol.

• Cycle Timer

The Cycle Timer is optionally installed inside the E20 at the factory. The cycle timer is ideal for arterial inflow studies, where the NVP3 Arterial Inflow software is not used. The Cycle Timer has two timers accessible on the front of the instrument. With the Cycle Timer you can repeat the cycle of inflation/deflation automatically and indefinitely. First select the pressure for inflation with the dial on the E20, then select a time to maintain the inflation and the interval between inflations on the Cycle Timer and the E20 will perform this inflate/hold/deflate cycle.

For more information and other supporting documents please go to our website: www.hokanson.cc

<table>
<thead>
<tr>
<th>Specifications</th>
<th>E20</th>
<th>A101</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth</td>
<td>9.00 in</td>
<td>18.00 in</td>
</tr>
<tr>
<td>Width</td>
<td>14.25 in</td>
<td>24.00 in</td>
</tr>
<tr>
<td>Height</td>
<td>5.00 in</td>
<td>13.00 in</td>
</tr>
<tr>
<td>Weight</td>
<td>10.5 lbs.</td>
<td>30.0 lbs.</td>
</tr>
<tr>
<td>Power</td>
<td>110 VAC 50 to 60 Hz</td>
<td>110 VAC 50 to 60 Hz</td>
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</table>
Intermountain Healthcare

MG_IMC CV Clinic

Specification Coversheet

Description: Hook, Coat/Robe, Wall Mount
Manufacturers: Bobrick Washroom Equipment, Inc.  ((818) 982-9600)
Vendor: Bobrick Washroom Equipment, Inc.  ((818) 982-9600)
Model: B-76717 Single

Single wall mount robe hook. Stainless steel with satin finish. 1-5/8in. high hook projects 1-5/8 in. from wall.

Arch Sig: Yes  Arch Code: 1-Fixed  Custom Code: Unassigned
Spatially Sig: No  ADA: No  Antimicrobial: No
Furnish Install: O/C  Type: Non-Medical  Green: No

Volts: N/A  Watts: N/A  Hz: N/A  Amps: N/A
Phase: N/A  BTU/hr: N/A  KVA: N/A  Ded. Circuit: No
Emer. Power: No  Plug Type: N/A

Water - Cold: No  Gasses: No
Water - Hot: No  Drain: No
Water - Treated: No  Steam: No
Vent: No  Vacuum - Dental / Medical: No  /  No
Tech Connect: No

Recommended Mounting Height Off Floor for Accessible Design: 38 to 40 inches (965 to 1015mm)

---

<table>
<thead>
<tr>
<th>Department</th>
<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
<th>Item Status</th>
<th>Qty</th>
<th>Item Notes</th>
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</thead>
<tbody>
<tr>
<td>Cardio-Vascular</td>
<td>Echo/EKG/PV(1 of 6)</td>
<td>Project</td>
<td>Draft (New)</td>
<td>3</td>
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<td>Project</td>
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<td>Project</td>
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<td>Exam/Activity</td>
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<td>Exam(9 of 21)</td>
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<td>Cardio-Vascular</td>
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<tr>
<td>Cardio-Vascular</td>
<td>Lab/Blood Draw (1 of 1)</td>
<td>Project</td>
<td>3</td>
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</table>

**Total:** 87
**MATERIALS:**

**Flange & Support Arm** — 18-8, type-304, 22-gauge (0.8mm) stainless steel. Concealed, 18-gauge (1.2mm) stainless steel mounting bracket. All-welded construction. Secured to wall plate with a stainless steel setscrew.

**Concealed Wall Plate** — 18-8, type-304, 19-gauge (1.0mm) stainless steel.

**Cap** — 18-8, type-304, 14-gauge (2.0mm) stainless steel. Welded to the support arm.

**INSTALLATION:**

To remove concealed wall plate from back of flange and mounting bracket, loosen setscrew. Mount wall plate so prongs are at top; secure with two sheet-metal screws, furnished by manufacturer, at points indicated by an S. Engage mounting bracket onto prongs of wall plate, then secure unit into position by tightening setscrew at bottom of flange.

For plaster or dry wall construction, provide concealed backing to comply with local building codes, then secure unit with sheet-metal screws furnished. For other wall surfaces, provide fiber plugs or expansion shields for use with screws furnished, or provide 1/8" (3mm) toggle bolts or expansion bolts.

For partitions with particle-board or other solid core, secure with sheet-metal screws furnished, or provide through-bolts, nuts, and washers. For hollow-core metal partitions, provide solid backing into which the furnished sheet-metal screws can be secured.

**SPECIFICATION:**

Surface-mounted robe hook shall be type-304 stainless steel with ________ (insert one: bright polished or satin) finish. Flange and support arm shall be 22 gauge (0.8mm) and equipped with a concealed, 18-gauge (1.2mm) mounting bracket that is secured to a concealed, 19-gauge (1.0mm) wall plate with a stainless steel setscrew. Cap shall be 14 gauge (2.0mm), welded to the support arm.

Surface-Mounted Robe Hook shall be Model ________ (insert model number) of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.
Intermountain Healthcare
MG_IMC CV Clinic
Specification Coversheet

Description: Chair, Clinical, Exam, Ultrasound
Manufacturer: Cone Instruments, Inc.  ((800) 321-6964)
Vendor: Cone Instruments, Inc.  ((800) 321-6964)
Model: Ergo Chair and Stool


General Product Detail

| Arch Sig: No | Spatially Sig: No |
| Arch Code: 3-Movable, Non-Elect | ADA: No |
| Custom Code: Unassigned | Antimicrobial: No |
| Furnish Install: O/O | Type: Medical |
| Green: No |

Physical Requirements

Width: 24.50 in (622 mm)  Left: N/A
Depth: 24.50 in (622 mm)  Right: N/A
Height: 40.50 in (1029 mm)  Front: N/A
Max Weight: 31 lbs (14.1 kg)  Back: N/A

Product and Project Item Notes

Specification:
Height adjusts 33'' - 40.5''

Structural:  
Electrical:  
Plumbing:  
Mechanical:  

Location

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Total: 11
Ergo Chair for Sonographers

Black Ergo Chair #944500-CO-BLACK

- Contoured saddle-style seat for increased comfort and range of motion
- Adjustable winged-back support provides relief from stress on back and shoulders
- Reverse sitting position provides increased ergonomic benefits
- Adjustable seat allows for increased flexibility, range of motion and reach
- Five-star base with wheels and sloping footplates to enhance stability and mobility
- Also available as a stool (without back)
- Assembly required
- Height adjustability 22.5” – 32”H
- 250 lbs. weight capacity

Dimensions:

Seat Height:  22.5” – 32”
Seat Depth:  14 13/16” – 18 7/16”
Seat Width:  19 5/8”
Back Width:  23 1/2”
Overall Depth:  19 ½” – 23 ½”
Overall Width:  23 3/16”
Overall Height:  33” – 40 ½”
Wheel Base:  24 ½” dia.
Weight:  31 lbs.
**Intermountain Healthcare**

**MG IMC CV Clinic**

**Specification Coversheet**

**Description:** Washer/Disinfector, Transducer  
**Manufacturer:** Nanosonics Inc. (844-876-7466)  
**Vendor:** GE Healthcare - Radiology Accessories (800-558-5102)  
**Model:** Trophon EPR w/Cart

Ultrasound transducer disinfector with mobile cart. Uses vaporized hydrogen peroxide. 7 minute disinfection cycle. Compatible with most ultrasound probe sizes, shapes and materials.

---

### General Product Detail

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<th>Arch Sig:</th>
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### Electrical Requirements

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### Physical Requirements

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<td>Max Weight:</td>
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<td>Mounting:</td>
<td>Floor-Mobile</td>
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<td>Bottom:</td>
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### Utility and Technology Requirements

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<th>Water - Cold:</th>
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<tr>
<td>Water - Hot:</td>
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<td>Drain:</td>
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<td>Water - Treated:</td>
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<td>Vent:</td>
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<td>Vacuum - Dental / Medical:</td>
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<td>Tech Connect:</td>
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### Structural Requirements

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<thead>
<tr>
<th>Seismic:</th>
<th>No</th>
<th>Pre-approval:</th>
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### Product and Project Item Notes

**Specification:**  
For Trophon Mobile Cart:  
Dimension: 20"W x 20.5"D x 34.5"H  
Weight: 45lbs  

**Structural:**

**Electrical:**

**Plumbing:**

**Mechanical:**

### Location

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<th>Room</th>
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Total: 1
Distributed exclusively by GE Healthcare, the Trophon® EPR is a complete ultrasound transducer High-Level Disinfection system that's fast, easy to use, environmentally friendly and quality assured. It uses a unique platform technology to effectively disinfect the transducer, including the shaft and handle—in just seven minutes between patients.

When used as directed the Trophon EPR meets guidelines set forth by the FDA and CDC for High-Level Disinfection. For sale in the U.S. and Canada only.

### Accessories

The Trophon EPR can stand alone or for convenient point-of-care options, we offer both the Trophon Mobile Cart and Wall Mount solution.

**Trophon Mobile Cart**
- Catalog #: E8350NH
- 34.5" H x 20" W x 20.5" D
- 45 lbs. 21 kg.

**Trophon Wall Mount**
- Catalog #: E8350NG
- 8.6" H x 6.7" W x 2.0" D
- 3 lbs. 1.35 kg.

### Consumables

We are your one-stop shop for Trophon EPR consumable supplies.

**Trophon Sonex-HL™**
- Catalog #: E8350NJ
- 6 cartridges/box
- Approx. 240 cycles

**Trophon Chemical Indicators**
- Catalog #: E8350NC
- 300/pkg.
- 1" 26 mm
# System specifications

<table>
<thead>
<tr>
<th>System Specifications</th>
<th></th>
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<tbody>
<tr>
<td><strong>Cycle Time</strong></td>
<td>7 minutes</td>
</tr>
<tr>
<td><strong>Cycle Verification</strong></td>
<td>Via User Screen, Chemical Indicator and Electronic Log.</td>
</tr>
</tbody>
</table>
| **Sonex-HL**          | Minimum Concentration 31.5%  
Minimum Disinfectant Dose 1.0 g  
Volume – 80 ml, approx. 40 cycles/cartridge  
Shelf Life – 2 years |
| **Chemical Indicators**| The Chemical Indicators are used exclusively for monitoring the High-Level Disinfection process when placed within the Trophon EPR chamber. Refer to the Chemical Indicator Color Assessment Chart for cycle verification information. |
| **Probe Compatibility**| Please check with your transducer manufacturer regarding compatibility with the Trophon EPR. You can also find a validated transducer list at www.trophon.com |

## Electrical Specifications

<table>
<thead>
<tr>
<th>Electrical Specifications</th>
<th></th>
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</thead>
</table>
| **Electrical Requirements**| Input Voltage: 120V AC  
Input Current: 5 Amp/50-60 Hz |
| **EMC Compliance**        | EN61326-1:2006 FCC Rules Part 15 Subpart B Unintentional Radiators, Class B  
Digital Devices ANSI C63.4:2009 |

## Mechanical Specifications

<table>
<thead>
<tr>
<th>Mechanical Specifications</th>
<th></th>
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</thead>
</table>
| **Trophon EPR**           | 19.3” H x 13.6” W x 13.6” D / 38 lbs.  
490 mm x 345 mm x 345 mm / 17 kg |

## Ordering is simple.

Order your Trophon EPR system, accessories, and consumable supplies with the method most convenient for you.

- Call: 800-558-5102, opt. 2, opt. 1
- Fax: 877-279-6990
- Email: gehcaccessorysales@ge.com
- Contact: Your local GE representative
- Visit www.gehealthcare.com/trophon
**General Product Detail**

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<td>Vendor: Medtronic - Covidien Kendall Products</td>
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**Electrical Requirements**

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<td>Emer. Power: No</td>
<td>Plug Type: N/A</td>
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**Utility and Technology Requirements**

| Water - Cold: No | Gasses: No |
| Water - Hot: No | Drain: No |
| Water - Treated: No | Steam: No |
| Vent: No | Vacuum - Dental / Medical: No / No |

**Structural Requirements**

| Seismic: No | Pre-approval: |

**Product and Project Item Notes**

**Specification:**
- **Structural:**
- **Electrical:**
- **Plumbing:**
- **Mechanical:**

**Location**

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**Intermountain Healthcare**

**MG_IMC CV Clinic**

**Specification Coversheet**

**Description:** Monitor, Physiologic, Cardiac

**Manufacturer:** Philips Healthcare - Monitoring Systems  
((978) 687-1501)

**Vendor:** Philips Healthcare - Monitoring Systems  
((978) 687-1501)

**Model:** MX450

---

### General Product Detail

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### Physical Requirements

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<td>Depth:</td>
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<td>Bottom:</td>
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</table>

### Electrical Requirements

| Volts: | N/A |
| Watts: | N/A |
| Hz: | N/A |
| Amps: | N/A |
| Phase: | N/A |
| BTU/hr: | N/A |
| KVA: | N/A |
| Ded. Circuit: | No |
| Emer. Power: | No |
| Plug Type: | N/A |

### Utility and Technology Requirements

| Water - Cold: | No |
| Gasses: | No |
| Water - Hot: | No |
| Drain: | No |
| Water - Treated: | No |
| Steam: | No |
| Vent: | No |
| Vacuum - Dental / Medical: | No / No |
| Tech Connect: | No |

### Structural Requirements

| Seismic: | No |
| Pre-approval: | |

### Product and Project Item Notes

**Specification:**

- Structural:
- Electrical:
- Plumbing:
- Mechanical:

**Location**

<table>
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<th>Room#</th>
<th>Room</th>
<th>Funding Source</th>
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<td>Equipment Alcove(1 of 2)</td>
<td>Project</td>
<td>Draft (New)</td>
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