AUTOGRAPH COLLECTION®

PRODUCT QUALITY STANDARDS

May 2014

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STANDARDS

MODULE

GR

GENERAL REQUIREMENTS

GR1 - Overview & Project Administration
GR2 - Signage & Graphics
GR3 - Material & Product Criteria
GR4 - Furniture, Fixtures & Equipment (FF&E) and OS&E

May 2014

AUTOGRAPH COLLECTION®

STANDARDS

MODULE

GR1

OVERVIEW & PROJECT ADMINISTRATION

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Autograph Collection

Independent Hotels

The Autograph Collection is comprised of upper-upscale to luxury independent hotels with distinctive personalities in major cities and desired destinations worldwide. Each hotel is highly unique and distinct with its own identity appealing to a growing segment of customers looking for experiences that only independent hotels deliver.

Autograph Collection hotels are bound by certain core requirements that cut across all hotels. Unlike other brands; Autograph Collection Standards do not prescribe design, color palette, specifications, etc., but focus on a central mission, ensuring a high quality customer experience while allowing each hotel to deliver on its unique customer promise.

Design the Brand facilities for physical, functional and experiential qualities that comply with the property's Facility Program, upper upscale or luxury standards, and a well defined theme with a fully activated customer experience program.

The Brand's expectation for concept planning and program activation is developed from the following:

- Quality & Functionality
- Brand Concept
- Brand Marketing & Communications
- Brand Service Program
- Customer Touch-Points & Branded Signature Service Moments

Quality & Functionality

The Design Standards address the property's physical quality and functionality that support the Brand's guest experience.

- Comply with upper upscale or luxury property standards and customers' expectations
- Guests can efficiently get their work done in the guestroom and appropriate public areas
- Property helps guests utilize their leisure time

The key quality and functionality design features are:

- Building exterior with manicured grounds
- Public spaces - quality finishes
- Technology in guestrooms and common spaces with extra tech features
- Guestroom - spacious interiors, quality finishes, insulated from noise - excellent sleep experience
- Bath experience - fixture quantity, finish quality, water pressure, amenity space
- Fitness & wellness - equipment size, quality, distinguishing interiors
- Culinary & bar - high quality experience
- Meeting & event spaces - quality, natural light, ergonomic seating, technology
- Spa - quality experience and services
- Resorts - high quality recreation facilities, golf, tennis, unusual options
- Service - high quality service culture
- Health & safety - facility condition, cleanliness, guest and employee safety

Brand Concept

Autograph Collection hotels have a core brand concept that radiates through the brand experience. This concept provides the experiential identity and the inspiration needed to create strong and lasting emotional connections with customers. The independent hotel brand concept is at the core of a holistic and cohesive customer experience program, and is strategically integrated into every customer touch point along the guest journey. Autograph Collection expects every member hotel to uniquely express its brand through operational programming that activates the brand and makes the hotel experience unique and memorable for guests.

Before joining the Autograph Collection every hotel under consideration or in development for the Autograph Collection is rigorously assessed on its physical, functional, and experiential qualities to ensure it meets the quality standards and experiential criteria that make Autograph Collection meaningful in the market. While no two properties are alike, the goal of each Autograph Collection hotel is to deliver an upper-upscale to luxury experience on par with other world-class hotels in their segment, as well as with other Autograph Collection hotels.

Brand Marketing & Communications

Identify the property's central concept to determine the marketing and communications campaign that clearly portrays the category and theme including:

- key messaging platform, reference Autograph Collection Standard Operating Procedures
- communications and marketing plan
- website

Brand Service Program

Provide new employee orientation, service skills training and daily stand-up meetings that brings the Brand concept into clear focus for employees. Reference *Autograph Collection Standard Operating Procedures.*

Customer Touch-Points & Branded Signature Service Moments

Each property brings their signature Brand concept to life by programming customer touch-points and branded signature service moments throughout the guest journey. Align the guest touch-points and service with the property's Brand concept, category and theme (from the guest perspective), that is intense, intuitive and memorable, making the ordinary, extraordinary. Reference *Autograph Collection Standard Operating Procedures*:

- arrival and check-in
- lobby and lounge
- guestroom
- departure and check-out

Touch-point alignment and service qualities ensure the property's Brand strength through the following:

- Props - are tangible accessories that help bring the theme to life in a particular guest journey moment
- Tone - speaks to guest experience service aspects – the theme language and behaviors
- Mood - intangible guest experience aspects – aromas, sounds, intangible qualities that add depth and detail

Administration

GR1.1 Product Quality Standards

A. Purpose: The Hotel Design Standards have been prepared by Marriott International, Inc. (MI) to communicate project product standards for The Autograph Collection properties and outlines the foundation and spirit of the product and Brand service requirements.

B. Brand Focus: The Autograph Collection Design Standards are primarily focused on "guest facing" experiences and amenities required by the Brand, the management relationship and coordination with the Brand's operational criteria.

C. Document Organization: The Design Standards are organized into 17 complementary Modules to facilitate the integration of design requirements into the design process.

1. Module GR: This Module describes the General Requirements applicable to the design process and design.
2. Modules 1 through 16: These Modules provide design criteria, facility requirements and general material qualities that facilitate the development of the final design and documentation.

D. Minimum Standards: The Standards in this Module are minimum requirements for developers and market managers. Where applicable codes, culture, ordinances and laws take precedence and these are substantially different from these standards, review the differences with the responsible design team consultant and the MI Design Team to obtain resolution.

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

GR1.2 Project Application

A. Design Integration: Compliance with these Design Standards defines the property's quality that guests expect and require of a leading Brand.

1. The Design Standards address the program of a full service, high quality to luxury tier, mid-size property.
2. Resort Hotels: The resort and leisure property features are similar to the business property model, except resorts require additional guest features and amenities such as the following:
   - Guestroom features such as larger bathrooms, closets and bedroom; balconies
   - Additional Food and Beverage
   - Additional Retail
   - Additional Recreation
   - Spa and Golf Facilities

B. "Star" Rating: If the property is intended to maintain a rating system to qualify or register for a hotel classification, provide the services, features, and facilities required to obtain the rating or classification.

C. Multi-Use Buildings: In order to maintain operational and access control (as required by Loss Prevention Review **<16>**), hotel exit stairs, utilities, facilities and services are not shared or connected to office, retail, residential, entertainment, recreational or other external uses.

1. If shared facilities can not be avoided, submit and obtain approval from MI of alternate facilities that safeguard the hotel operations and access.
2. Entertainment Lounges, General and Service Retail, and Recreational Facilities not associated with the Fitness Center are only included in the hotel program under limited conditions when reviewed and approved by MI.
3. Facilities and services not approved or directly managed by MI are separate and independent of the property and therefore are not located within, proximate to, or associated with the hospitality facility.

D. Dimensions, Sizes & Measurements: Conversions from English to metric (SI) units are approximate. Verify, coordinate and confirm product and material dimensions for required design applications.

E. Cost Responsibilities: The organization of the Design Standards into 17 Modules and the organization of each Module are not intended to assign design, control, procurement or cost responsibility to project team members.

GR1.3 Interpretations

A. General: Project specific conditions may require additional design direction for issues not specifically addressed by the Design Standards. MI will provide additional interpretations and information to assist in integrating the Design Standards into the project.

B. Modifications: These Design Standards may be modified by MI to reflect and respond to changing design, market, construction, operational conditions and regional operating needs and requirements.

C. Current Edition: Prior to relying on or implementing the Design Standards, verify with MI that this edition is current and contains the latest modifications.

GR1.4 Code & Regulation Compliance

A. Architect / Engineer of Record: The project Owner and the Architect & Engineer of Record and consultants (design professionals) are responsible for compliance with governing laws, codes, and regulations.

1. These Design Standards are not intended to negate the Design Professional's legal responsibilities for the protection of public health, safety and welfare. Nor, are they intended to alter responsibilities for good design practices such as accessibility, environmental protection, energy conservation, weather tight, safe buildings, etc.
2. MI reserves the right to request that a variance be requested for code requirements that are in conflict with the Design Standards and operations.

B. Selecting Codes & Standards: Prior to the project's commencement, the Design Team proposes to the Owner and MI a recognized building code and standards for the building, finishes and furnishings.

1. Current Editions: MI uses current editions of codes and technical references below as a basis for comments.
2. Minimum Standards: Comply with the current requirements of NFPA 101 Life Safety Code (National Fire Protection Association) and the understanding and interpretation of them by the Marriott's Fire / Life Safety Department and the Zurich Services Corporation.
3. Recognized codes and standards include:
   a. International Building Code
   b. Governing jurisdictional codes and regulations
   c. NFPA Standards
   d. NFPA 101 Life Safety Code (US)

e. ANSI Standards
f. UL and ASTM Standards

4. Code Integration: Follow these Design Standards when they exceed requirements of governing codes and accessibility guidelines.
5. Refer conflicts with Design Standards to MI for resolution.

GR1.5 Accessibility

A. Meeting the Needs of All Guests: In keeping with the best traditions of Marriott hospitality, we extend hotel services to all guests, including those with disabilities.

- We work diligently to apply the best current thinking on accessibility features to each lodging brand, each new hotel, and each hotel renovation.
- Recognizing that we operate and acquire hotels originally built under many previous requirements, we constantly seek to improve the physical accessibility of our hotels, removing existing barriers wherever feasible, as well as extending services where barriers remain.

B. Accessibility Standards Compliance: As a minimum, MI's accessibility standards require compliance with accessibility regulations of the country where the property is located and the following criteria using United States standards:

1. Hotel Access: Provide an accessible public path of travel into the hotel and into spaces accessible to guests.
2. Service: Provide access to services generally available to guests.
3. Public Toilets: All public area restrooms have accessible toilet compartments, urinals, and lavatories.
4. Guestrooms: Outside of the U.S., a minimum of 1% of the total guestrooms is accessible. Increase quantity based on market norms.

C. Americans with Disabilities Act (ADA): Within the United States, the facilities shall comply with the Americans with Disabilities Act (ADA). Outside the U.S., projects must not only comply with the accessibility standards of the governing jurisdiction, but also accommodate the guest's accessibility expectations represented by The Americans with Disabilities Act (ADA).

1. Conflicts: In cases where the governing accessibility laws conflict with ADA or where issues are not mutually addressed, consult with MI to develop a program that accommodates the guest's expectations.
2. ADA Resources: Available free at: *http://www.ada.gov*

GR1.6 Green & Sustainable Design

Marriott International supports green and sustainable practices as an integrated part of our hospitality business.

We have an important facilitating role to play, working in partnership with our hotel Owners to implement sustainable design and operations, to conserve natural resources, protect indigenous wildlife, enhance indoor environmental quality, and reduce and recycle waste wherever possible.

Operating with a greater awareness of green and sustainable design, we strive to support the environmental interests and concerns of our guests, associates, business partners and communities.

Marriott International is an active member and supporter of the following organizations:

- The U.S. Green Building Council and LEED Accreditation Program
- The Center for Environmental Leadership in Business
- Conservation International
- The International Tourism Partnership
- Energy Star Rated Products - for hotel brands worldwide

GR1.7 Building Materials, Products and Equipment

A. General: These Design Standards identify criteria for materials, products and equipment and not specifications and methods of workmanship.

It is understood that the work is performed by skilled craftsmen of various trades that reflect the best quality defined by applicable industry standards. The criteria are for use by the design professionals to develop project specific specifications.

Additionally, the Design Standards are used by the Architect, and other design team members, Owner and Contractor to assure the quality of a Hotel project.

B. Standard of Quality: The Design Standards identify specific products that meet the MI requirements. However, it is clearly not MI's intent to limit product use.

Alternate manufacturers will be considered by MI for the products identified in the Design Standard. MI will base the decision of acceptance when compared to products identified as the standard of quality.

The Owner and Project team are fully responsible for submitting documentation and samples of required and alternate products to MI for consideration. Base initial budget projections on products defined in this Design Standard.

C. Labels and Nameplates: Omit manufacturer nameplates and other graphics visible to guests, unless directed by MI.

D. Toxic or Carcinogenic Materials: No known toxic or carcinogenic materials are specified or provided for construction. This includes concealed materials and products containing or manufactured with formaldehyde and asbestos.

MI reserves the right to reject materials, including products specified for the FF&E package, that may pose a health risk to guests or hotel employees. It is the responsibility of the Owner and the Owner's team to identify non-compliant materials and to provide MI with qualified written testing lab reports that certify safety.

E. Technical Institute References: Use current editions.

F. Environmental Impacts: Adjust design for sites with high humidity, noise, etc. At ocean sites with salt exposure select and provide applicable non-corrosive finishes, equipment and plant materials.

Branding & Design Review

GR1.8 Branding & Interior Design Process

A. Application: This model defines the design and review process requirements summarized in the governing agreement.

1. Franchise Agreement or Brand Affiliation Requirements document (assessment issued for hotel conversions).
2. Technical Services Agreement (TSA) or Design Review Agreement (DRA) governing the project.
3. Consult the governing Agreement for project specific requirements applicable to the project.

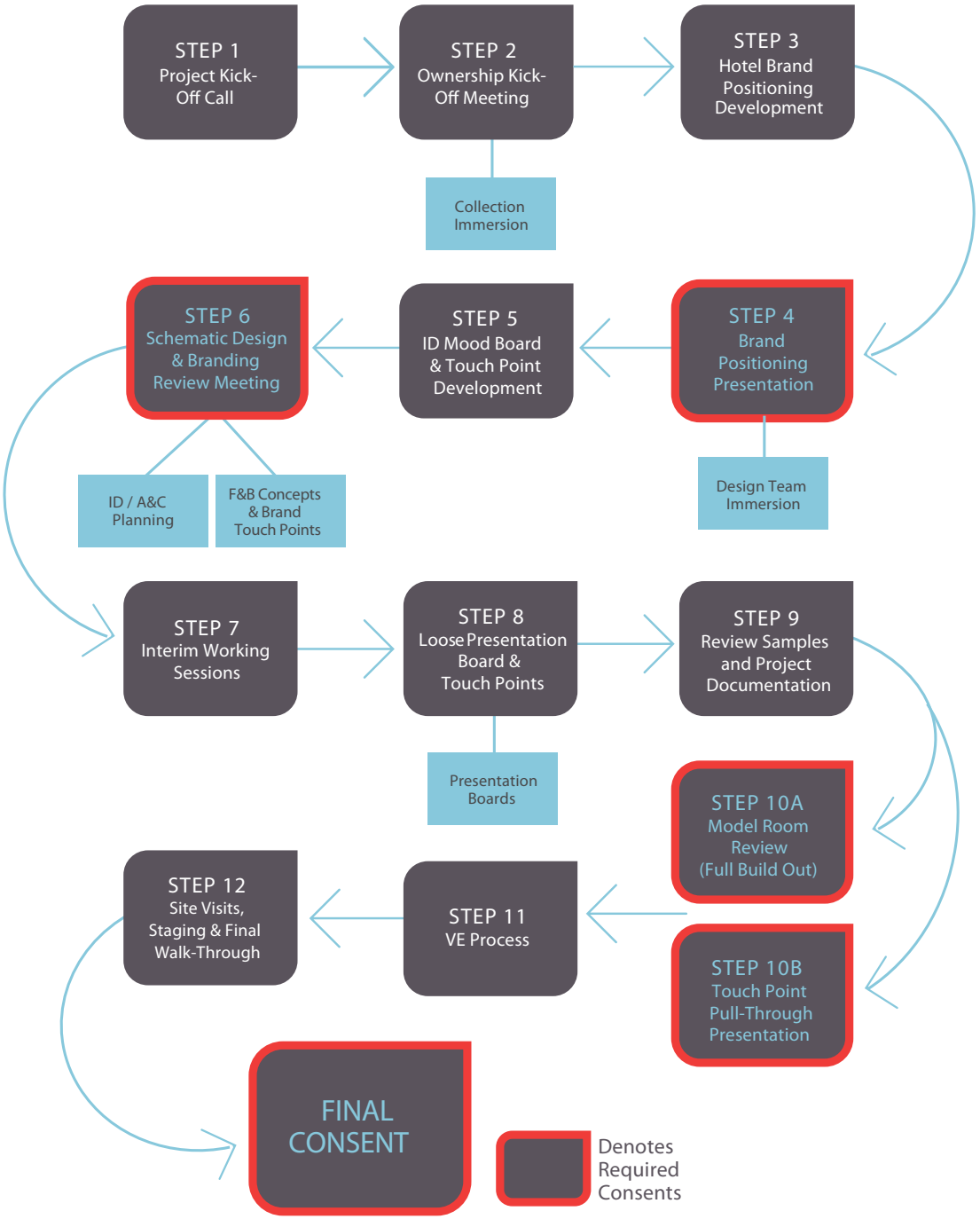
B. Design Sequence: This model assumes the entire project is designed and constructed in one focused process. Typically, project designs are developed in a series of parallel efforts (exterior, guestrooms, public areas, etc.) requiring adjustments to the process to address the intent of the governing Agreement.

C. Project Delivery: This model assumes a sequential evolution of the design and construction process. For projects employing a non-sequential process (fast-track, phased, etc.) adjustments to the process are required to conform to the governing Agreement intent.

D. Project Coordination: Consult with MI at the project kick-off meeting to develop a project specific design and construction review process based on the project's scope, budget, schedule and team composition organized to address the requirements of the governing Agreement.

E. Quality Assurance: Project design conformance with MI requirements is verified by a series of meetings, submissions and document reviews. The process includes the following design and construction phases, milestones and tasks.

Figure 1 - Branding & Design Review Process

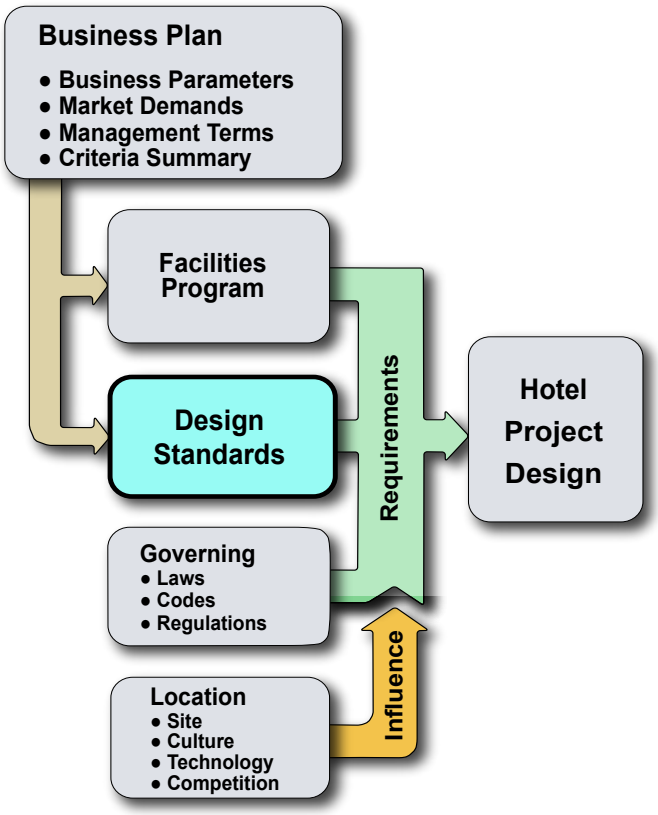


GR1.9 Preliminary Design Phase

A. Criteria Summary & Facilities Program: An initial step in the design process is the Criteria Summary and Facilities Program creation.

1. Criteria Summary: A Criteria Summary is developed by MI for each project to establish the number of guestrooms, amount of food and beverage and meeting space, and other hotel program requirements based on a feasibility study.
2. Facilities Program: The Criteria Summary and resulting project Facilities Program forms the foundation of the hotel design and governs the application of the Design Standards. Together, the dictates of the Criteria Summary and project Facilities Program are integrated with the customized application of Design Standards to guide the hotel design. Additionally, governing laws, building codes, regulations, site conditions and local parameters influence the hotel design.
3. Design Phase Submittal: At each phase of the design process, the Architect submits a revised, as-designed project Facilities Program reflecting the current state of the project design.

Figure 2 **- Design Process - Diagram**



B. Brand Concept: A core Brand concept is developed to radiate throughout the hotel, a motif or theme that runs through the property and creates a meaningful emotional connection with guests, while inspiring the hotel's interior design. It is important that each property meets the Autograph Collection's guest experience criteria where a strong brand positioning and pull-through is essential.

1. Working with a qualified third-party, hospitality focused branding agency is the most efficient way to realize a brand positioning, and for bringing vision to life during the course of the project. For most projects, not limited to owners who are developing an independent hotel for the first time, retaining the services of an approved branding consultant is required.
2. Brand concept consent starts with a review of the brand concept as part of the initial assessment process. The Brand concept is then presented at the project kick-off meeting by the branding agency.
3. In collaboration with MI and working towards a project that exudes originality, a sense of place and an upper-upscale to luxury level of quality ownership, the design team and relevant partners develop design solutions that embody the point of view of the independent hotel.
    a. Interpret and reinforce the brand message by the interior design.
    b. Identify touch points to enliven the hotel positioning by pulling-through the experience.

C. Key Messaging Platform: Outlines a hotel's positioning elements, to be further developed during the Design Phase:

1. Brand Attributes: Define the specific qualities attributed to the Brand. This suite of attributes is distilled into key impact areas only, those that are compelling, what actually motivate consumers and that create distinct experiences for guests.
2. Brand Cornerstones: Articulate the four or five key pillars that define the foundation of the Brand. The key pillars include elements focused on everything and anything from property amenities, services and management team to the nuances that define the spirit of a place.
3. Brand Positioning Statement: Encompasses the core essence of where the Brand Cornerstones intersect. It is a statement that solidifies and simplifies the combined elements of the Brand.
4. Brand Personality: Defines the appropriate tone and spirit of the Brand and provides a key decision-making pillar. The Brand Personality is what helps a property's team quickly answer the question, "Is what I am about to do, say, or promote, etc., in sync with the personality of our Brand?"
5. Brand Promise: Is the commitment made by the hotel to every guest who experiences the Brand.

D. Brand Positioning Document: Delivering a quality guest experience starts with a hotel specific document that clearly defines the hotel's competitive positioning within the local hospitality market, illustrates what makes the hotel unique and interesting, and paints a picture of the final product and guest experience. This document is the inspiration and true north for design disciplines and is referenced throughout the development process to ensure a cohesive Brand experience. This document includes the following (the first 3 items right up-front):

1. Competitive Analysis / Market Survey
2. Hotel Business Positioning & Competitive Strategy
3. Hotel Brand Positioning: Defines what the Brand stands for and offers, which is unique from its competition. It includes the guest target, Brand attributes or pillars, Brand promise, and core values.
4. Key Messaging Platform: Describes how the Brand positioning is communicated and brought to life via the look, feel and tone of voice for written and verbal communications from the property.
5. Brand Identity and Visual Vocabulary: (with logo, graphic icon, color, materials, typography and a graphic guide that clearly establishes usage guardrails). It includes the following:
   a. Hotel logo or graphic icon
   b. Typography fonts, materials and color palette
   c. Style Guide for the usage of logo, typography and palette
   d. Copy Guide that establishes the voice and copy style for brand positioning (with real- world examples such as sales and marketing copy, sample ads and service verbiage)
6. Key Experiential Touch Points: On-property pull-through of guest touch points, design signatures and messaging are the visual cues, interactions and small moments throughout the guest experience that make each hotel unique and special. Conversion properties are to submit photos, samples or descriptions of the unique touch points that embody the properties' positioning and personality. The areas where this is pulled-through include the following:
   a. Pre-Arrival / Arrival / Check-in
   b. Guestroom
   c. Public Spaces
   d. Entertainment / Recreation
   e. Departure

E. Design Team Selection: The Owner is responsible to research and contract competent design consultants. For the Owner's reference and consideration, consult MI for a list of qualified, upscale, lifestyle design consultants specific to each project. The consultants include but are not limited to the following:

1. Project Management Company
2. Branding Consultant
3. Architect
4. Interior Designer *
5. Graphics Designer
6. Lighting Designer
7. Acoustic Consultant
8. Purchase Agent
9. Landscape Architect
10. Engineers - Mechanical, Electrical and Plumbing
11. Restaurant Designer **
12. Spa Designer
13. Spa Consultant
14. Retail Consultant
15. Kitchen Designer
16. Laundry Designer
17. Audio / Visual Systems
18. Security System Designer

* Third-Party Interior Design Firm: For new construction, projects undergoing extensive PIPs (property improvement plans), and properties that are repositioned within their competitive environment, retention of an MI approved professional third-party interior design firm with upper-upscale to luxury, full-service, lifestyle hotel experience is required.

** For owners and operators without a track record of creating market relevant bars and restaurants, retention of either a dedicated in-house F&B professional (with a history of developing successful F&B venues) or a partnership with a third party consultant, a licensed partner or lessee is required to ensure the on-property bar and restaurant experience is delivered at the highest level.

F. Hotel Development Committee (HDC): Every project requires HDC approval.

1. The HDC evaluates variations to standards and carefully weighs the overall benefit the project offers MI.
2. Once a project is approved by the HDC, the building and interior designs are developed for the design review process.

G. Initial Technical Service Conference: The initial meeting with the Owner and MI establishes the working process between the Owner's project management representative and the MI technical service staff. The purpose of this meeting is to review the following:

1. Project status and scope
2. Owner's Preliminary Project Schedule
3. Owner's Preliminary Project Budget
4. Project Administration

H. Project Kick-off Meeting: After obtaining the required approvals and appropriate agreements and design team appointment, project coordination commences with a project kick-off meeting.

1. To generate a comprehensive concept of the project that includes Brand concept direction, functional and aesthetic space planning, architecture, interior design and exterior environment.
2. Project Schedule: Review project requirements and establish a schedule and content for reviews, submissions and presentations.
3. Sequence: Typically, interior design presentations are scheduled after the building designs are approved.
4. Resource: *"Interior Design Process Guide"*

GR1.10 Design Phase Administration

A. Overview: Design phase reviews (concept, schematic, design development) require a series of sequential meetings, document submissions and presentations as based on the project's timeline.

The ultimate goal of the collaboration between MI and the hotel design team is for the physical product (furniture, fixtures and materials, etc.) to be on par with other competitive properties in the market, as well as with other Autograph Collection hotels.

Follow the guidelines below to ensure an efficient design review process.

B. Schedule: The Owner establishes and maintains the project schedule for tasks, meetings, presentations and documentation.

C. Budget: The Owner establishes and monitors the project budget. Project Owners and their professional consultants are strongly encouraged to utilize MI's Cost Code System to establish a common language and understanding.

The categorization provides both a breakdown of various project elements and a distinction of responsibilities for control.

Category 1 **Special Site Conditions**	Extraordinary site and building conditions.
Category 2 **Building**	Site and building improvements (including fees and permits) not included in other Categories.
Category 3 **Communications Systems**	Cost and design fees for security, telephone and two-way radio systems.
Category 4 **Trade Equipment**	Cost and design fees for kitchen, laundry and housekeeping equipment.
Category 5 **Operating Supplies and Equipment**	Cost and fees for fixed asset supplies and hotel systems required to open a fully operational hotel.
Category 6 **Furniture, Fixtures & Equipment**	Cost and design & procurement fees for decorative items including FF&E, interior landscaping, graphics and decorative lighting.
Category 7 **Architectural / Engineering Fees**	Professional design fees (not included in other Categories).
Category 8 **Land, Corporate Finances, Legal**	Cost of land (closing costs, insurance, fees) and interest and finance fees.
Category 9 **Operations**	Cost necessary to open a hotel (items not included in Category 5) including pre-opening costs, working capital and project development costs.

D. Updates: At each design phase formal presentation, provide a revised project schedule, budget and Facilities Program reflecting the current status of the project design.

E. Loss Prevention Review – General: **<16>** A Loss Prevention (LP) Review generates a project specific Risk Assessment that generates Functional Requirements. The Functional Requirements are integrated with Module **<16>** minimum requirements to produce a comprehensive project design that reasonably mitigates or eliminates risk factors associated with the property location, design and facilities.

1. Managed Properties: The LP Review for MI Managed projects are conducted and overseen by MI's Global Security & Safety Technical Services department. Deviations from MI's LP Review process requires MI acceptance.
2. Franchise Properties: MI does not manage a franchise company's operations. The franchise shall determine the most effective method to develop proper measures and to select systems that coincide with the franchise operations. Module **<16>** is intended only as a guide to assist franchise management to develop proper measures based on the franchise company's unique methods of operations such as, personnel, staffing levels, technology, operational policies and experience.

GR1.11 Design Brief

A. Intent: To insure that each Autograph Collection project fulfills the vision of providing a unique, indigenous experience, a design brief is created that defines the hotel's unique characteristics, establishes a unified design vocabulary and provides a basis for appropriately integrating the Design Standards into the project.

B. Process: As early in the design process as feasible, a select group of project principals meet (preferably at the project site) to review established project criteria, to observe existing site condition and to develop design brief script.

C. Content: At a minimum, the design brief includes the following:

1. Vision: Verify compliance with the goals.
2. Facilities Program: Validate or recommend exceptions.
3. Brand: Initiate criteria for development.
4. Sense of Place: Define elements of the locations history, culture and heritage that support indigenous design authenticity.
5. Competitive Set: Provide a strategy to manage competitive differentiation.
6. Site Features: Identify opportunities to integrate and benefit.
7. Material Vocabulary: Establish types and palette of colors.
8. Design Motif: Develop a unique, local theme.
9. Environmental: Identify approaches to integrate, protect or sustain environmentally sensitive features.

D. Brand Immersion: Prior to the Concept Design Phase initiation and when the principal design team has been selected, attend a Brand immersion meeting to review the goals as outlined by:

- Autograph Collection Operating Standards
- Autograph Collection Affiliation Requirements

GR1.12 Concept Design Phase Requirements

A. Overview: The Concept Design phase generates a comprehensive concept of the hotel project that includes branding development, functional and aesthetic space planning, architecture, interior design and exterior environment. Provide documentation to define parameters and adequately convey design.

B. Brand Documents: Provide the following:

1. Printed presentation depicting brand thinking through imagery and text.
2. Copies of the presentation in a digital format to the principal stakeholders.

C. Architectural Documents: Provide exhibits and illustrative sketches in full color, depicting the Project design theme and project objectives.

1. Facilities Program: current as-designed
2. Project Schedule
3. Project Budget
4. Research & Market Studies (laundry, sun orientation, sign, traffic, acoustics)
5. Vicinity Map: showing access and major surrounding developments
6. Site Plans: with boundaries, contours, parking, buildings and recreation facilities
7. Landscape Plan
8. Floor Plans
9. Typical Guestroom Floor Plans
10. Exterior Elevations and Sections
11. Exterior Image Boards

D. Interiors Documents: The concept design entails a loose or more formal presentation and includes mood photos, written words, a color palette, and possibly other items such as examples of lighting, architectural finishes, and FF&E to convey intent. See the *Interior Design Process Guide* for detailed requirements.

E. Engineering Documents:

1. Design Brief of the major building systems
2. Utility system locations and definitions

F. Governing Authority: Inform MI Project Director of meetings and drawing submissions for planning, building, fire and governing authorities that have project development jurisdiction.

At initial meetings with the Fire Department, include a representative of the Marriott Fire Protection Department.

Allow adequate time in the project schedule to coordinate this meeting.

GR1.13 Schematic Design Phase Requirements

A. Overview: Prepare a Schematic Design phase presentation incorporating MI's concept design plan review comments and accepted variances. Provide documentation required to clearly convey the design intent, project program criteria and compliance with Brand Standards.

B. Architectural Documents: Provide professionally prepared preliminary drawings and documents.

1. Facilities Program: as-designed
2. Schedule: updated
3. Budget: updated
4. Special Studies: laundry, elevator, acoustic, etc.
5. Vicinity Map: site access, surrounding development
6. Site Plan: site features, buildings, recreation, traffic, etc.
7. Landscape Plan: exterior planting, paving and recreation, in color
8. Building Plans: public spaces, guestrooms, back-of-house
9. Elevations and Sections: materials
10. Model: physical or digital
11. Fire & Life Safety: exit plan, separations, features
12. Loss Prevention: risk assessment

C. Interiors Documents:

1. Areas: guestrooms, corridors, entry, lobby, food & beverage, function, recreation, spa, retail, lounges
2. Floor Plans: floor material, furniture, fixture, equipment
3. Reflected Ceiling Plans: materials, heights, lighting
4. Elevations: as required to define design intent
5. Perspectives: views required to define design intent; professionally created
6. Guestrooms & Lounge: enlarged plans, room matrix
7. Color & Materials Boards: loose samples and images~~; framed~~
8. Interior Design Process Guide: consult for additional details

D. Engineering Documents:

1. Utility Confirmations
2. System Descriptions
3. Space Allocations
4. Alternate System Analysis

E. Building Insurance Reviews: Managed Projects: At the completion of Schematic Design, and prior to beginning Design Development, contact the designated insurance reviewing agency to establish the following:

1. Elements requiring review; wind, earthquake, roof, fire protection, etc.
2. Design criteria
3. Submittal requirements

F. Interim Working Sessions: Following the acceptance of Schematic Design documents, a series of informal meetings and reviews are conducted with MI and the Owner's design team to advance the design, offer design assistance and prepare documents for Design Development acceptance.

G. Senior Brand Management Design Review (SBMDR): At the end of the Schematic Design phase, prior to initiating the Design Development phase, projects are presented to senior managers to confirm mutual acceptance of the design and consistency with the project Brand and Design Standards.
The formal presentation consists of the Schematic Design documentation rendered and enhanced with color, illustrations and samples to clearly convey the design intent. Consult the MI Project Director and the Interior Design Process Guide for the presentation schedule, format and deliverables as appropriate for the project type, scope and location.
Provide copies of the presentation in a digital format to the principal stakeholders.

GR1.14 Design Development Phase Requirements

A. Overview: Prepare a Design Development phase presentation incorporating MI's Schematic Design phase and SMDR comments and accepted variances. Provide fully developed design documentation required to clearly convey the design intent, project program criteria and Brand Standards.

B. Architectural Documents: Provide detailed development drawings.

1. Facilities Program: as-designed
2. Budget & Schedule: updated
3. Vicinity, Site & Landscape Plans: all areas of the project
4. Building Plans, Elevations & Sections: all areas of the project
5. Special Studies: laundry, elevator, acoustics, recreation, etc.
6. Fire Protection & Life Safety: exit plan, separations, features
7. Trade Equipment: kitchen, laundry, IT systems, etc.

C. Interiors Documents: See the *Interior Design Process Guide* for requirements.

1. Design Concept: fully developed and illustrated
2. Floor Plans & Elevations: all public areas of the project
3. Reflected Ceiling & Lighting Plans: materials, heights, lighting
4. Perspectives: views required to define design intent; professionally created
5. Guestrooms & Guest Floor Lounge: enlarged plans, room matrix
6. Materials, Finishes, Colors & FF&E: samples and images; framed
7. Millwork Design
8. Flooded Floor Plans: carpet designs

D. Engineering Documents:

1. Design Narrative of Systems: updated
2. Space Allocations: plant rooms and vertical shafts
3. Riser Diagrams
4. Equipment Schedules
5. Calculations including load and service connection sizes

GR1.15 Construction Documents Phase Requirements

A. Overview: Prepare Construction Documents for review and acceptance incorporating MI's Design Development comments and accepted variances. Provide fully developed construction documentation required to clearly convey the design, project program criteria and Brand Standards.

B. Early Construction Document Submittal: Provide 30 to 50% Construction Documents as scheduled by MI.

C. Final Construction Document Submittal: Incorporate comments and accepted variances from the early review and provide 90% to 100% Construction Documents for review and final acceptance by MI. Provide updated project Facilities Program, budget and schedule.

Construction Phase

GR1.16 Construction Phase Requirements

A. Overview: Construct the project in compliance with the accepted submittals and Brand Standards.

B. Model Guestrooms: When the guestroom design is fully developed, as early in the schedule as appropriate, prepare model guestrooms and corridor for MI's review and acceptance. Incorporate MI's review comments and variances in the model guestrooms for review and final acceptance prior to ordering guestroom and guest corridor FF&E.

Complete initial mock-up rooms at least 12 months prior to the hotel scheduled opening. This schedule allows for the incorporation of corrections into the project prior to installation of interior walls, plumbing, HVAC and electrical rough-ins. See the *Interior Design Process Guide*.

C. Site Observation: During the course of construction, provide MI with access to the project site to determine if the project is proceeding in compliance with the accepted submittals and Brand Standards. Provide updates to the schedule, budget and information MI requires for operational coordination.

D. Submittals: Provide Construction Phase submittals (shop drawings, product literature, samples, mock-ups, etc.) necessary for MI to review design and construction compliance based on the accepted submittals and Brand Standards. Consult with MI to establish the scope of required Construction Phase submittals.

E. Substantial Completion: Inform MI of the anticipated date of Substantial Completion, as scheduled in the TSA or DRA agreement, and provide a review schedule for MI's final review process, turnover and opening operations. Provide Architect's Certificate of Substantial Completion and compliance with MI's accepted submittals.

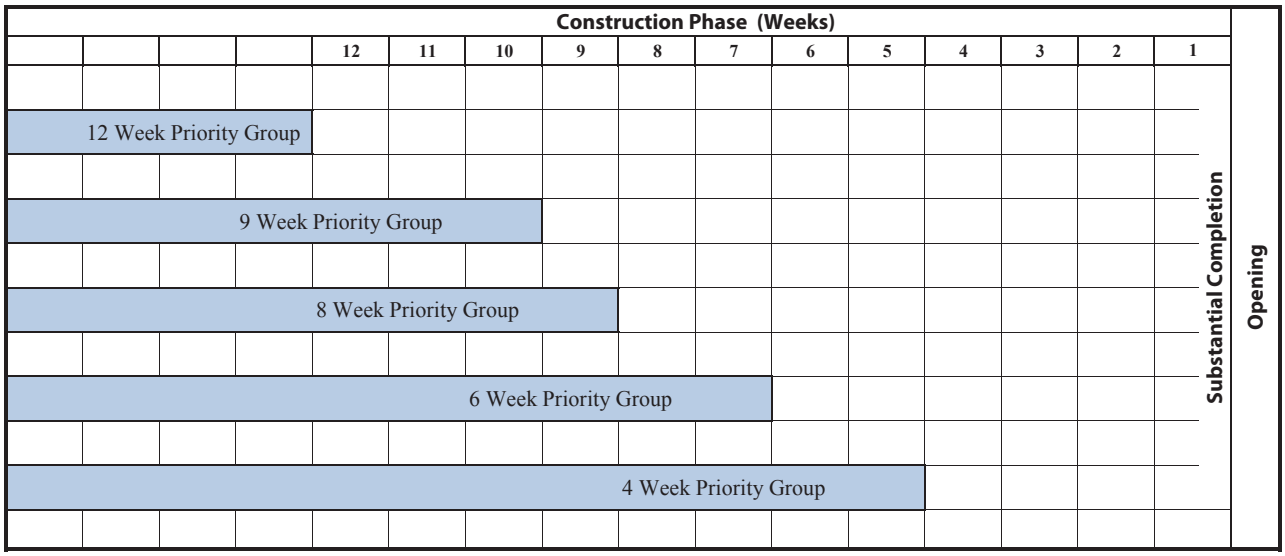
GR1.17 Turnover Schedule

A. Overview: In order to facilitate orderly staffing and training in preparation for Substantial Completion and project opening, turnover building areas in accordance with the following schedule and priority.

B. Priority Sequence: Since the areas of the building in each priority group are dependent on the areas in the previous group, turnover areas complete (constructed, furnished, punched-out, accepted) prior to proceeding to the next priority. Reevaluate the date of Substantial Completion and revise the schedule, if appropriate, prior to proceeding to the next priority.

C. Turnover Prerequisites: The following items are required for areas of the project intended for turnover activities prior to Substantial Completion.

1. Fire Sprinklers: Fully operational
2. Means of Egress: A minimum of 2 clear, remote paths with adequate capacity
3. Toilet Facilities: Adequate men and women toilets and lavatories
4. Safety: Area free of construction activity
5. Circulation: Provide access to stairs, elevators and corridors required for staffing and training.



6. Sleeping Accommodations: Not permitted, unless approved by MI Fire Protection & Life Safety.

D. Project Schedule: Develop a customized turnover schedule that addresses the intent of this process and obtain acceptance by MI.

12 Weeks Out - Priority Facilities:

- Garage Storage
- Purchasing / Receiving Office / Temporary Storage
- Rough Landscaping
- Ancillary Building Construction

9 Weeks Out - Priority Facilities:

- Store Rooms: Liquor / Beverage / Wine / Food
- IT & Telecom System Room
- Engineering Office, Window Washing Equipment
- Guest Floor Service Elevators & Service Elevators
- Ballroom (Hiring & Orientation)

8 Weeks Out - Priority Facilities:

- Receiving Area
- Kitchen & Coolers / Freezers
- Executive / Admin. / Sales & Catering Offices / Human Resources
- Call Center / Telephone System
- Security Office / Central Control Station (Fire Command)
- Electrical and Mechanical Rooms, Boilers / Chillers / Pump Rooms
- Service Level & Storage Areas / Banquet Storage
- Ballroom Service Corridor / Pantry
- Meeting Rooms (employee training)
- Housekeeping / Laundry & Valet
- Guestrooms 25% (Sequence to be determined.)

6 Weeks Out - Priority Facilities:

- Employee Dining Room / Locker Rooms / Linen Closets
- Reception / Reception Desk / Concierge / Control Room
- F&B: Lounge / Cafe / Bar / Dining Room
- Public Area Restrooms
- Retail / Business Center / Fitness Center
- Pre-Function Areas / Meeting Rooms
- Entry / Porte Cochere / Parking Areas
- Guestrooms 66% / Guest Floor Lounge / Guest Elevators
- Room Service / Service Bars / Count Room
- Swimming Pool Decks / Pool Equipment
- Landscape Maintenance Building & Equipment

4 Weeks - Priority Facilities:

- Guest Floors 100%
- Safety Deposit Box Room / Luggage Storage / Coat Room
- Window Washing
- Finish Landscaping / Fountains
- Recreational Facilities

GR1.18 Project Close Out Requirements

A. Record Documents - As-constructed: Provide Record Documents (drawings and specifications) of the documents used to construct and furnish the project including testing, balance reports, fire protection certificates and governing authority documents required for occupancy.
The documents shall include and integrate changes, supplements and accepted variances that represent the "as-constructed" (as-built) completed project status. Provide 2 copies of the documents to MI on CD in CADD and pdf formats and 2 half-size drawing sets.

B. Operations & Maintenance: Provide operating manuals, technical information, warranties and special tools required to efficiently operate and maintain the project's equipment, systems, finishes and furnishings. Provide documents in digital format defined by MI.

C. Training: Provide operations and maintenance training (before and after turnover as appropriate) required to efficiently operate and maintain the project's equipment, systems, finishes and furnishings. Instructors shall be qualified manufacturer's representatives, vendors, factory authorized technicians and installation contractors. Coordinate training scope and schedule with MI.

D. Warranties: Consult the Owner, design team and MI to coordinate requirements for extending warranties for equipment, materials and systems beyond the standard warranties provided by governing law, offered by the manufacturer or required by the construction contract. Consider the following variables.

1. Governing laws and legal process in the country of construction
2. Cost and benefit analysis of warranty terms
3. Exclusions, disclaimers, limitations and imposed obligations of extended warranties
4. Risk of product or system failure
5. Reputation of the company supporting the warranty

E. Attic Stock: Provide attic stock in compliance with project requirements to permit rapid and efficient replacement of damaged furniture, fixtures and equipment during the first one or two years of operation. Consult with the Owner, design team and MI to establish minimum criteria considering the following project variables that may suggest limiting attic stock requirements.

1. Storage: Verify if a secure, on-site storage area is available.

2. Remote Storage: Consider the operational cost of off-site storage, if required.
3. Damage: In order to remain serviceable, materials require a controlled environment such as heating (to prevent freezing), cooling and ventilation (to prevent mold and mildew) and shelving.
4. Cost: Carefully balance the cost of providing attic stock (initial cost of materials, storage and handling) against the cost of procuring materials on an as needed basis.
5. Security: To ensure the attic stock is available when required, inventory control is required.
6. Custom Products: Attic stock is beneficial for the rapid replacement of "custom" products but is typically not critical for the replacement of "stock" products.
7. Remote Locations: Projects, such as resorts located a distance from their supply chain, may depend on attic stock to avoid long lead times for product replacements.
8. Safety Stock: Extra materials normally ordered to account for installation breakage and waste are not included as attic stock but, if available, may serve to minimize replacement risks and dependence on attic stock.

F. Operating Equipment & Supplies (OS&E) and Spare Parts: OS&E and spare parts required to operate the property are defined in **<GR4>**.

GR1.19 Definitions, Acronyms & Abbreviations

A&E	Architect and Engineer
A/C	Air Conditioning
A/V	Audio / Visual
AC	Alternating Current
A&C	Architecture & Construction; a business division at Marriott headquarters that manages project design.
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guide
AFF	Above Finish Floor; when measuring height distance
AGA	American Gas Association
AHU	Air Handling Unit
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigeration & Air-conditioning Engineers, Inc.
ASME	American Society of Mechanical Engineers
ASPE	American Society of Professional Engineers
ASTM	American Society for Testing and Materials
ATC	Automatic Temperature Control
ATM	Automatic Teller Machine
AWI	Architectural Woodworking Institute
BAS	Building Automation Systems; the computer system that coordinates and controls heating and cooling, mechanical, electrical, plumbing and safety systems. These systems typically include the EMS, ATC and DDC.
Call Accounting	Telephone system software that automatically charges hotel guests for telephone and fax use.
CCCTV	Closed Circuit Color Television
CLTD	Cooling Load Temperature Difference
CRI	Carpet and Rug Institute
CWM	Construction Waste Management
DAS	Distributed Antenna System
Day Tank	Fuel oil tank, typically, located with an emergency generator (large storage tank would feed fuel to “day tank”).
dBA	Decibel level, measurement of sound.
DDC	Direct Digital Control; an electronic control device; part of the BAS.
DHCP	Dynamic Host Configuration Protocol (protocol for automating the configuration of computers that use TCP / IP)
DNS	Domain Name System
DOAS	Dedicated Outdoor Air System

DX	Direct Expansion
Dx Units	Direct-Expansion (DX) Unitary HVAC System
EIFS	Exterior Insulated Finish System
ETS	Environmental Tobacco Smoke
EMS	Energy Management System
FC	Foot Candle; measuring unit for lighting illumination.
FDB	Fahrenheit Dry Bulb
FF&E	Fixtures Furniture and Equipment
FM	Factory Mutual is an insurance agency for building industry material, product, and assembly testing. FM publishes the Factory Mutual Data Handbook.
FRP	Fire Rated Panels
GFI	Ground Fault Interruptor (electrical)
GFS	Global Field Services
HPL	High Pressure Laminate
HVAC	Heating, Ventilation and Air Conditioning
IAQ	Indoor Air Quality
IBC	International Building Code
IEQ	Indoor Environmental Quality
IP	International Protocol
IR	Information Resources
LAN	Local Area Network
LDN	Level Day-Night
LEQ	Equivalent Continuous Noise Level
LFM	Lighting Fixture Matrix
LPD	Lighting Power Density
JW	JW Marriott; an MI Hotel Brand
MARSHA	Marriott's Hotel Reservation System for Hotel Accommodations
MCNC	Marriott's Computing & Networking Center
MDF	Main Distribution Frame
MEP	Mechanical, Electrical and Plumbing
MHR	Marriott Hotels & Resorts
MERV	Minimum Efficiency Reporting Value - a measurement of air filter efficiency
MGS	Marriott Global Source; a secure Intranet web site for Marriott Associates (ID and password required for access)
MI	Marriott International
MRL	Machine RoomLess
MSDS	Material Safety Data Sheet
NALO	North America Lodging Operations refers to properties within continental U.S. and Canada.

NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NIC	Noise Index Coefficient
NSF	National Sanitation Foundation
NGS	Next Generation System is a hotel automated computerized management application integrated with the PMS and used to record and manage food, beverage, and gift sales; also see P.O.S. and PMS. **<13>**
NIC	Noise Index Coefficient
NSF	National Sanitation Foundation
OCTV	Open Circuit Television
OS	Occupancy Sensors
OSHA	Occupational Safety - Health Administration
PCB	Poly Chlorinated Biphenyl; an environmental pollutant.
P.O.S.	Point of Sale computerized recording equipment used to manage food, beverage and gift sales; see PMS.
PABX	Private Automated (telephone) Branch Exchange.
PI	Property Internet
PMS	Property Management System is the property management computer application used to record and manage food, beverage and retail sales; see P.O.S. and NGS. **<13>**
PPV	Pay Per View
PSI	Pounds / Square Inch
RH	Renaissance Hotels; a Marriott International Brand
SMACNA	Sheet Metal & Air-conditioning Contractors National Association.
SOP	Standard Operation Procedures
STC	Sound Transmission Class
SRI	Solar Reflectance Index
TCA	Tile Council of America
TESC	Temporary Erosion and Sediment Control
UL	Underwriters Laboratories; an independent testing agency.
UTD	Up To Date
VFD	Variable Frequency Drive.
VSS	Video Surveillance System
VVVF	Variable Voltage, Variable Frequency

AUTOGRAPH
COLLECTION

AUTOGRAPH COLLECTION®

STANDARDS

SIGNAGE & GRAPHICS

MODULE GR2

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Signage & Graphics

GR2.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Program: A comprehensive, integrated, project specific signage and graphics program is required that complements and reinforces the architectural and functional features of the property, and the Autograph Collection Hotels with identifying devices and graphics for the distinctive, independent and unique Brands as follows:

1. Directional & Information Graphics: Way finding.
2. Identity Signage: Site / Building Exterior.
3. Traffic Regulation Signage: Site / Building Exterior for vehicle site traffic control signage and graphics.
4. Exterior: Together with identity signage, provide Autograph Collection plaque at primary hotel entrances.
5. Interior: Provide a Signage and Graphics Program designed by a professional graphic designer.

B. Resources: Graphics criteria, details and example documents are available on the Marriott Global Source (MGS) website for the following signage categories:

1. Operations / Engineering / Tools & Resources: Exterior signage documents.
2. Vendor Documents: Interior signage documents.
3. Loss Prevention: Documentation and criteria for Loss Prevention.
4. Contact: For additional signage information, contact MI A&C Project Management.

C. **Signage Locations:** Review entire property buildings and site (actual site or architectural documents) for signage locations.
   1. Entry Points: Determine site and building entry points. Evaluate primary and secondary approaches to the site and / or building.
   2. Governing Regulations: Research government regulations and apply signage and graphic requirements. Follow signage standards including the intent of the Americans with Disabilities Act (ADA) Accessibility Guidelines. Implement required and customized signage such as Braille if usage is prevalent in the region.
   3. Scale: Determine overall scale of signs according to sight distances and impact on site design.
   4. Sign Locations: Develop sign locations and forms which address the Signage and Graphics program.
   5. Language: Provide bi-lingual (English / host country) identifying devices and graphics if required by law, custom or to comply with the "star" rating of the designated hotel.
   6. Coordination: Ensure full coordination of graphics elements with Interior Design, other related disciplines and system equipment.

D. **Destinations:** Identify destination points and establish hierarchy for destination points.
   1. Destination Points: Typical hotel destinations include guestrooms, restaurants, meeting rooms, ballrooms, fitness center, the concierge, the front desk etc.
      a. Provide lead-in information for each through established decision points.
      b. Limit information to essential elements only.
   2. Amenities: Include helpful guidelines for use of amenities as required.
   3. Information Hierachy: Establish hierarchy for various types of information.
      a. Plan and document sign locations.
      b. Determine sign scale and formats.
   4. Guestroom Numbering: Establish a logical room numbering system that is compatible with the Property Management System. See Module **<7A>** for conventions.

GR2.2 Primary Identity Signage

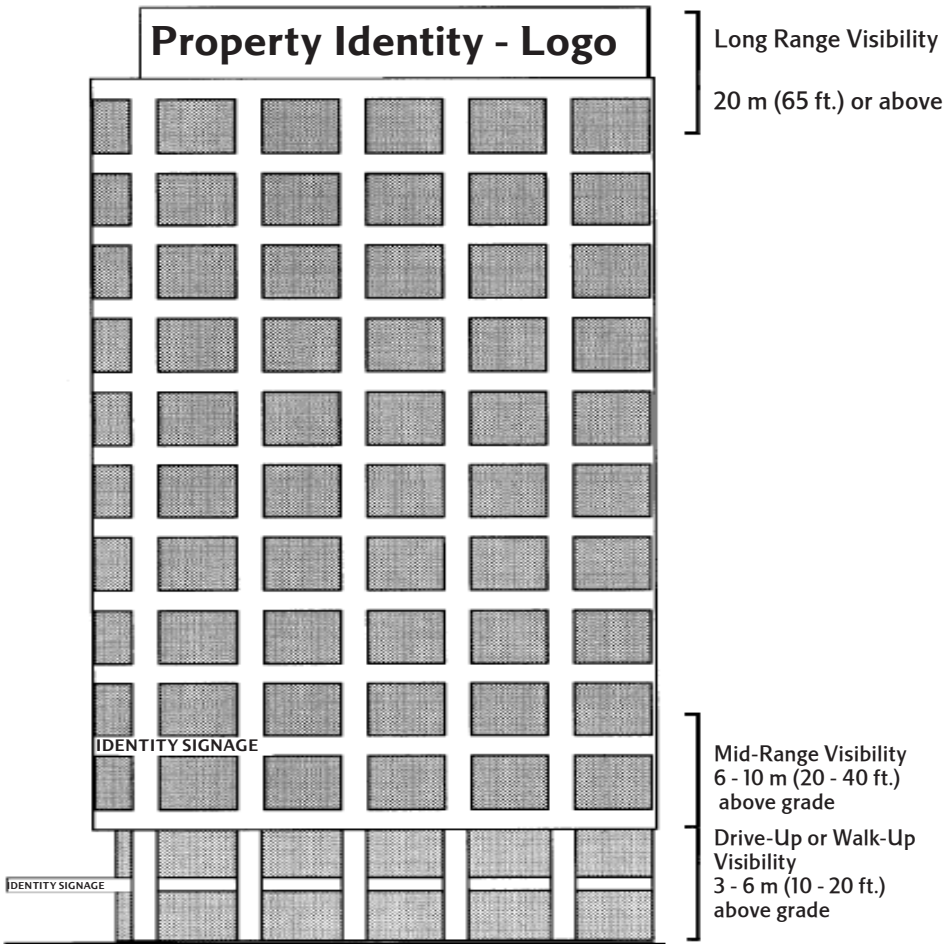
A. Exterior Identification: Provide exterior building, site or building entrance signs that complement the branding concept for the property.

B. Property Identification: Autograph Collection Properties have individual and unique Brand protocol whereby affiliation with Autograph Collection is a subtle identifying plaque at the main exterior entrance or in the lobby, clearly visible to guests.

C. Example Diagrams: The following diagrams outline recommended sign configuration and size.

1. Exterior Building Signs: Identify the building and site considering the farthest sight distances possible for a given property. Emphatically identify the property location directly to the most prominent, well-used, or highest visibility (airport, major roadway or walk-up approach) line of sight available.

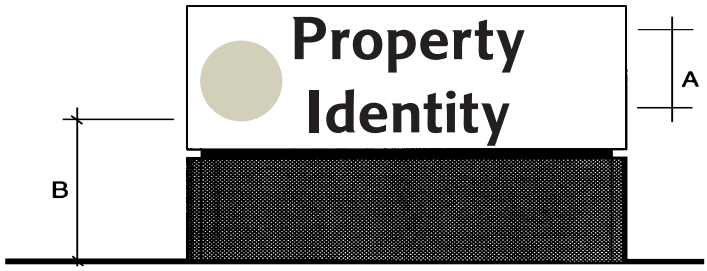
General Guide for letter size: Provide 25mm(1 in) letter height for each 15m (50 feet) viewing distance.



Determine signage requirements based on building location and orientation. Align signage with the approved property branding concept.

- Two, internally illuminated (long range) signs
- Site drive-in roadway entrance
- Site walk-up entrance
- Mid-range - if provided, coordinate building identification with MI
- Building entrance identification - provide Autograph Collection plaque, two sizes available 32 x 50 cm (12½ x 20 inch) and 22 x 35 cm (8¾ x 14 inch) both 19 mm (¾ inch) thick

2. Secondary Identification: Smaller scale signs identify secondary building and site entry points. General minimum recommended sizes are shown in the following diagram. Using a proper size and logo layout, all other features of these signs are variable.

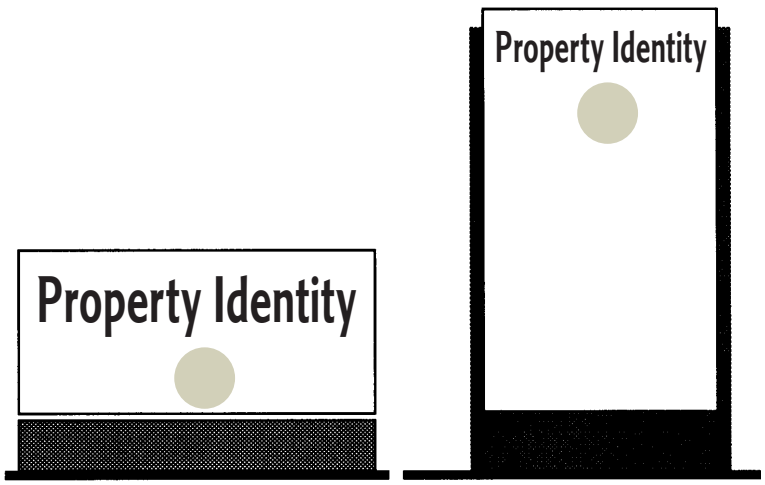


Drive-Up (Vehicular Use)

A minimum	A maximum	B minimum	B maximum
150 (6 in)	300 (12 in)	1000 (3 feet)	2500 (8 feet)

Walk-Up (Pedestrian Use)

A minimum	A maximum	B minimum	B maximum
80 (3 in)	150 (6 in)	800 (30 in)	3500 (12 feet)



Optimum Logo Size: 300 - 500mm (12-20 inches),
Other text: 100 - 300mm (4-12 inches) Background size variable

GR2.3 Interior Signage & Graphics

A. Guestroom Identification: Show room numbers as described in Module **<7A>**; coordinate sign / graphic and character style with interiors and illustrative on interior design drawings.

B. Facilities & Direction: Locate signs at decision or destination points only.

- Include frequently used facilities (destination points) only.
- Provide for associations between destination points.
- Scale sign and message size according to intended use.
- Arrange message items in logical order.
- Numbers follow ascending order (or according to prevailing local custom).
- Alphabetize items of equal importance.
- Nearby destination points, first; further destination points, last in order.
- Use repetition of messages.

C. Primary Destination Points: Select primary facilities and identify them repeatedly within the graphics program, rather than to identify a great number of varied facilities throughout the program.

- Include primary noted features of a given hotel property.
- Establish hierarchy of destination points.
- Emphasize small quantity of primary destination point repeatedly.
- Determine primary features according to intended service of hotel property.
- Scale identification according to viewing distance.
- Alter scale for esthetic or operating requirements.
- Position identification to maximize viewing distance.
- Establish consistency for like-use destination points.
- Impose unique format for unique, differentiated, destination points.

D. Secondary Destination Points: Include secondary service and amenity features of a given hotel property.

- House phones
- Rest rooms
- Message desk
- Retail or gift shops
- Concessions
- Include essential services, consider guest needs and comfort.
- Establish hierarchy of secondary destination points.
- Emphasize subordination to primary destination points.

- Scale identification according to viewing distance.
- Alter scale for esthetic or operating requirements.
- Position identification to maximize viewing distance.
- Establish consistency for like use destination points.
- Establish consistency for location of information.

E. Other Destinations: Where guests may need direction for assistance.

1. Helpful signage to reinforce use of an obvious facility, such as the Guest Floor Lounge.
2. Additionally, stairways, special entry areas, and circulation corridors may be identified in order to assist guests in areas where directions are helpful.

GR2.4 Food & Beverage Service

A. Application: See Module **<3>**. Determine operating theme and features of the intended service and apply the following signage and graphics design parameters:

1. Scale: Size identification according to viewing distance.
   a. Alter scale for esthetic or operating requirements.
   b. Position identification to maximize viewing distance.
2. Design Format: Impose unique format for unique, differentiated, destination points. Often decorative in nature and vary greatly in scale and execution.

B. Identification / Service: Restaurant name, food theme, and decor style is determined by hotel operator and obtained from the operating team. This information will set a design direction for the restaurant entrance identification.

1. Location: Incorporate signage into parameters of the interiors and architectural design.
2. Appearance: Physical form may be for interior or exterior, freestanding, wall mounted, or overhead. It may be a monument, a canopy, a pendant, plaque or sculptural shape, and may be internally or externally illuminated if required.

GR2.5 Function Space

A. Application: See Modules **<6>** and **<13C>.** Determine hierarchy of facilities according to the operating team for ballroom and meeting room identification and directions. Coordinate with locations of electronic function boards at primary meeting rooms.

1. Scale identification according to viewing distance.
2. Alter scale for esthetic or operating requirements.
3. Position identification to maximize viewing distance.
4. Establish consistency for like use destination points.
5. Impose unique format for, differentiated, destination points.

B. Ballrooms: Identify in a prominent, simple, often architectural manner.

1. Mount individual characters to panels above or immediately adjacent to the various entry doors is preferred. Coordinate with the electronic digital signage system.
2. If this type of identification is not possible, find an alternate and review with MI.

C. Meeting Rooms: Identify with names provided by the property's operating team.

1. Generally, locate room name adjacent to entry door.
2. Provision for individual event identification is presented using electronic digital signage system.

GR2.6 Daily Events & Information Announcements

A. Application: Provide systems for daily events information. Include special consideration for large group meetings and presentation of daily events. Coordinate this effort with IR Systems and A/V; see Module **<13C>**.

B. Delivery Methods: Event information is serviced in two methods, electronic and static.

1. Electronic: These systems feed information to monitors throughout the property. System details are included in the A/V system, Modules **<13A> <13C>**.
2. Static Systems: If used, the graphics provider for program includes display areas for overall information that covers all areas and all meetings within the property.
   - Typically a paper display, changed daily, and presented in an area protected by a glass window overlay.
   - Displays may be either wall mounted or freestanding, desk type kiosks. Special circumstances may require other formats.

GR2.7 Life Safety & Loss Prevention Information <14> <16>

A. Codes & Standards – General: Consult with officials and building code jurisdictions at the property location.

1. Code requirement messages are not altered or expanded by the graphics program process.
2. Many jurisdictions have widely varied, strictly regulated requirements for sign size, format and text.
3. Specific message types below are required by Marriott.

B. Guestroom Emergency Evacuation Information:

- Standard
- Standard, room opens to exterior
- Earthquake standard
- Earthquake standard, room opens to exterior
- Fireplace use

C. Public Use Rooms / Food & Beverage Service Areas:

- Maximum occupancy
- Maximum occupancy diagram (include illustration)
- Distilled spirits warning

D. Recreation / Pool Areas:

- Pool area use
- Pool capacity
- Pool area use with maximum capacities
- Diving warning (include illustration)
- No lifeguard

- Exercise room use
- Mouth to mouth resuscitation (include illustration)
- Whirlpool spa use
- Sauna use
- Steam room use
- Tanning bed use
- Emergency shut off

E. Vehicular Areas:

- Clearance
- Park at own risk

GR2.8 Elevator Graphics & Signage

A. General: Follow information prescribed by Life Safety standards, codes and governing regulations. Because many jurisdictions have widely varied and strictly regulated requirements for sign size, format and text, it's imperative that terminology used for elevators and overall graphics program be carefully coordinated (same floor numbers, parking garage level, and similar designations).

B. Coordination: Coordinate graphic and signage requirements with Module **<12>** Elevators & Escalators.

C. Building Directory: Arrange in a floor-by-floor style, listing the facilities available at each floor accessed by the elevator.

1. Directional information for persons emerging from the elevator at each floor lobby.
2. Elevator cab building directory inside cab, near the elevator floor buttons in the cab.
3. Provide information explaining the use of special access floors.

D. Promotional Information: Provide promotional information for food and beverage services or other special amenities as required.

1. Use digital signage system.
2. Identification of the floor buttons and other elevator controls is generally included as a part of the elevator equipment. **<12>**

AUTOGRAPH COLLECTION®

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STANDARDS

MODULE GR3

MATERIALS & PRODUCTS

May 2014

Contents

Module Organization

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Material & Product Criteria

GR3.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Content: This Module identifies criteria for materials, products and equipment, and does not include specifications and methods of workmanship.

B. Standard of Quality: The Standards identify products that meet minimum criteria.

- Material, product and equipment manufacturers identified in the Standards are acceptable to Marriott International (MI). Additionally, MI will base their decision of acceptance when compared to products identified as the standard of quality.
- It is understood that the work is performed by skilled craftsmen of various trades that reflect the best quality defined by applicable industry standards.
- The criteria are for use by the design professionals to develop project specific specifications. Additionally, the Standards are used by the Architect, and other design team members, Owner and Contractor to assure the quality of the hospitality property.
- References: Use current editions.

C. Material & Product Criteria: This Module, **<GR1>, <GR2>, <GR4>** and Modules **<1>** through **<16>** are intended to guide the Design Team (Architects, Engineers, Interior Designers, Consultants, etc.) with selection of materials, products and systems.

- The Design Team shall review the provisions and develop specifications consistent with the project requirements.
- The material and product requirements, although not inclusive, are important to MI's established quality, the Brand and Operations.
- If specifying conflicts arise, consult with MI for interpretation.

D. Labels & Nameplates: Omit manufacturer nameplates and other graphics visible to guests, unless directed by MI.

E. Toxic or Carcinogenic Materials: No known toxic or carcinogenic materials are required or included in the Standards for design and construction. This includes concealed materials and products containing or manufactured from formaldehyde foam and asbestos.

- The Owner and the Owner's team has the responsibility to identify non-compliant materials and to provide MI with qualified written testing lab reports that certify compliance.

- Marriott reserves the right to reject materials that may pose a health risk to guests or employees.

F. Environmental Impacts: Adjust design for sites with high humidity, noise, etc. At ocean sites with salt exposure, select and provide applicable non-corrosive finishes, equipment and plant materials.

GR3.2 Project Manual

A. Organization: Marriott may require project specifications organized by Division and 3 part, numbered Section format as described in the Construction Specification Institute (CSI) "Manual of Practice".

B. Module: The term "Module" is used to reference Modules of this Standard.

C. Section: This term refers to the subordinate portion or paragraph of a Module and not the "Section" organization as described by the CSI manual.

GR3.3 Division 01 - General Requirements

A. Codes & Standards: Use current editions of codes and industry standards approved by the governing authority to produce the intended quality of construction and finishes. In the schematic design phase, identify an accepted structural code, in addition to designing the project to meet applicable building codes. Also, see Module **<14>** Fire Protection & Life Safety.

B. Structural Loads: Design and construct the facilities and building components to safely accommodate structural loads (dead, live, wind and impact loads) in compliance with the current version of the applicable building code. Also, see Module **<14>** Fire Protection & Life Safety.

C. Seismic Loads: Prior to design, contact the Zurich Regional Operations Office to obtain project criteria required by Marriott's "Customized Servicing Agreement" with Zurich. At a minimum, comply with the current version of the International Building Code (IBC) for seismic design. Comply with criteria contained in the governing version of the applicable code. Design and secure building systems, utilities and equipment to prevent injury and disruption of property functions.

D. Accessibility for Persons with Disabilities: Comply with governing requirements and the USA-DOJ Americans with Disabilities Act (ADA).

E. Construction Tolerance: Install building elements "visually" level, flat, straight and true to line, minimum 0.3 cm per 3 m (⅛ inch per 10 ft.) unless specifically required otherwise for operational reasons such as drainage.

F. Walkway Surfaces: Provide slip resistant walkway surfaces. Comply with Module **<16>** requirements.

GR3.4 Division 30 - Site Work

General: See Module **<1>** for site requirements including the following:

- Site Design & Concepts
- Landscape Schedule
- Site Development
- Site Utilities, Drainage & Soil Treatment
- Traffic Circulation - Planning
- Traffic Control - Regulation Signage
- Paving & Hardscape
- Main Site Entrance
- Service / Delivery Entrance
- Parking Areas
- Parking Structures
- Landscaping
- Irrigation
- Water Features, Fountains and Site Amenities
- Site & Landscape Lighting

GR3.5 Division 03 - Concrete

Comply with standards for formwork, cast-in-place concrete, and reinforcement such as American Concrete Institute (ACI) Standards and governing authority requirements for quality control of concrete work. Define concrete finishes and provide concrete surfaces within stipulated dimensional tolerances.

GR3.6 Division 04 - Masonry

A. General: Comply with national or international standards.

B. Masonry Units: Provide specified unit size and weight, and fire rated masonry as required by code. Use masonry materials in the following areas where additional sound and / or moisture isolation is required:

- Service corridor or Back-of-House walls adjacent to public spaces.
- Fire walls and exit stair walls
- Laundry
- Kitchen

C. **Acoustic Control:** See requirements in other Modules. Extend masonry walls from floor to underside of roof or to floor structure above and seal openings.

GR3.7 Division 05 - Metals

A. **Structural Steel:** Comply with project standards approved by the governing authority for quality control applicable to structural steel work.

B. **Expansion Control:**
1. Expansion Joints: Place only in non-public spaces and not visible. Extend finish materials over joints to reduce visible impact.
2. Fire Rating: Provide fire rated expansion joints as required by applicable construction assembly.

C. **Access Panels - Public Areas:** Avoid in public and guestroom spaces unless located in closet spaces. Otherwise, provide recessed access metal doors to accept gypsum board insert or trim access doors to match interior design details.

D. **Fabrication:**
1. Fabricate metal decorative work with mitered exposed corners and angles.
2. Form exposed non-welded connections with hair line joints flush and smooth.
3. Grind and finish brazed and welded surfaces flush and free of weld marks.
4. Conceal fastenings wherever possible. Use exposed fasteners of the same material and finish as adjacent surfaces.

GR3.8 Division 06 - Wood, Plastics & Composites

A. **Architectural Woodwork Standards:** Comply with American Woodworking Institute (AWI) Sections for trade definitions, grade of millwork materials, fabrication, finishing and installation.

B. **Millwork/Woodwork:** Fabricate and install millwork / woodwork in compliance with AWI "Custom Grade" standards unless noted otherwise.
- Install with lines and surfaces straight, plumb and level securely anchored to supporting construction
- Scribe to adjacent construction where exposed to view.

C. **Finish Hardware:** Obtain MI acceptance for appearance and finish.

D. **Rough Carpentry:** Pressure treat and / or fire protect wood grounds, sleepers, blocking and nailers including, blocking for toilet accessories, partitions, draperies and window coverings, millwork, etc.

GR3.9 Division 07 - Thermal & Moisture Protection

A. **General:** Provide waterproofing, sealants, insulation and roofing. See Module **<1>**.
   1. Service Life: Select products and systems having a proven record of success (minimum of 5 years) for the application. Provide systems for low maintenance and minimum service life of 20 years.
   2. Building Insulation: Provide for efficient thermal control from exterior heat and cold.
   3. Slope / Drainage: Design structures to receive waterproofing with positive slope to drains to avoid standing water.
   4. Roof Areas: Where exposed to Guest views shall be part of the architectural design having a visually clean, attractive and uniform appearance.

B. **Waterproofing:** Provide waterproofing for below grade walls and basement concrete slabs on grade consistent with recommendations of a soils engineer.
   1. Suspended Slabs: Provide membrane waterproofing for kitchen, laundry, dishwashing pantries, mechanical rooms, steam rooms, locker room shower areas and public toilets on suspended slab.
   2. Guestroom Shower Pans: **<7A>** Provide minimum 40 mil membrane formed in monolithic sheets complete with preformed corners or prefabricated pan / receptor designed to receive tile, stone finish for a watertight installation.
   3. Balconies: Seal exterior building balconies.

C. **Dampproofing:** Provide on the following surfaces:
   1. Exterior Face of Concrete Masonry Units (CMU): Damp-proof back-up CMU used at public levels.
   2. Exposed Exterior Wall Surfaces: Provide water repellent coating.

D. **Building Insulation:** Provide insulation types in thickness, compatible with construction assembly and location to produce an "R" value as required by governing energy codes, but not less than the following:
   1. Exterior Wall Insulation: R-11 minimum; provide roll, batt, rigid, loose fill, etc.
   2. Roof Insulation: R-19 minimum.

E. Acoustic Insulation: Provide insulation between steel stud walls of Guestrooms **<7A>**, between public and administration spaces to achieve the required STC ratings, in compliance with certified laboratory tested assemblies.

F. Fireproofing / Fire Stopping: Comply with building code.

1. Structural Members: Fireproof with asbestos free fireproofing materials.
2. Fire Stopping: Provide at penetrations through fire rated walls and floors, except for conduits cast solid in concrete.

G. Sealant Joints: Design joints between building elements to accept sealants and to accommodate expansion and contraction of materials.

1. Exterior Sealants:
   a. Type: Polyurethane or silicone.
   b. Material: High performance; minimum 50% elongation.
   c. Backer Rod: Required for installation.
   d. Life Cycle: Minimum 10 years service life.
2. Sanitary Sealant:
   a. Required locations at bath, toilets and Food Preparation / Service areas.
   b. Edges of vanity and counters.
   c. Perimeter of bathtubs, water closets, and drains.
   d. Bottom of mirrors.
   e. Junction of wallcovering with doorframe and stone or tile.
   f. At Food Service Areas, one part silicone; mildew resistant; NSF approved.
3. Interior Sealants: Acrylic, paintable, at interior non-moving joints and at perimeter of vinyl wall covering. Do not use at sanitary joints or food service areas.
4. Acoustical Sealants: Required at perimeter of field assembled walls for guestroom, public areas, other sound rated wall construction and around penetrations and items built into walls such as electrical receptacle boxes.

H. Roofing: Select roofing based on location, design character, project theme, material technology and skill of craftsmanship available.

1. Use roofing system that meets project aesthetic requirements and physical material requirements.
2. Consider roof types for a project including flat, sloped, etc.

3. Design roof for water management from the highest roof to the ground. Provide details at intersections, joints and flashing.

I. **Sheet Metal Flashing & Trim:** Comply with SMACNA Standards for Architectural Sheet Metal. Comply with building code.

J. **Traffic Coatings:** Include single product source provisions Provide watertight pedestrian and vehicular traffic coatings that will not deteriorate when exposed to ice and snow-melting compounds, sun, weather, wheel traffic, oil or other motor vehicle operating compounds.

K. **Coating Surface Finish:** Provide slip resistance with a static coefficient of friction equal to a minimum of 0.6 wet / dry on flat surfaces and 0.8 wet / dry on ramps without abrasion to guests' bare feet while walking.

GR3.10 Division 08 - Openings (Doors & Windows)

A. **Doors & Frames:** Provide products designed and fabricated for commercial and hospitality projects.
   1. Guestroom & Suite Doors: See Module **<7A>** for the following applications:
      a. Entry Door
      b. Bathroom Door
      c. Closet Doors
      d. Connector Doors
      e. Balcony, Patio & Terrace Doors
   2. Exit Stair Doors:
      a. Type: Hollow steel; 1.52 mm (U.S. 16 gauge).
      b. Frame: Hollow steel; 1.52 mm (U.S. 16 gauge).
      c. Finish: Factory primed; finish selected by Architect.
      d. Rating: 1½ Hour fire rating in 2 hour fire rated wall; closer required.
   3. Exterior Service / Exit Doors:
      a. Type: Hollow steel; 1.52 mm (U.S. 16 gauge) with closed top end.
      b. Frame: Hollow steel; 1.98 mm (U.S. 14 gauge).
      c. Finish: Galvanized or equivalent finish for exterior use; finish specified by Architect.
      d. Rating: Comply with fire / code and acoustical requirements.
   4. Office Doors:
      a. Type: Solid core wood construction; fully bonded.
      b. Frame: Steel or wood and of sufficient fabrication strength to prevent forced entry with a hand tool.
      c. Face: Selected by Interior Designer.

5. Ballroom Doors: See Module **<6>**.
6. Meeting Room & Boardroom Doors: See Module **<6>**.
7. Service Doors (Back-of-House):
   a. Type: Hollow steel, 1.52 mm (U.S. 16 gauge) with diagonal shaped Kraft paper type core.
   b. Frame: Hollow steel, 1.52 mm (U.S. 16 gauge).
8. Custom Wood Doors:
   a. Location: Suites, Food and Beverage, Public Areas.
   b. Type: Door and frame type, profile, finish as selected by Interior Designer.

B. **Door Hardware:** Select hardware for long-term durability, appearance, low maintenance, operational efficiency and security dependability.

1. General: Hardware shall address fire ratings, accessibility, codes, interior / exterior applications and operational requirements.
   a. Reference Standards: Comply with the following U.S. standards published by the National Fire Prevention Association (NFPA) and the American National Standards Institute (ANSI).
      - NFPA 80
      - NFPA 101
      - ANSI 156
   b. Hinges: Commercial grade.
      - Doors with door closers; ball-bearing hinges.
      - Hinges sized to comply with manufacturer's standard recommendations.
      - Use continuous hinges on heavy abuse doors, such as Ballroom / Meeting Rooms; service doors, and doors wider than 106 cm (42 inches).
      - Finish specified by Interior Designer (usually satin brass).
   c. Locksets:
      - Guestroom: See Module **<7A>**.
      - Guestroom Interior Connector / Suite: Standard duty, commercial grade.
      - Back-of House: Locksets heavy-duty, commercial grade with proprietary keyway.
      - Finish: Coordinate with Interior Design.
      - Keys: Transfer to Owner's representative.
   d. Exit Devices:
      - Heavy-duty commercial grade with vertical rod concealed in door.
      - Exit Device Trim: Lever handles.
      - Finish: Coordinate with Interior Design.
   e. Door Closers:

- Commercial grade.
- Guestroom: Closers required at entry / exit doors **<7A>**.
- Back-of-House Door Closers: Heavy duty.
- Accessibility: Accepted type where applicable.
- Finish: Manufacturer's standard sprayed finishes as specified for the project.

f. Flat Goods / Metal Thresholds:

- Door stops, wall type where possible.
- Kickplate, minimum 1.52 mm (U.S. 16 gauge).
- Flush bolts, concealed type.
- Thresholds, extruded aluminum. Comply with accessibility codes for threshold heights.

2. Guestroom Hardware - Miscellaneous: See Module **<7A>**

3. Door Viewers: Size for door thickness. Provide 160° viewers with privacy cover in guestroom **<7A>** and 190° viewers in function space **<6>** doors.

4. Special Function Hardware.

a. Administrative Areas: For perimeter access, provide push button mechanical lockset as manufactured by Simplex.

b. Encode Card Station: Provide Front Desk computer system stations for encoded cards to meet project requirements.

c. Guestroom Entry Locksets: See Module **<16>** Loss Prevention.

5. Automatic Door Hold-Open Devices: Provide electro-magnetic door hold-open devices with built-in 24 Volt controller.

a. Mount devices on wall, connect to electrical service **<15C>** and to Fire Alarm System **<14>**.

b. Provide as required by code, governing authority and Marriott to hold fire / smoke rated doors and function space entry doors (more than 32.5 m^2 (350 sq. ft.)) in open position and to automatically release the door when fire / smoke alarm is activated.

6. Key Cabinet: Include for each project.

7. Hardware Schedule - General

a. Ballroom / Meeting Rooms: See Module **<6>**

b. Guestroom Doors: See Module **<7A>**

c. Receiving Dock Entry: Continuous architectural type hinge; push plate; pulls; kickplate; door position switch; closures; seals; bottom seals; electronic operated remote control lock; power supply; motion detector; astragal.

d. Exterior Service / Exit Doors: Latch set; cylinder lock or magnetic encoded card - electronic operated lock access compatible with guest room lock system; door position switch; exit device; hinges; closer; stop / holder; stainless steel or brass kick-plates; weather / bottom seals.

e. Offices: Lockset; hinges; stop; silencers.

f. Exit Stair: Latch set; hinges; closer; stop; silencer.

8. Hardware Mounting Locations: Coordinate installation locations and requirements with door, frame and hardware manufacturers. Unless specific project, product, governing regulations and manufacturer's conditions dictate otherwise, install hardware at the following recommended mounting heights:

a. Hinges:

- Top: 12.7 cm (5 inch) from head to top of hinge leaf.
- Bottom: 25 cm (10 inch) from bottom of hinge to finished floor.
- Intermediates: Equal distances between top and bottom hinges; maximum 0.91 m (36 inch).

b. Lever Handles: 0.97 m (38 inch) from finished floor to center line of handle.

c. Door Guards: 1.14 m (45 inch) from finished floor to center line of guard.

d. Dead Bolt: 1.22 m (48 inch) from finished floor to center line of dead bolt.

e. Door Viewers: From finished floor to centerline of viewer.

- Standard: 1.45 m (57 inch).
- Accessible Guestrooms: 1.14 m (45 inch).

C. Windows & Storefronts:

1. Construction: Commercial quality, thermally efficient (thermally broken), aluminum, with secondary weep (drainage) system.

2. Impact Resistance: Provide in regions that experience high velocity wind events and as required by code.

3. Window Operation: **<16>** Limit operable window opening to 10 cm (4 inches) maximum with manufacturer's restrictive safety stop integrated with the window construction (unless prohibited by code). Provide with manufacturer's "key" for maintenance operation.

4. Exterior Finish: High performance, durable finish (*Kynar*, fluorocarbon, etc.).

D. Glass & Glazing – General: Provide glass and glazing in compliance with recommendations of glass and metal framing manufacturers, governing codes and the following.

1. Insulated Glass: Provide insulated (double glazing) glass unless energy, acoustic, code or impact resistance requires additional requirements.
2. Glass Color: Clear glass preferred; if energy or solar control is required, provide tinted or reflective glass that maintains natural looking exterior views and colors, and provides natural ambient light and color to the interior.
3. Mirrors: Provide safety backing for mirrors including mirrors at sliding mirror doors and wall mirrors. Set mirrors in compliance with National Association of Mirror Manufacturers recommendations. See Module **<7A>** for vanity mirror installation.

E. Safety Glass & Glazing: Provide safety glass and glazing in compliance with the U.S. Consumer Product Safety Commission (CPSC), the governing codes and the following:

1. Human Impact: Provide tempered or laminated safety glass at glass locations subject to human impact. Examples include:
   - Doors and sidelights
   - Full height windows (without guard rails or curbs)
   - Balcony and patio doors and windows
   - Shower enclosures and glass doors
   - Bathtub surround and screens
   - Room dividers and doors
   - Mirrors
2. Impact Protection: Safety glass and glazing may not be required if protection is provided at a glass wall or window, such as a guard rail or where the glass wall is located on a 46 cm (18 inch) high curb AFF that reduces the opportunity for human impact. Verify design conditions with referenced standards.
3. Skylights: In skylight and overhead assemblies above occupied spaces, provide laminated glass. If tempered glass, provide screening below skylight to prevent glass from falling on occupied areas.
4. Reference: U.S. Consumer Product Safety Commission, Title 16 - Commercial Practices, Chapter II - Consumer Product Safety Commission, Part 1201 - Safety Standard for Architectural Glazing Materials.

GR3.11 Division 09 - Finishes

A. General: Preferred materials are typically shown for each space in other Modules of this Design Standard.

B. Ceramic and Stone Tile Standard: Comply with the Tile Council of America (TCA) Handbook for ceramic tile installation, materials, workmanship and installation, tile and stone installation.

C. Ceilings – General:

1. Food Preparation: **<10>** Accessible, commercial duty, vinyl coated or non-corroding panels on an aluminum suspension system. Panels shall be capable of being repeatedly washed without damage.
2. Guestrooms, Bathroom & Guest Corridors: See Modules **<7A>** and **<7B>**
3. Service Corridors / Back-of-House: Commercial duty, exposed grid, accessible, acoustical tile of a composition to resist cupping and deflection from moisture.
4. Administrative Offices: Accessible, commercial duty, exposed grid, acoustical, tegular edge tile system.
5. Public Areas, Lobby, Reception & Recreation: **<2>** Gypsum board, plaster and suspended acoustical tile system, slim-line frame with tegular edge ceiling tiles (minimize use of acoustical ceiling tile). Coordinate ceiling designs with Interior Designer.
6. Gypsum Board: 16 mm (⅝ inch) minimum supported at 0.6 m (2 ft.) to avoid deflection.

D. Stud Wall Assembly & Finish System: Consult governing codes to verify product application and code requirements for wall assemblies:

1. Typical Application: 15 mm (⅝ inch) thick gypsum board on each side of galvanized metal studs.
2. Acoustic Control: Comply with galvanized steel stud and gypsum board construction assembly standards that meet minimum acoustic requirements; see other Modules for minimum wall assembly STC ratings.
3. Chases: 2 hour fire rated, gypsum board "shaft wall" or equal.
4. Wet Areas: Provide water resistant substrate wall material (such as cement board) for toilet, food preparation and other wet areas.
5. Cement Board: Provide cement (not gypsum) board (*Densglas or Dur-o-Rock* products) for guestroom showers, toilets, steam rooms, locker room wet areas and other wet areas as substrate (or backerboard) to install ceramic tile, thin stone and stone tile.

6. Exterior Gypsum Sheathing: 12 mm (½ inch) minimum thickness, meeting ASTM C79-78 for water resistant gypsum sheathing board, type X, where indicated.

E. Carpet & Carpet Pad: For Guestrooms and Guest Corridors see **<GR4>**; Public area FF&E requirements are included in Module **<GR4>**.

F. Vinyl Wall Coverings – Standard: ASTM F793, Category 5; obtain Marriott acceptance for wall covering materials.

1. Fire Characteristics: ASTM E 84; flame spread of 25 or less and a smoke development of 450 or less.
2. Mildew Resistance: Provide mildew resistant products and "strippable" adhesive. Include adhesive and manufacturer's recommendations for primer coating, sizing, etc.

G. Painting:

1. Paint Products: Provide Sherwin Williams or MI accepted equal.
2. Includes exposed surfaces unless surfaces are prefinished with desired color or finish.
   - Access doors, panels, diffusers trims and grilles the same finish as adjacent surfaces.
   - Interior of ducts showing through registers and grilles with flat black.
   - Protect adjacent surfaces from paint and damage.
   - Do not paint controls, sprinkler heads and covers, fire alarms and detectors, electrical fixtures or other items adversely affected by paint / coating.
3. Surface Preparation: Caulk with joint sealant, fill voids, seal and sand substrate and coatings to provide tight, smooth surface for application of paint and stain. Prime unfinished surfaces prior to finish.
4. Finish: Paint and stain surfaces with multi-coat finish systems as scheduled by the Architect and Interior Designer. In general, finish levels shall be as follows:
   a. Flat: Ceilings and walls not accessible to guests / staff.
   b. Semi-Gloss: Service areas, back-of-house, and toilet areas.
   c. Gloss: Food preparation, utility areas, main service corridor and wet areas.

GR3.12 Division 10 - Specialties

A. Flagpoles: **<1>** Not a Brand essential, but if required, provide the following:

1. Type: Minimum three, 12 m (40 ft.) high, ground supported flagpoles for flags of country, state or province or local jurisdiction and Marriott International.
2. Construction: Seamless aluminum, cone tapered, tubular with internal halyards.
3. Finish: Anodized, dark bronze; waxed.

B. Lockers & Benches - Employee Areas: **<8>**

1. Types: Double and single tier, metal lockers; provide full height for cold climates.
2. Construction: Steel, ventilated with sloped tops and closed bottoms.
3. Size (overall): 0.3 (wide) x 0.45 x 1.8 m (1'-0" x 1'-6" x 6'-0").
4. Finish: Baked enamel.
5. Features: Number-plates, latch with door hasp, clothes hooks.
6. Benches: Prefinished hardwood seats on steel frame supports.

C. Operable Partitions: See Ballrooms / Meeting Rooms in Module **<6>**.

D. Toilet Compartments:

1. Public Areas: See Module **<2A>**
   a. Compartment: Same construction as adjoining wall. Provide "no sight line" or "gapless" design for privacy.
   b. Finish: Stone or ceramic tile as selected by Interior Design.
   c. Door: Millwork; wood.
   d. Hardware: Chrome plated hinges, brackets, latch with bumper, coat hook and bumper.
2. Guestrooms / Suites: See Module **<7A>**; selected by Interior Design and accepted by MI.
3. Employee Toilets: See Module **<8B>**

E. Toilet & Bath Accessories:

1. Materials / Finishes - General:
   a. Stainless Steel: ASTM A167, Type 304, 22 gauge minimum for sheet materials.
   b. Backplates: For wall mounted accessories, provide concealed heavy duty cadmium plated steel backplate.
   c. Finish: Provide accessories with polished finish unless otherwise specified.

d. Fasteners: Use concealed mounting brackets where possible; secure with non-corrosive fasteners.
Where exposed fasteners are used, provide non-corrosive types with heads finished to match finish of accessory unit.

e. Installation: Provide level, plumb and securely anchored. Mount toilet accessories within range of reach limits of applicable accessibility regulations. Provide wood blocking to secure installation.

2. Guestroom Toilet Accessories: See Module **<7A>**.
3. Public Toilet Accessories - Manufacturer: Provide products from one Marriott accepted manufacturer.
4. Public & Employee Toilet Room Accessories:
   a. Toilet-Seat-Cover Dispensers / Toilet Tissue Dispensers; Combination: Secure door of toilet-seat-cover dispenser to cabinet with full-length stainless steel piano-hinge and equipped with a tumbler lock.
      - B-3474 by *Bobrick*; recessed wall mounted.
      - B-347 by *Bobrick*; mounted on partition
      - B-3471 by *Bobrick* (at accessible stall); mounted on partition

   b. Toilet-Seat-Cover Dispenser / Sanitary Napkin Disposal / Toilet Tissue Dispenser; Combination:
      - Secure door of toilet-seat-cover dispenser to cabinet with full-length stainless steel piano-hinge and equipped with a tumbler lock.
      - Secure self-closing door of napkin disposal to cabinet with spring-loaded, full-length stainless steel piano-hinge.
      - Equip with international graphic symbol identifying napkin disposal. Furnish sanitary napkin disposal with a removable stainless steel receptacle.
      - Product: B-3574 by *Bobrick*; recessed, wall mounted.

   c. Toilet-Seat-Cover Dispenser / Sanitary Napkin Disposal / Toilet Tissue Dispenser; Partition-Mounted: Mount unit in partition and serving two toilet compartments.
      - Secure door of toilet-seat-cover dispenser to cabinet with full-length stainless steel piano-hinge and equipped with a tumbler lock.
      - Secure self-closing doors of napkin disposal to cabinet with spring loaded, full-length stainless steel piano-hinges and equipped with international graphic symbols identifying napkin disposal. Furnish napkin disposal with removable stainless steel receptacle and a tumbler lock.

- Products: B-357; B-3571 by *Bobrick* (at accessible stall)

d. Paper Towel Dispenser / Waste Receptacle; Combination Recessed:
- Use type 304 stainless steel, welded construction, with exposed surfaces satin finish. Flange shall be drawn, one-piece seamless beveled construction.
- Door is 5/16-inch solid high-pressure laminated plastic (*Wilson Art* No. 4615-60 San Finesse) with concealed full-length stainless steel piano hinge and two friction catches.
- Product: B-36907 by *Bobrick*.

e. Napkin / Tampon Vendor Dispenser; Recessed: Combine two dispensing mechanisms in one cabinet to provide napkins or tampons at user's option.
- Dispensing Mechanism: Convertible to allow change of coin denomination without purchasing new mechanisms or removing unit from wall.
- Finish: Type-304 stainless steel; satin finish at exposed surfaces.
- Construction: All welded; 22 gauge cabinet; 18 gauge door.
- Door Facing: 5/16-inch solid high-pressure laminate plastic (*Wilson Art* No. 4615-60 Sand Finesse) with concealed full-length stainless steel piano hinge and cable door swing limiter.
- Coin Box: Each equipped with two tumbler door locks and double coin mechanisms for 50 cent operation.
- Product: B3507 x 2 by *Bobrick*; no brand name advertising on unit.

5. Grab Bars: Heavy-duty, having 1¼ inch diameter polished or satin stainless steel.

6. Soap Dispenser: Vanity, countertop mounted at each lavatory in men and women restrooms.

a. Unit: Designed to dispense vegetable oil liquid soaps, synthetic detergents, viscous lotion soaps and most antiseptic soaps.

b. Valve: Operate with less than 5 pounds of force with type 304 stainless steel, bright polished finish piston and spout assembly.

c. Translucent, shatter resistant polyethylene bottle container with 700 milliliter holding capacity.

d. Product: SureTouch No. 91934 by *Kimberly-Clark Corp.*; New Town Square, PA (800) 472-6881.

F. Storage Shelving: Included as part of the Owner supplied package (OS&E category). Provide metal shelving system of type suitable for guest luggage and Marriott equipment, material and product storage.

1. Provide freestanding wall braced or wall supported type with fixed or adjustable shelving. Flange the running edge of shelves. Provide solid, grated or perforated shelves depending on required use and stored material.
2. Finish: Painted, G 90 galvanized, 16 gauge steel (unless otherwise noted), ASTM A-527.
    a. See Modules **<9>** and **<11>** for maintenance and housekeeping storage shelving requirements.
    b. Alternate material such as plastic may be acceptable if performance equals galvanized steel. Obtain Marriott acceptance.

G. Interior Signage & Graphics: See Module **<GR2>**.

H. Fireplace, Prefabricated, Gas Fired: See Modules **<14>** and **<16>** for fireplace safeguards to ensure an approved operational fireplace.

1. Rating: A.F.U.E. (Annual Fuel Utilization Efficiency) with 65% or above rating.
2. Vent: Extend flue to exterior, through roof or wall.
3. Starter Control: Remote electric on wall.
4. Gas Piping Loop: Include in design.
5. Accessories: **<16>** Include manufacturer's installed glass window and screen, remote starters, draft prevention devices; design for high altitude applications when appropriate.
6. Carbon Monoxide Detector: **<14>** Required for fuel burning locations.
7. Installer: Licensed to install pre-fabricated fireplace systems, flue, fuel piping, and controls with fireplace manufacturer's written approval.
8. Inspection: Comply with National Gas Codes and governing authority.

I. Fire Protection Specialties: Provide fully recessed extinguisher cabinets and installation accessories Match adjoining wall finish and wrap material to cabinet edges.

J. Safes: For Guestroom Safe, see Module **<7A>.** For Drop Safe, House / Cash and Safe Deposit Boxes, see Modules **<8A>** and **<8B>**.

K. Walk-off Mat: Decorative type; included in OS&E package.

GR3.13 Division 11 - Equipment

A. **Appliances - Guestrooms:** See Module **<7A>**.

B. **Receiving Area Equipment:** See Module **<9>**.

C. **F&B Production Equipment:** See Module **<10>** for kitchen and other food and beverage service areas.

D. **Washing & Drying Equipment:** See Module **<11A>**.

E. **IT Equipment:** Computer system and peripherals, see Module **<13A>**.

F. **Telephone Equipment:** See Module **<13B>**.

G. **Audio / Visual (A/V) Equipment:** See Module **<13C>**.

GR3.14 Division 12 - Furnishings

- FF&E: See Module **<GR4>** Furnishings, Fixtures & Equipment.

GR3.15 Division 13 - Special Construction

A. **Saunas:** See Module **<4>** Recreation.

B. **Steam Rooms:** See Module **<4>**

C. **Swimming Pools & Whirl Pools:** See Module **<4>**.

GR3.16 Division 14 - Conveyances

- Elevators & Escalators: See Module **<12>**.

GR3.17 Division 22 - Plumbing

- Plumbing: See Module **<15B>**.

GR3.18 Division 23 - Mechanical

- Mechanical / HVAC: See Module **<15A>**.

GR3.19 Division 26 - Electrical

- Electrical Systems & Lighting: See Modules **<1>, <15C>**.

GR3.20 Division 33 - Utilities

- Utilities: See Modules **<1>, <15A>, <15B>**.

AUTOGRAPH
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STANDARDS

MODULE

GR4

FURNITURE, FIXTURES & EQUIPMENT (FF&E)

OPERATING SUPPLIES & EQUIPMENT (OS&E)

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Furniture, Fixtures & Equipment

GR4.1 Interior Design - FF&E

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Introduction: This Module defines the required minimum criteria for FF&E for Autograph Collection properties and serve as a Brand reference and guideline. The renovation and development principles are based on MI's hotel industry experience and product development research. This section supplements the Standards for FF&E construction and fabrication including Modules:

- **<2>** - Public Spaces
- **<3>** - Food and Beverage
- **<6>** - Function Spaces
- **<7>** - Guest Accommodations

The criteria for Public Spaces and Guestroom décor includes, but are not limited to, flooring, carpet and padding, area rugs, wall finish, window treatments, casegoods, upholstered furniture, bedding, artwork, artifacts and decorative light fixtures.

B. Governing Codes: When governing codes exceed the requirements contained herein, the governing codes are understood as minimum prerequisites. During the project review process, MI may waive the Autograph Collection Design Standards to comply with the project's governing provisions, market customs or practices.

C. Deviations or Exceptions: When market customs or existing property conversions are in non-compliance with these Standards, obtain MI review, interpretation and acceptance. Exceptions require submission to MI prior to material or product purchase and installation.

D. Slip Resistance: <16> On hard floor walking surfaces, provide minimum of 0.6 wet/dry coefficient of friction on flat surfaces and minimum of 0.8 wet/dry on ramps.

E. Attic Stock: **<GR1>** Provide material and product stock over and above initial FF&E installation quantities. The attic stock list may be amended by MI to respond to the specific project requirements. Define products in sufficient time for project purchase. Generally, attic stock is delivered near project completion.

1. Public Spaces: Attic stock is required for public spaces in the following minimum quantities:
   a. Carpets: 5% over quantity ordered
   b. Wallcovering: 5 to 15% depending upon pattern and repeats
   c. Fabrics: Evaluate for each location.
2. Guestrooms: Provide attic stock minimum quantities for guestrooms as follows:
   a. Mirrors: 2% of total quantity (minimum of 2)
   b. Lamps & Ceiling Fixtures: 2% of total quantity (minimum of 2)
   c. Lamp Shades: 2 to 5% of total quantity ordered (minimum of 2 of each type)
   d. Artwork: 2% of total quantity (minimum of 2)
   e. TVs, Radios, CD Players & Cooler Units: 2 to 5% of total quantity (minimum of 5 each)
   f. Casegoods: Minimum 1 for each piece, 2 each for pairs of headboards
   g. Upholstered Seating: Minimum of 1 each
   h. Wallcovering: 5% of total quantity ordered
   i. Carpet: 5% of total quantity ordered
   j. Shower Curtains: 1 to 5%
   k. Bed Skirts: 5% of total quantity ordered
   l. Decorative Bed Pillow Covers: 5% base on PAR level of property (3.5 to 5 par is typical)
   m. Decorative Pillows: 2% of total quantity ordered (minimum of 2)

GR4.2 Public Spaces

A. General: This section includes the FF&E criteria and finishes for Public Areas in Autograph Collection properties. Obtain MI acceptance for product, material and fabrication exceptions.

B. Floor Finishes:

1. Area Rugs: Provide combination of hand-tufted, cut pile, loop and tip shear construction.
   - a. Hand Tufted: 88 oz. weight
   - b. Yarn Content: 100% semi-worsted wool. Obtain MI acceptance for exceptions.
   - c. Rug Edges: Bevel with a slope no greater than 1:2
   - d. *Axminster*: Provide natural fiber area rugs with edges finished to provide a sealed edge.
   - e. Padding: Provide manufacturer's recommendation for non-slip padding.
2. Carpet:
   - a. Weave Type: Woven *Axminster*, 36 oz.
   - b. Pile Yarn: 80% wool 20% nylon
   - c. Yarn Count: R674/2, 2/46s
   - d. Backing Material: Polyester, polypropylene, conductive latex with superior film strength properties or suitable material
   - e. Pitch: 27.6 per dm (7 per inch)
   - f. Rows: Minimum 45.5 per dm (9 per inch); areas with high traffic areas, provide higher density.
   - g. Tuft Density: 762 per dm^2 (49 per $inch^2$)
   - h. Pile Height Above Back: Cut-pile 7.1 mm (0.28 inch)
   - i. Total Carpet Thickness: 9.1 mm (0.36 inch)
   - j. Pile Weight Above Back: 786 g per m^2 (23.2 oz per yd^2)
   - k. Total Pile Weight: 1048 g per m^2 (30.9 oz per yd^2)
   - l. Carpet Option: Computer Yarn Placement (CYP), solution dyed nylon. Consult MI for specifications and obtain MI acceptance.
   - m. Flammability: Pass ASTM E-648-91, Class 1 flammability rating, DOCFF 1-70 Pill Test or equivalent, or governing codes that meet or exceed these requirements.
   - n. Soil Inhibitors: Apply during fiber production; not topically applied after carpet fabrication.

o. Padding: Synthetic rubber or rubber compound; 1700 g per m² (64 oz./yd²) minimum weight; re-bond is not permitted.
p. Carpet Installation: Install carpet over padding. Double stick installation is recommended.
- Seams: Install with commercial hot melt tape.
- Carpet Edges: Apply seam sealer to edges where carpet meets other floor materials.

q. Carpet Base: Not permitted

3. Hard Floor Finishes: Provide slip resistant floor and ramp walking surfaces **<16>**.
a. Stone: Provide non-porous, natural stone. Obtain MI acceptance on a project case-by-case basis for exceptions.
b. Tile: Provide full body porcelain. Ceramic tile types are not permitted.
c. Wood: Provide commercial grade, solid hardwood with inherent stain resistance throughout.
- Engineered Wood: Obtain MI acceptance.
- Technical Review: Project interior designer reviews technical information with owner and MI Interior Design. Obtain MI acceptance.
- Faux Wood or Laminate Flooring: Not acceptable

d. Concrete Finish: Provide impregnated concrete color, not topically stained.

4. Rubber Flooring: Provide in fitness centers where applicable.
5. Other Flooring: Terrazzo, cork, bamboo and leather flooring may be acceptable if acceptance is obtained from MI.

C. Window Treatments:

1. Blackout Drapery: Provide in function areas using audio / visual presentations such as meeting rooms, boardrooms, and ballrooms.
2. Fabrics: Pre-shrink fabrics before fabrication if the fiber is not previously treated for shrinkage. Treat fabrics to resist water and soil staining.
a. Colorfastness: AATCC 16 Option 1 or 3-2003: 60 hours, Grade 4, ASTM D3691, 1974 or 16E
b. Wet & Dry Crocking: 4.0 dry, 3.5 wet or better
c. Flammability: Provide flame retardant to pass NFPA-701 requirements and governing codes.
d. Face Panels: Conceal secondary panel hems with face panels. Crocking: Pass AATCC 8-2001-4.0 dry, 3.5 wet or better.

e. Pil: ASTM D3511, Class 4.5
f. Seam Slippage: 24.3 kg/m² (15 lbs/in²)
g. Tensile Strength: Pass ASTM D5034-95 (2001) (Grab Test 15 pounds for fabrics less than 6 ounces.

3. Hardware: Provide commercial quality, extruded aluminum tracks and hardware warranted for commercial application.
   a. Protection: Provide galvanized hardware (including staples) or other non-corrosive treatment.
   b. Carriers: Ball bearing carriers are preferred over nylon carriers for ease of drapery movement. Overlap master carriers on center draw drapery treatments.
   c. Motorized Traverse: Electrically motorized traverse treatments are an option.
      - Calculate the drapery weight for motor power applications.
      - Provide window treatments with proper mechanisms for easy operation (opening and closing).
   d. Concealment: Conceal hardware from view.

D. Wall Finishes:

1. Wallcoverings: Provide strippable, Type II, 454 g/m² (20 oz per LY) wallcovering minimum. .
   a. Backing: Provide woven scrim / fabric scrim. Paper back is not permitted.
   b. Flammability: Comply with MI Standard Class 1 flammability rating and toxicity or governing codes that meet or exceed these requirements.
   c. Protective Coating: Provide wallcoverings with the manufacturer's clear, matte, liquid protector designed to resist scuffs and stains.
   d. Installation:
      - Provide mold and mildew resistant, commercial grade adhesives following manufacturer's recommendations.
      - Provide primers when recommended.
2. Option: Paint may be acceptable based on market conditions. Obtain MI acceptance.
3. Base:
   a. Carpet Base: Not permitted
   b. Base Height: Minimum of 10 cm (4 inch). Large scaled bases are appropriate in large areas.
4. Specialty Finishes: Contract quality wood, stone, tile, glass, and specialty wall finishes are encouraged for utilization in feature areas and in food and beverage outlets.

E. Furniture - Public Spaces:

1. Casegoods - General: Fabricate furniture for commercial hospitality applications.
   a. Supplier is responsible for the structural integrity, finish durability and construction.
   b. Project interior designer reviews shop drawings and finish samples prior to production.
   c. Warranty: Warrant casegoods for commercial use.
2. Materials & Fabrication:
   a. Wood: Kiln dry 7 to 10% moisture content
   b. Panels: Corner block, glue and cross screw. Secure full size back panels at four corners for additional stability.
   c. Fasteners: Furniture quality screws with sufficient screw type bit. Provide clamp nails on mitered bases and aprons.
   d. Glue: Provide commercial, furniture grade to produce superior strength. Remove excess glue from visible areas before finishing.
   e. Joints: Mortise and tenon and/or double wood dowel joints. Strengthen joinery with screw cleats.
      - Glue and screw corner blocks in both directions.
      - Carefully match exposed finish surfaces to produce consistent veneer line and design.
3. Feature Pieces: Obtain MI acceptance for non-compliance with these furniture fabrication requirements.
4. Core, Top & Side Panels:
   a. Fiberboard or Flake Board: Industrial grade, 730 kg per m^3 (45 lbs/ft^3) density with balancing backer to face material
   b. Medium Density Fiberboard: MDF is acceptable when fully sealed with veneer. Seal exposed edges with polyurethane to prevent moisture seepage.
5. Top Material:
   a. Acceptable Tops: Provide wood veneer with polyurethane protective finish, stone, glass, granite, and engineered stone. When glass is utilized over wood, provide 6 mm (¼ inch) tempered glass on silicon pads.
   b. Wood Veneer: Provide balancing backer sheet with solid hardwood and polished or beveled edges.
   c. High Pressure Laminate: HPL tops not permitted.
   d. Inlaid Tops: Fill and seal inlaid seams and joints to prevent soil staining when hard material finish is provided.

6. Drawer Components:
   a. Wood Veneer: Provide with balancing backer sheet over fiberboard or flake board core. Cover exposed edges with veneer.
   b. Exposed Wood Frames: Solid, kiln dried hardwoods
   c. Drawer Glides: Silent, nylon ball bearing, contract quality drawer side glides components (such as K & V #1275 or equal).
   d. Drawer Stops: 34 kg (75 lbs.) load capacity
   e. Drawer Sides & Backs: One, 7 ply, 178 mm (7/16 inch) thick plywood, sanded and splinter free.
      - Sand finish parts smooth and seal with a moisture resistant coating.
      - Provide French or English drawer sides and dovetail to drawer fronts and English dovetail at back. Glue joints.
   f. Interior Drawer Box: Completely seal using wood construction or treated moisture protective coating. Provide masonite, melamine, or sealed plywood drawer bottoms to resistant spills and stains.
7. Bases & Legs:
   a. Glides: Provide cushioned stainless steel glides for furniture on wood floors and heavy duty nylon glides on bases and legs for other floor finishes.
   b. Bottom Edges: Finish bottom edges to prevent moisture damage.
8. Hardware: Finish metal hardware and decorative details with corrosion protective coating.
9. Finishes: Provide casegoods with durable, commercial, hospitality quality finish.

F. **Upholstered Furniture - General:** Fabricate furniture for commercial hospitality use.
1. Submittals: Project interior designer reviews shop drawings and finish samples prior to production.
2. Warranty: Warrant fabrication for commercial use.
3. Frames: Solid hardwood, #1 common grade, kiln dry to a moisture content of 7 to 9%.
   a. Provide solid hardwoods suitable for finishing free of knots and blemishes for exposed wood frames.
   b. Provide frames of steam bent plywood construction for curved areas, and solid kiln dried hardwood frames for other applications.
   c. Provide stretchers to support legs (dining and side chairs).
   d. Corner block and screw frames.

4. Joints: At major joints, double dowel with corner blocks and screw and glue.
   a. Lag bolts are recommended to join seat frames to legs.
   b. Reinforce other joints with glue blocks or cleats.
5. Frame Finish: Provide catalyzed type finishes to match approved finish samples. Test and warrant finishes for commercial use.
6. Springs: Provide sinuous wire springs for seats and seating backs.
   a. Provide springs of sufficient quality to retain 95% memory for five years.
   b. Provide a sufficient quantity of springs to ensure even weight distribution during use.
   c. Seat Springs: 8 gauge
   d. Back Springs: 11 gauge
   e. Attach springs with steel clips.
   f. Cover seat springs with steel wire flexolator or equal product.
7. Seat Decking: Provide under seat cushions (not self decked). Provide woven synthetic material to cover back springs and apply foam on top.
8. Foam: Comply with US CA117 minimum requirements (or equivalent) or governing codes that meet or exceed the following requirements.
   a. Seat Cushions: 29.2 kg/m³ (1.8 lbs./ft ³) minimum foam density, ILD (compression) 11.8 to 13.6 kg (26 to 30 lbs)
   b. Backs: 24.3 kg/m³ (1.5 lbs/ft³) minimum foam density, ILD (compression) 6.8 kg (15 lbs)
   c. Solid Foam Core: Cover with 2.5 cm (1 inch) layer of polyester batting.
   d. Memory Quality: Provide sufficient foam quality to retain 85% memory for five years.
9. Loose Cushions: Reversible
10. Foam & Fabric Flammability: Comply with US CA117 minimum requirements (or equivalent) or governing codes that meet or exceed these standards.
11. Seams:
    a. Depth & Stitches: Provide sufficient depth and stitches to eliminate seam slippage (opening).
    b. Thread Quality: Provide thread of sufficient quality for contract use.
    c. Fabric Test: Seating supplier shall test fabrics for seam slippage prior to production sewing.

12. Upholstered Arms:
    a. Reinforce inside arms with cardboard or synthetic woven fabric padded with 2.5 cm (1 inch) of foam.
    b. Cover outside arms with synthetic woven fabric covered by fabric.
13. Upholstered Outside Back: Provide foam pad and cover with fabric.
14. Glides: Provide cushion stainless steel glides for furniture on wood floors and heavy duty nylon glides for other floor finishes.
15. Upholstery Fabric:
    a. Abrasion Resistance: Pass minimum test requirement of 30,000 double rubs using Wyzenbeck (back and forth) or Martindale (circular).
    b. Flammability: Comply with US CA117 minimum requirements (or equivalent) or governing codes that meet or exceed these requirements.
    c. Finish Protection: Treat with water and soil treatment. Provide acrylic or latex backing and lamination for stability.
    d. Colorfastness to Light: Pass AATCC 16 Option 1 or 3-2003: 40 Hours, Grade 4.
    e. Crocking: 4.0 dry 3.5 wet or better
    f. Pil: Brush Pill ASTM D3511-02, Class 4.5
    g. Seam Slippage: ASTM D3597-02-D434-95 for upholstery and panel fabrics: 35 lbs./inch^2
    h. Tensile Strength: Upholstery 3.5 kg/cm^2 (50 lbs per inch^2), panel 2.4 kg/cm^2 (35 lbs/inch^2)
    i. Latex or Acrylic Backing: Back fabrics with an exposed seam in seat cushion for stability.
    j. Fabric Cleaning: Clean with water based methods.
16. Leather: Provide top quality, aniline dyed leather, free of blemishes, scratches, and holes for upholstery. Obtain MI acceptance for other leather products and applications.

G. Boardrooms & Meeting Rooms - General:

1. Executive Style Arm Chairs: Provide in durable upholstery with a 5 prong spider base. Provide dual wheel casters are in Boardrooms.
2. Chairs: Provide stackable chairs in Meeting Rooms with ganging devices.
3. F&B Service: Provide console, or built-in millwork for food and beverage service.
4. Televisions: Mount TVs on a millwork panel, finished recessed application, or within enclosed cabinet millwork. Where TVs are wall mounted, locate the installation to prevent sound transmission outside of the room.
5. Connectivity: **<13>** Provide in Boardroom to accommodate TV, A/V, data, PI, phone and computer cables and wires.
6. Wires: Conceal from view.
7. Lighting: Provide a combination of architectural and decorative lighting fixtures.
8. Controls: Locate light dimming control and media audio panels easily accessible to guests.

H. Artwork & Artifacts for Public Spaces - General:

1. Submittals: Submit project artwork and artifacts specification book and location documents, prior to purchase, to MI for review.
   Provide property Look Book upon final completion to clearly identify locations and vendor contact information. Use the standard format document.
2. Custom Packages: A unique collection of varying media to tie into brand pull-through.
3. Lighting: Provide with the appropriate lighting.
4. Frame Corners: Miter cut, glue and join with V-nail.
5. Security Hardware: Provide artwork with 3 point security hardware for secure mounting.

I. Televisions & Media Screens - General: **<13C>** Locate TVs in discreet areas.

1. Permanent Equipment: When the project requires permanent installations, provide electronic opening and closing panel mechanism to conceal the equipment in the ceiling. Design panel to blend with the ceiling. Install removable projectors at hang points determined by the project lighting designer.
2. Media LCD: Install monitors on walls to present continuous property marketing. Locate in transition traffic spaces. Do not install behind the front desk.

3. Televisions: Mount on finished millwork panel or finished recessed panel.
4. Gobo Projection: Provide for Sensory Refresh Program.
5. Wires: Conceal from view.

J. **Lighting for Public Spaces - General:** See Module **<15C>** for lamp types and lighting levels; coordinate with the following:
1. Design Consultant: MI recommends providing a lighting designer on each project. Review full lighting drawings with MI.
2. Standards: Comply with governing codes. Provide UL approval and labeled products.
3. Fixtures: Provide a combination of ambient, decorative, and task lighting.
4. Lighting Controls:
   a. Provide dimmable lighting in front of house public areas, except restrooms and recreation facilities.
   b. Locate programmable dimming panel in back of house space for public spaces.
5. Decorative Lighting:
   a. Metal Components: Seal with clear powder coating to withstand 1,000 hour salt spray test.
   b. Electric Cord: Provide sufficient cord length to reach electric outlet.
   c. Lamp Bases: Provide table and floor lamp bases with sufficient weight to prevent tipping.
6. Reference: See Lighting Guidelines for lighting principles and essential objectives.

GR4.3 Guestrooms & Suites

A. General: This section includes the FF&E criteria and finishes for Guestrooms and Suites in Autograph Collection properties. Obtain MI acceptance for product, material and fabrication exceptions.

B. Floor Finishes:

1. Area Rugs: Provide on hard flooring such as tile, stone, wood.
   - **a.** Fabrication: A combination of hand tufted, cut pile, loop and tip shear construction
   - **b.** Edges: Bevel with a maximum of 1:2 slope. Provide sealed and finished *Axminster* and natural fiber area rug edges.
   - **c.** Padding: Manufacturer's recommended non-slip padding
   - **d.** Yarn Content: 100% semi-worsted wool in Suites. 100% semi-worsted wool or woven 80/20 *Axminster*
   - **e.** Exceptions: Obtain MI acceptance.
2. Carpet:
   - **a.** Weave Type - International Projects & Suites in North America Projects: Provide 80/20 woven *Axminster*
   - **b.** Pile Yarn: 80% Wool 20% Nylon
   - **c.** Yarn Count: R674/2, 2/47s
   - **d.** Backing Material: Polyester, polypropylene, conductive latex with superior film strength properties or a equivalent material
   - **e.** Pitch: 27.6 per dm (7 per inch)
   - **f.** Rows: 27.6 to 31.5 per dm (7 to 8 per inch)
     - International Projects; 7 per inch
     - North America Projects - Suites: 8 per inch
   - **g.** Tuft Density: 762 per dm² (49 per sq inch)
   - **h.** Pile Height Above Back: Cut-pile 6.35 mm (0.25 inch)
   - **i.** Total Carpet Thickness: 8.8 mm (0.35 inch)
   - **j.** Pile Weight Above Back: 632 g per m² (18.5 oz per yd²)
   - **k.** Total Pile Weight: 972 g per m² (28.2 to 32.2 oz per yd²)
   - **l.** Total Carpet Weight: 1728 g per m² (60.96 oz per yd²)
   - **m.** Carpet Option: Computer Yarn Placement (CYP), solution dyed nylon. Consult MI for specifications and obtain MI acceptance.

n. Flammability: Pass ASTM E-648-91, Class 1 Flammability rating or equivalent, DOCFF 1-70 PILL Test or applicable governing codes that meet or exceed these requirements.

o. Soil Inhibitors: Apply during fiber production; not topically applied after carpet fabrication.

p. Carpet Option: 100% solution dyed nylon, tufted and 32 to 36 oz. nylon reviewed on a project-by-project basis, based on market conditions.

q. Pile Type: Tufted cut and loop pile.
- Finished Pile Height: 0.197 inch
- Yarn Ply: 2 ply
- Yarn Composition: 100% *Eco Solution Q Branded* yarn
- Dye Technique: Solution dyed
- Face Weight: 32 to 36 oz.
- Backing: Primary - polypropylene; secondary - classicbac
- Yard Denier: 1350/2
- Yard Density: 6000 oz. per cubic yard
- Color Fastness: 4 to 5
- Light Fastness: 4 to 5
- Flammability: ASTM E-648 Class I rating for commercial use
- Tuft Bind: Classic Bac rating 5.9 lbs. loop pile, 2 lbs. cut pile
- Stain Warranty: Lifetime stain

r. Carpet Padding: 1709 g m² (64 oz./yd²) minimum weight, synthetic rubber or rubber compound. Re-bond is not permitted.

s. Carpet Installation: Install carpet over padding, utilizing the stretch-in method.
- Seam: Locate one seam only per room toward demising room wall on bath side. No seams permitted in rooms with hard surface at entry and no visible seams at entry.
- Carpet Edges: Seal off carpet edges where carpet meets other floor material.

3. Hard Floor Finishes: Provide slip resistant floor and ramp walking surfaces **<16>**.

a. Stone: Provide non-porous, natural stone. Obtain MI acceptance for exceptions.

b. Tile: Provide full body porcelain. Ceramic tile types are not acceptable.

c. Wood: Provide commercial grade, solid hardwood with inherent stain resistance throughout.
- Technical Review: Project interior designer reviews technical information with owner and MI. Obtain MI acceptance.
- Engineered Wood: Obtain MI acceptance.
- Faux Wood or Laminate Flooring: Not acceptable

4. Other Flooring: Cork, bamboo and leather flooring may be acceptable if acceptance is obtained from MI.

C. Window Treatments:

1. Traverse Tracks: Provide to support window treatments.
2. Baton Pulls: Mount in front of curtain fabric.
3. Fabrics: Pre-shrink fabrics before fabrication, if the fiber is not previously treated for shrinkage. Treat fabrics to resist water and soil staining.
   a. Colorfastness: AATCC 16 Option 1 or 3-2003: 60 hours, Grade 4, ASTM D3691, 1974 or 16E
   b. Wet & Dry Crocking: 4.0 dry, 3.5 wet or better
   c. Pil: Brush Pill ASTM D3511, Class 4.5
   d. Seam Slippage: 24.3 kg/m² (15 lbs/in²)
   e. Tensile Strength: ASTM D5034-95 (2001) (Grab Test) 17.4 kg/m² (25 lbs/in²), warp and fill for fabrics over 6 ounces per square yard, and 24.3 kg/m² (15 lbs/in²) for fabrics less than 6 ounces.
   f. Flammability: Provide flame retardant to draperies, linings and sheers to pass US NFPA 701-04, Test Method I (vinyl coated blackout, Test Method 2) and as required by governing codes. Provide inherent treatment during production; not topical after fabrication.
   g. Blackout: Provide 100% blackout for Guestrooms and Suites. Provide blackout lining to primary window treatment fabrics when blackout is not installed on a separate traverse track.
   h. Face Panels: Conceal secondary panel hems with face panels.
4. Hardware: Provide commercial quality, extruded aluminum tracks and hardware warranted for commercial applications.
   a. Tracks: Ceiling mounted tracks are preferred over wall mounted tracks.
   b. Protection: Provide galvanized hardware (including staples) or other non-corrosive treatment.
   c. Carriers: Ball bearing carriers are preferred over nylon carriers for easy opening and closing draperies.
      - Overlap master carriers on center draw drapery treatments. Block light 100% from center and edges.
      - Electric, motorized traverse tracks are an option.
   d. Concealment: Conceal hardware in recessed architectural pocket or behind a wood or upholstered valance.

5. Decorative / Blackout Panels:
   a. Fullness: Minimum of 200% fullness. Increase fullness is determined by specific window and accompanying window treatment fabrics.
   b. Hems: Double hems 8 to 10 cm (3 to 4 inch) deep, sewn with blind hemstitch or weighted hankie hem is acceptable.
   c. Blackout: Provide blackout lined overdrape with 2 pass blackout.
      - Provide 3 pass blackout when blackout is provided on a separate track.
      - Overlap center draw draperies at center with master carrier to prevent light leakage.
      - Weight: Provide at corners and hems.
      - Drapery Finish Length: 1.3 cm (½ inch) above finish floor.
6. Sheers:
   a. Fullness: Minimum of 250% fullness; Consider 300% if sheer is provided as over drapery material or as determined by sheer fabric.
   b. Hems: Double hems 8 to 10 cm (3 to 4 inch) deep sewn with blind hemstitch or serge over a chain weight. Overlap center draw hems at center master carrier.
   c. Weight: Provide at corners and hems.
   d. Finish Sheer Length: 1.3 cm (½ inch) above finished floor.

D. Wall Finishes:

1. Wallcovering: Provide strippable wall coverings..
   a. New Construction: Minimum of Type I, 15 oz./LY (350 g/m²) wallcovering outside of North America.
   b. Type: Minimum of Type II, 454 g/m² (20 oz. per LY) wallcovering.
   c. Widths: Guestroom, 130 cm (54 inch); Guest Bath, 130 cm (54 inch) or 65 cm (27 inch).
   d. Backing: Woven scrim / fabric scrim; paper back is not permitted unless acceptance is obtained from MI.
   e. Flammability: Comply with MI Standard Class 1 flammability rating or governing codes for flammability and toxicity that meet or exceed the MI requirements.
   f. Protective Coating: Provide wallcoverings with the manufacturer's clear, matte, liquid protector designed to resist scuffs and stains.

g. Installation:
- Primers: Provide when necessary.
- Adhesives: Mold and mildew resistant, commercial grade following manufacturer's recommendations.

2. Paint: Obtain MI Interior Design approval to utilize paint and paint products based on market requirements.
3. Specialty Finishes: Decorative millwork, glass, or specialty finishes are encouraged. Obtain product approval from MI.
4. Base:
   a. Profiled vinyl or wood, carpet base not permitted
   b. Base Height: Provide 10 cm (4 inch). Large scaled bases are appropriate in large areas. Countersink nails and screws.

E. Furniture for Guestroom:

1. Casegoods - General: Fabricate furniture for commercial hospitality applications.
   a. Supplier is responsible for the structural integrity, finish durability and construction.
   b. Project interior designer reviews shop drawings and finish samples prior to production.
   c. Warranty: Warrant casegoods for commercial use.
2. Millwork: Provide refrigerator / mini-bar cabinet for guestrooms and suites.
   a. Locate millwork or decorative FF&E piece in the guestroom and suite foyer, living area or incorporated into the closet millwork.
   b. Review with MI all equipment and OS&E required in this casepiece.
   c. Provide the following attributes:
      - Mini-bar and snack drawer (option)
      - Pull-out shelf for tea or coffee service (option)
      - Shelf for tray, ice bucket, tongs, etc.
      - Provide durable top
      - Integral outlet for tea / coffee pot
3. Materials & Fabrication:
   a. Wood: Kiln dry 7 to 10% moisture content
   b. Panels: Corner block, glue and cross screw. Secure full size back panels at corners for stability.
   c. Fasteners: Provide furniture quality screws with sufficient screw type bit. Provide clamp nails on mitered bases and aprons.
   d. Glue: Provide commercial, furniture grade to produce superior strength. Remove excess glue from visible areas before finishing.

e. Joints: Mortise and tenon and double wood dowel. Strengthen joinery with screw cleats.
   - Glue and screw corner blocks in both directions.
   - Carefully match exposed finish surfaces to produce consistent veneer line and design.

f. Door Hinges: Provide commercial quality concealed hinges.

g. Refrigerator Enclosures: Design and fabricate case-pieces to enclose refrigerators with ventilation in compliance with the refrigerator manufacturer's recommendations. Obtain recommendations prior to production.

4. Core, Top & Side Panels:
   a. Fiberboard or Flake Board: Industrial grade, 730 kg per m^3 (45 lbs/ft^3) density with balancing backer to face material
   b. Medium Density Fiberboard: MDF is acceptable when fully sealed with veneer. Seal exposed edges with polyurethane to prevent moisture seepage.
5. Top Material:
   a. Acceptable Tops: Provide wood veneer with protective polyurethane finish, stone, glass, granite, and engineered stone. If glass is utilized over wood, provide 6 mm (¼ inch) tempered glass with pencil polished edge on silicon pads.
   b. Wood Veneer: Provide balancing backer sheet with solid hardwood.
   c. High Pressure Laminate (HPL) Tops: Not permitted for International projects.
   d. Specialty Materials: Submit to MI for review and obtain MI approval.
6. Drawer Components:
   a. Wood Veneer: Provide with balancing backer sheet over fiberboard or flake board core. Cover exposed edges with veneer.
   b. Exposed Wood Frames: Solid, kiln dried hardwoods.
   c. Drawer Glides: Silent, nylon ball bearing, contract quality drawer side glides components (such as *K & V* #1275 or equal).
   d. Drawer Stops: 34 kg (75 lbs.) load capacity required.
   e. Drawer Sides & Backs: 178 mm (7/16 inch) thick plywood, sanded and splinter free.
      - Sand finish parts smooth and seal with a moisture resistant coating.
      - Provide French or English drawer sides and dovetail to drawer fronts and English dovetail at back; glue joints.

f. Interior Drawer Box: Completely seal using wood construction or treated moisture protective coating. Provide masonite, melamine, or sealed plywood drawer bottoms to resist spills and stains.
g. Drawer Face Panel: Mount to drawer face box for ease of maintenance and replacement.

7. Bases & Legs:
   a. Glides: Provide cushioned stainless steel glides for furniture on wood floors and heavy duty nylon glides on bases and legs for other floor finishes. Provide leveling glides son large and tall pieces.
   b. Bottom Edges: Finish bottom edges to prevent moisture damage.
8. Hardware: Finish metal hardware and decorative details with corrosion protective coating.
9. Finishes: Provide casegoods with durable, commercial, hospitality quality finish. If tops are not protected with glass, then coat tops with polyurethane or other moisture resistant finish.

F. Reading Lights: See "Lighting for Guestrooms" section in this Module.

G. Softgoods - General Requirements: Provide high-end products (applies to all guestroom softgoods and bedding fabrics).
1. Standards: Meet governing fire code requirements and these MI standards for material treatments.
2. Material Durability, Protection and Maintenance: Treat finish materials to protect from water and soil and flame spread.
3. Hardware Protection: Galvanize or powder coat metal hardware and fittings to prevent corrosion.
4. Drapery Operation: Motorized / remote controlled drapery hardware is preferred.

H. Upholstered Furniture - General: Fabricate furniture for commercial hospitality applications.
1. Submittals: Project interior designer reviews shop drawings and finish samples prior to production.
2. Warranty: Warrant fabrication for commercial use.
3. Frames: Solid hardwood, #1 common grade, kiln dry to a moisture content of 7 to 9%.
   a. Provide solid hardwoods suitable for finishing free of knots and blemishes for exposed wood frames.
   b. Provide frames of steam bent plywood construction for curved areas, and solid kiln dried hardwood frames for other applications.

   c. Provide stretchers to support legs (dining and side chairs).
   d. Corner block and screw frames.
4. Joints: At major joints, double dowel with corner blocks and screw and glue.
   a. Lag bolts are recommended to join seat frames to legs.
   b. Reinforce other joints with glue blocks or cleats.
5. Frame Finish: Provide catalyzed type finishes to match approved finish samples. Test and warrant finishes for commercial use.
6. Springs: Provide sinuous wire springs for seats and seating backs where possible.
   a. Provide springs of sufficient quality to retain 95% memory for five years.
   b. Provide a sufficient quantity of springs to ensure even weight distribution during use.
   c. Seat Springs: 8 gauge
   d. Back Springs: 11 gauge
   e. Attach springs with steel clips.
   f. Cover seat springs with steel wire flexolator or equal product.
7. Seat Decking: Provide under seat cushions (not self decked). Provide woven synthetic material to cover back springs and apply foam on top.
8. Foam: Comply with US CA117 minimum requirements (or equivalent) or governing codes that meet or exceed the following requirements.
   a. Seat Cushions: 29.2 kg/m³ (1.8 lbs./ft ³) minimum foam density, ILD (compression) 11.8 to 13.6 kg (26 to 30 lbs). Seat cushion foam for public spaces - 2.5 lb. per ft. minimum.
   b. Backs: 24.3 kg/m³ (1.5 lbs/ft³) minimum foam density, ILD (compression) 6.8 kg (15 lbs)
   c. Solid Foam Core: Cover with 2.5 cm (1 inch) layer of polyester batting.
   d. Memory Quality: Provide sufficient foam quality to retain 85% memory for five years.
9. Loose Cushions: Reversible
10. Fabric Flammability: Comply with US CA117 minimum requirements (or equivalent) or governing codes that meet or exceed these standards.
11. Seams:
   a. Depth & Stitches: Provide sufficient depth and stitches to eliminate seam slippage (opening).
   b. Thread Quality: Provide thread of sufficient quality for contract use.
   c. Fabric Test: Seating supplier shall test fabrics for seam slippage prior to production sewing.

12. Upholstered Arms:
    a. Reinforce inside arms with cardboard or synthetic woven fabric padded with 2.5 cm (1 inch) of foam.
    b. Cover outside arms with synthetic woven fabric covered by fabric.
13. Upholstered Outside Back: Provide foam pad and cover with fabric.
14. Glides: Provide cushion stainless steel glides for furniture on wood floors and heavy duty nylon glides for other floor finishes.
15. Loveseat / Sofa Sleeper:
    a. Sleeper Mechanism: Contract quality, Leggett and Platt Classic 3500 with Anti-Tilt Mechanism.
    b. Instruction Label: Permanently apply operating instruction label to the webbing.
    c. Sleeper Mattress: Beige ticking, 268 kg per m^3 (1.3 lbs per ft^3) density, 13.6 kg (30 lbs) compression. Springs are 3½ inch, 13 gauge.
    d. Sleeper Mattress Coil Count:
        - 36 W x 72 L x 5 inch H (coil count: 184)
        - 40 W x 72 L x 5 inch H (coil count: 207)
        - 48 W x 72 L x 5 inch H (coil count: 253)
        - 2 W x 72 L x 5 inch H (coil count: 253)
        - 60 W x 72 L x 5 inch H (coil count: 299)
16. Desk Chair:
    a. Style: Provide comfortable style chair suitable for working and appropriate for the brand concept, arms optional.
    b. Clearance: Design to fit under desk with adequate legroom and clearance for arms, when applicable.
17. Upholstery Fabric: Cotton duck
    a. Abrasion Resistance: Pass minimum test requirement of 30,000 double rubs minimum, using Wyzenbeck (back and forth) or Martindale (circular).
    b. Flammability: Comply with US CA117 minimum requirements (or equivalent) or governing codes that meet or exceed these requirements.
    c. Finish Protection: Treated with water and soil treatment. Provide acrylic or latex backing and laminate for stability.
    d. Colorfastness to Light: Pass AATCC 16 Option 1 or 3-2003: 40 hours, Grade 4.
    e. Crocking: 4.0 dry 3.5 wet or better
    f. Pil: Brush Pill ASTM D3511-02, Class 4.5
    g. Seam Slippage: ASTM D3597-02-D434-95 for upholstery and panel fabrics, 2.4 kg/cm^2 (35 lbs per $inch^2$)

h. Tensile Strength: Upholstery 3.5 kg/cm² (50 lbs per in²), panel 2.4 kg/cm² (35 lbs/inch²)
i. Latex or Acrylic Backing: Back fabrics with an exposed seam in seat cushion for stability.
j. Fabric Cleaning: Clean with water based methods.

18. Leather: Top quality, aniline dyed struck-through leather, free of blemishes, scratches and holes for upholstery. Obtain MI approval for other leather products and applications.

I. **Metal Furniture - General:** Submit to MI for review and acceptance.
1. Weld Joints: Smooth and free of burns
2. Screws: Buried in the frame
3. Finish: Electrostatic powder coated or natural finish
4. Glides: Provide plastic glides on leg bottoms.

J. **Bedding:** See MI provided OS&E list for bed and bedding materials.
1. Standards: Comply with governing fire codes; See OSE list.
2. Acceptable Bed Manufacturer: Consult MI for accepted bed manufacturer options from *Jamison*, *Serta* or *Sealy*. Contact MI for provider outside U.S. / Canada.
3. Bed Sizes: International sizes may vary.
a. Double: 54 (w) x 80 inch (l) (140 x 200 cm)
b. Queen: 60 (w) x 80 inch (l) (150 x 200 cm)
c. King: 72 x 80 inch (l) (180 to 193 x 200 cm)
4. Bed Frame:
a. Provide a wood or rustproof, enamel on steel, metal bed frame with nylon glides concealed with a tailored fitted bed skirt.
b. Alternate custom platform base support is acceptable.
c. Box Springs: Provide with washable, fitted cover for platform beds.
5. Warranty: 10 year full warranty on box spring and mattress.
6. Headboard:
a. Mount secure to wall with wood cleats.
b. Where headboard design requires built-in lighting and electrical, fabricator is required to provide UL approved assembly and label.
c. If upholstery is used, provide water and soil resistant treatment or removable washable slipcovers, and comply with governing codes. To facilitate refurbishment, design and fabricate the upholstery portion for easy, on site replacement, without having to remove the entire headboard.

7. Bed Components: For the latest project bedding materials, designs and fabrication specifications; see OSE list provided by MI.
   a. Bedskirt: When frame is used, provide tailored and lined bedskirt. Coordinate with box spring and frame size.
   b. Mattress: Provide one of the following mattress types:
      - Deluxe 18 to 23 cm (7 to 9 inch) foam mattress and 25cm (10 inch) box spring set or equivalent
      - 30 cm (12 inch) plush mattress with a 23 cm (9 inch) box spring set or equivalent
      - Plush bed-topper acceptable to increase height of mattress to 30 cm (12 inch)
   c. Mattress Topper: White color
   d. Sheets: High quality white; 300 thread count or greater
   e. Duvet Cover: White ground sheeted cloth covering, 240 thread count or greater. Purchase feather duvet insert separately.
   f. Sleeping Pillows: Selection of foam and feather pillows with white base and covers
      - At least 4 pillows for double and queen beds, and 6 pillows for king beds
      - A 50/50 mix of foam and feather pillows
   g. Decorative Element: provide washable accent pillow, bolster pillow or throw, etc.

K. **Mirror:** Full length mirror. Location as directed by MI.

L. **Artwork & Artifacts – General**
1. Custom Packages: A unique collection of art to tie into Brand pull-through.
2. Artwork Style: Provide unique, not typical, artwork and frame.
3. Framed Artwork: Mitre cut corners, glue and join using V-nails.
4. Security Hardware: Provide 3 point security hardware to install artwork on walls.
5. Adhesives: Not permitted

M. **Lighting for Guestroom:** See Module **<15C>** and coordinate with the following:
1. General: MI requires a minimum of four decorative fixtures in addition to architectural lighting and (optional) reading lights.
2. UL Approval & Label: Provide UL approved and labeled products for U.S. or equivalent governing certification.

3. Codes: Comply with governing electrical codes for lighting.
4. Fluorescent Lamps: To maintain guest satisfaction, comply with color quality performance, instant on, silent, and flicker free operation equivalent to incandescent lamps.
5. Fluorescent Color: 2700 degrees Kelvin minimum, 85 CRI minimum
6. Energy Efficient Lamps: Provide 1700 Lumen output throughout the room for decorative fixtures.
7. Bed Lighting: Provide lighting fixture between bed pairs with two light sources and two light sources at king beds with separate switching. Provide fixture with electrical outlets in the base,
8. Controls: Locate fixture switches that are easily identified by and accessible to guests. Twist type switches are not permitted.
9. Reading Lights (option): Provide LED reading lights at headboard, with flexible adjustment and separate switch at the fixture.
    a. At king beds, provide one reading light on each side.
    b. In Double / Double rooms and rooms with bed pairs, provide one reading light at the outer side of each headboard.
10. Architectural Lighting:
    a. Entry Foyer: Recessed downlight (or decorative lighting) with switch at entry door
    b. Refreshment Service Alcove: Recessed downlight above the counter
    c. Headboard: Concealed wall wash light fixture to light accent wall.
    d. Closet / Wardrobe - International Projects: Instant on, flicker free light with automatic switch activated (on and off) with closet door opened and closed
    e. Vanity Light: Recessed downlight above sink. Decorative lighting at vanity with electric mirror style preferred.
    f. Bathtub & Shower Light: Moisture resistant recessed downlight above bathtub and shower enclosure.
11. Decorative Lighting:
    a. Lamps: Provide energy efficient lamps, with light output equivalent to 1700 Lumens.
    b. Metal Components: Seal with clear powder coating to withstand 1000 hour salt spray test.

c. Cord & Plug: Provide sufficient insulated cord length with polarized cap for sufficient size and capacity to carry the connected load.
- Provide cord color / finish per Interior Design.
- Provide plugs to match receptacles.
- Unless otherwise specified, provide cord 2.5 m (8 ft.) in length.

d. Bases: Provide table lamps and floor lamps with weighted bases to prevent tipping.

e. Shade: Color, shape, texture by Interior Design; obtain MI acceptance.

f. Floor Lamps: Locate 3-way switch or dimmer at socket. Provide stable weighted 4.5 kg (10 lb.) minimum base. Cover underside of weighted base with felt.

g. Lamp / Bulbs: See Module **<15C>**.

h. Sconces: At circulation areas, provide 10 cm (4 inch) minimum projection, if mounted within 203 cm (80 inch) from finished floor.

i. Harps: Finish to match fixture or shade finish.

j. Metal Finishes: In high humidity and ocean-side (salt air) sites, provide powder coated custom color on exposed metal parts including harp. Obtain MI acceptance.

12. Lighting Levels: In Lux [Foot-Candles (fc)].

a. Overall Lighting: 85 to 130 Lux (8 to 12 fc)

b. Desk Top: 485 to 538 Lux (45 to 50 fc)

c. Headboard: 410 to 430 Lux (38 to 40 fc)

d. Bath Vanity Top: 430 to 485 Lux (40 to 45 fc)

GR4.4 Guestroom Corridors

A. General: This section includes the FF&E criteria and finishes for Guestroom Corridors in Autograph Collection properties. Obtain MI approval for product, material and fabrication exceptions.

B. Floor Finishes:

1. Carpet:
   - **a.** Weave Type: Woven *Axminster*
   - **b.** Pile Yarn: 80% Wool 20% Nylon
   - **c.** Yarn Count: R674/2, 2/47s
   - **d.** Backing Material: Polyester, polypropylene, conductive latex with superior film strength properties or a suitable material
   - **e.** Pitch: 27.6 per dm (7 per inch)
   - **f.** Rows: 31.5 to 35.5 per dm (8 to 9 per inch)
     - North America Projects: 8 per inch
     - International Projects: 9 per inch
   - **g.** Tuft Density: 995 per dm² (64/inch²)
   - **h.** Pile Height Above Back: Cut pile 6.5 mm (0.250 inch)
   - **i.** Total Carpet Thickness: 8.8 mm (0.35 inch)
   - **j.** Pile Weight Above Back: 715 g per m² (23.2 oz. per yd²)
   - **k.** Total Pile Weight: 913 to 1026 g per m² (32.2 to 36.2 oz. per yd²)
   - **l.** Width: As ordered with + 1.25% tolerance
   - **m.** Carpet Option: Computer Yarn Placement (CYP), solution dyed nylon. Consult MI for specifications and obtain MI acceptance.
   - **n.** Flammability: Comply with ASTM E-648-91, Class 1 flammability rating, DOCFF 1-70 Pill Test, or governing codes that meet or exceed these requirements.
   - **o.** Soil Inhibitors: Apply during fiber production. Not topically applied after carpet fabrication.
   - **p.** Padding: 1709 g/m² (64 oz./yd²) minimum weight, synthetic rubber or rubber compound. Re-bond is not permitted.
   - **q.** Carpet Installation - Guestroom Corridors: Install carpet over padding. Provide double stick glue down method. Seal off carpet edges where carpet meets other floor materials.
   - **r.** Carpet Base: Not permitted.
2. Hard Floor Finishes: Provide slip resistant floor and ramp surfaces **<16>**.

a. Stone: Provide non-porous, natural stone. Obtain MI approval, on a case-by-case basis, for exceptions.
b. Tile: Provide full body porcelain. Ceramic tile types are not acceptable.
c. Wood: Provide commercial grade, solid hardwood with inherent stain resistance throughout.
- Technical Review: Project interior designer reviews technical information with owner and MI. Obtain MI approval.
- Engineered Wood: Obtain MI approval.
- Faux Wood or Laminate Flooring: Not acceptable

3. Specialty Flooring: Obtain MI approval.

C. Wall Finishes - General:

1. Wallcoverings: Provide strippable wallcoverings, Type II, 454 g/m² (20 oz./LY).
a. Width: 130 cm (54 inch)
b. Backing: Woven scrim / fabric scrim. Paper back is not permitted.
c. Flammability & Toxicity: Comply with MI Standard Class 1 Flammability Rating or governing code for flammability and toxicity that meet or exceed the requirements.
d. Protective Coating: Provide wallcoverings with the manufacturer's clear, matte, liquid protector designed to resist scuffs and stains.
e. Installation:
- Primers: Provide when necessary.
- Hardware: Prepare surfaces so non-decorative mounting hardware is not visible.
- Adhesives: Provide mold and mildew resistant, commercial grade products following manufacturer's recommendations.

2. Corner Guards: 2 cm (¾ inch) wide.
a. Install corner guards from top of base material to ceiling or lower edge of crown molding.
b. Match wall color.
c. Adhere with clear, silicone adhesive. Visible attachments such as screws are not permitted.
d. Decorative millwork, glass, or other specialty finishes require MI approval.

3. Base:
a. Profiled vinyl or wood, carpet base not permitted
b. Base Height: Provide 10 cm (4 inch). Large scaled bases are appropriate in large areas. Countersink nails and screws.

D. Furniture: See Public Spaces requirements.

E. Artwork & Artifacts - General:

1. Custom Packages: A unique collection of art to tie into brand pull-through.
2. Framed Artwork: Mitre cut corners, glue and join with V-nails.
3. Security Hardware: Provide 3 point security hardware to install artwork on walls.
4. Adhesives: Not permitted

F. Lighting for Guestroom Corridors: See Module **<15C>** and coordinate with the following:

1. Lighting Sources: Provide combination of architectural and decorative lighting to create contrast and drama.
2. UL Approval & Label: Provide UL approved and labeled products for U.S. or equivalent governing certification.
3. Codes: Comply with governing electrical codes for lighting.
4. Fluorescent Lamps: To maintain guest satisfaction, comply with color quality performance, instant on, silent, and flicker free operation equivalent to incandescent lamps.
5. Guestroom Doorways: Provide well lighted entry at door.
6. Energy Saver Feature Lights: Provide flicker free, instant on that illuminates within 1 to 2 steps of guest entry.
7. Lighting Levels: 76 to 108 Lux (7 to 10 fc)

GR4.5 Outdoor & Pool Furniture

A. General: This section includes the FF&E criteria for outdoor and pool furniture in Autograph Collection properties. Obtain MI approval for product, material and fabrication exceptions.

B. Aluminum Frames:

1. Frames: Extruded aluminum welded frames, 360 degree radius heli-arc welds (not riveted)
2. Weld Joints: Smooth and free of burrs
3. Screws: Buried in the frame
4. Finish: Electrostatic powder coated
5. Plastic Glides: On leg bottoms

C. Wood Frames: Provide teak, mahogany or other hardwood suitable for outdoors.

D. Seat & Back:

1. Rattan or Wicker: Provide synthetic woven HDPE (preferred over PVS). Provide UV protection and warrant against fading for 5 years.
2. Slings: Field replaceable; firmly attach in channels and warrant against tearing.
3. Cushions: No concealed zippers. Attach to frames with loops; 100% acrylic fabric (*Sunbrella* or equal) and construct for outdoors.
   a. Filling is quick-drain fiberfill or reticulated foam construction for outdoors.
   b. Provide drain holes if required.

E. Tables:

1. Table Tops: Provide acrylic or fiberglass at pools areas. Fully rimmed tempered glass is appropriate in other applications.
2. Outdoor Dining Tables: Provide umbrella holes with grommets in table center to support umbrellas.

F. Chaise Lounges:

1. Arms: When required, brace with vertical supports. To avoid hand and finger pinching, locate the adjustable latching bar, that positions the chaise back, away from the frame edge.
2. Weighted: Design for wind conditions to minimize roll-over.

G. Chair Back Legs: Provide fillers to minimize tipping.

H. Umbrellas:

1. Fabric: 100% solution dyed acrylic, *Sunbrella* or equal, 8 ounce per square yard.
2. Base: Provide weighted bases, as heavy as necessary, to support umbrella and to prevent roll-over.

I. **Accessories & Artifacts:** Provide the following:
1. Floor Rugs
2. Lanterns
3. Fire Pits **<16>**
4. Exterior lighting **<1>**
5. Accent Pillows
6. Heat Lamps

GR4.6 Operating Supplies & Equipment (OS&E)

A. **General Description:** Operating Supplies and Equipment consist of fixed asset supplies and on-site technology required for a fully operational facility at the opening and first three months of operation. The selection and purchase of approved operating supplies requires an analysis of the property size, location and Brand standards.

B. **Project Supplies List:** Obtain the project list from MI that includes the complete list of operating supplies and equipment.

a. Reception Pods & Bellstand Equipment
- Golf umbrella, amenities on request, sharps safety kit, wheelchair, luggage cart, name badge, indoor & outdoor flags, key cards

b. Administrative / Office Supplies and Equipment
- Printed materials, stationary, general office supplies, folios luggage tags, key packs, guestroom directories, combination locks
- Storeroom / control, shelving, stickers, inventory books

c. Guestroom Supplies - Bedroom
- Ice bucket, tray & bag
- Pens, note pads, wastebasket, stationery folders
- Clock radios, luggage rack
- Glassware, coaster / cover, coffee maker, coffee / supplies
- Iron, ironing board & iron holder, valet bags, hangers

d. Guestroom - Bathroom / Amenities
- Bath tissue & facial tissue
- Hairdryer, bathrobe
- Amenities, glassware
- Shower curtains

e. Linens & Terry
- Guestroom wash clothes, hand towels, bath towels, bath mat, bath rug
- Pillows, pillow covers, pillow cases, sheets, blankets, mattress topper

- Pool towels, exercise towels
- F & B linens
- Banquet linens

f. Housekeeping Supplies & Equipment
- Carts, glass rack carts, shelving
- Floor care equipment, cleaning supplies
- Roll away bed, cribs
- Linen truck, laundry carts, scale

g. Engineering Supplies & Equipment
- Hand tools, power tools & shop tools
- Receiving area equipment
- HVAC service equipment
- Storage work benches
- Safety equipment & illustrations

h. Communications & On-Site Technology
- Radios & pagers
- Fax machines, remind o timers, TDD equipment, ADA equipment
- Property Management System
- Back Office Accounting
- Point of Sale
- LAN Applications

i. Passenger Vehicles & Golf Cars

j. Uniforms

k. Food & Beverage (F&B)
- China, glassware, hollow ware, flatware, linen napery, glass racks
- Menus, guest checks, candles, vases, flowers, salt / pepper shakers, ashtrays
- Buffet equipment, food containers, urns & pots, hot boxes, stands, chafers
- Bar & rail matting, blenders, shakers, stir stix, picks, coffee equipment
- Room service carts, Queen Mary cart, tray jacks
- Kitchen equipment, appliances, spatulas, tongs, whips, utensils, ladles, knives, pots & pans, bakeware,
- Dishroom racks, dollies & cylinders (silverware)

l. Banquet
- Props / decorations, flowers, vases, centerpieces
- Backdrops, podiums, staging, dance floor, piano
- Chairs & tables

m. Audio Visual
- Reader boards, flip charts, easels, projectors, DVD

AUTOGRAPH
COLLECTION

AUTOGRAPH COLLECTION®

STANDARDS

MODULE

1

SITE & BUILDING EXTERIOR

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Site

1.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Concept: The Autograph Collection is a diverse group of Independent Lifestyle Hotels and Resorts that embody an upscale level of design and service. Each property is unique and represents its Brand position through its design. The purpose of this guide is to assist in the integration of the functions outlined in this Module together with the project's Facilities Program and it's unique character to create a memorable design and guest experience.

B. Program: The property supports the image of quality by utilizing noble building materials and timeless designs that adapt to the site and region consistent with the Brand's concept.

The Brand concept encourages respect for the diversity of site locations and supports quality themed designs that are sympathetic to the site context.

C. Co-Location: Where a property is co-located with other Brands and facilities, develop concepts that provide a selective level of connectivity and separation as appropriate between buildings for public and service circulation.

D. Residential: When a hotel is co-located with a residential use, property facilities and operations are segregated by use. In order to address the differing expectations of the "transient" guest amid residents, the following are provided separately or managed to minimize conflicts:

- Site access and parking
- Building entry
- Elevators
- Management and administrative employees
- Utilities and services

E. Entrances: Provide for separate access for lobby entry **<2A>**, function area (see Module **<6>**) and service circulation to avoid conflicts.

F. Steps, Stairs, Ramps & Slip Resistance: **<16>** Make stairs and steps apparent through use of essential design elements (including ramps where required) and in compliance with governing codes.

G. Loss Prevention Review: **<GR> <16>** A Loss Prevention Review is required to develop a risk and safety assessment associated with the property's location, design and facilities. The Risk Assessment review considers exterior features such as the following:

- Local crime and potential threats to building and occupants
- Perimeter site and building access
- Controlled access to utilities
- Location of air intakes
- Site and building lighting

1.2 Site Development

A. Exterior Design: Create a comprehensive project site concept.

1. Coordinate the landscape design with the interior planting to reflect a mature and natural green environment that complements the site and architecture.
2. Provide an exterior environment to reflect the project's Brand concept and regional context showing consideration and sensitivity to indigenous plant and hardscape materials.

B. Slopes:

1. Earth slopes not to exceed 2:1.
2. Seeded grassed sloped areas not to exceed 3:1.
3. Sodded grassed slopes not to exceed 4:1.
4. Fill slopes not to exceed 3:1 (unless compacted).

C. Retaining Walls: Generally, minimize the use and quantity of retaining walls in the site design.

D. Guard Rails: In areas accessible to public, provide 1.07 m (42 inch) high, architecturally designed guard rails, integrated with landscaping.

1. Space between railing elements to restrict a 10 cm (4 inch) ball.
2. Maximum between the bottom horizontal bar and structure 5 cm (2 inch).
3. Comply with governing codes.
4. Avoid horizontal rail designs that can assist climbing.

1.3 Site Utilities, Drainage & Soil Treatment

A. General: Design site infrastructure and drainage to comply with codes and drainage criteria for 100 year flood protection.

B. Utility Infrastructure: Design and provide underground utilities and piping. Exercise sensitivity to site aesthetics and location selection of surface devices, drain inlets, electric load centers and transformers, backflow devices, utility vaults, cleanouts, water meters, etc.

C. Utility Metering: Coordinate with Module **<15>.**

D. Utility Materials: Conceal utility devices and vaults, service areas and utility equipment from guests and public view.

1. Electrical Load Centers / Transformers: Provide in service areas.
2. Water Meter / Backflow Prevention: Provide devices in vaults and finish surfaces compatible with surrounding hardscape.
3. Submeter: Provide with backflow preventer for metering irrigation water consumption and pool makeup water.

E. Site Drainage:

1. Provide storm water management for anticipated rainfall conditions and prohibit pockets of standing water on paved surfaces, planted landscape and lawn areas.
2. Evaluate providing storm water management features that retain, store or reuse storm water to support green and sustainable goals.

F. Soil Treatment / Pest Control: Provide soil treatment to prevent infestation of termite and subterranean pests.

1. Provide termiticide products that comply with U.S. Environmental Protection Agency (EPA) and governing regulations.
2. Do not use fuel oil as a diluent.

1.4 Traffic Circulation - Planning

A. General: When planning for traffic circulation, design the site to complement the property Brand category and theme.

B. Driveways: Provide driveways to the hotel and other major amenities.

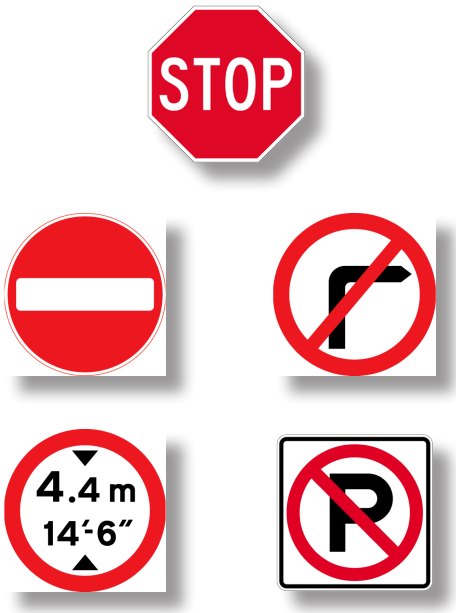
1. Curbs, Curb Cuts and Ramps: Design from parking areas to meet guidelines of ADA and applicable governing codes.
2. Bollards: Locate facilities to avoid damage by vehicles. When the location requires, provide bollards or similar protection devices around columns, planters, signs, trash enclosures, utility mains and other features vulnerable to damage by vehicular traffic.
3. Snow Storage: In areas of high snowfall, carefully analyze parking layout to ensure proper snow storage in parking lot if impossible or impractical to completely remove snow.

C. Traffic Circulation Features: Provide 2-way circulation with 90 degree parking in the following widths:

1. Curb to Curb: 19.5 m (64 ft.); subject to utilization of front overhang design.
2. Wall to Wall: 19.5 m (64 ft.).
3. Two-Way Drives: Minimum of 7 m (24 ft.) wide.
4. Single Lane Driveways (exclusive of parking): Minimum width of 3.6 m (12 ft.).

Figure 1 - Example: Signs that comply with MUTCD

Figure 2 - Example: International Signs



1.5 Traffic Control - Regulation Signage

A. Traffic Control on Site: Provide normal traffic control signage to avoid electronic signaling devices.

1. Verify requirements with fire department having jurisdiction and other governing officials.
2. Indicate traffic direction, parking restrictions, roadway intersection regulations and speed and other limitations.
3. Altering standard symbols, conventional symbol size, or conventional regulatory colors and configurations is not recommended.
4. If allowed by governing authority, custom design "standard" type traffic control signage consistent with the image of the project. Typically, provide raised letters (such as carved letters) on background (generally, solid wood for resorts) signage material.

B. Symbol Standards: Use symbol standards generally prescribed by the Manual of Uniform Traffic Control Devices (MUTCD) of the Federal Department of Transportation (FDOT).

1. Examples of sign panels that comply with MUTCD: See *Figure 1*.
2. Examples of International sign panels: See *Figure 2*.

C. Exterior Vehicular & Directional Signs: Coordinate vehicle signage with pedestrian and the overall project signage planning requirements in Module **<GR2>**.

1. Minimize information items; limit to three items whenever possible.
2. Provide decision point and destination point items only.
3. Scale / distance for vehicular use.
4. Minimize signage at Porte Cochere main building entrance indicating fire lanes, etc. but provide in compliance with governing authority.

1.6 Paving & Hardscape

A. Finish Surfaces: Design for clean appearance, easy maintenance and ability to be cleaned (to acceptable limits) of stains from motor oil, food spillage and other spotting substances.

B. Paving Materials: Select base materials in compliance with the approved Soils Report. Provide the following minimum thickness of finish course materials:

1. Entry (site entry to hotel): Traffic rated decorative pavers or natural stone if length is limited. Stone size / thickness determined by stone type and setting bed method. Decorative or exposed aggregate concrete if drive is extensive.
2. Parking Lots: 60 mm (2½ inch) asphalt concrete
3. Service Drives: 100 mm (4 inch) asphalt concrete
4. Dock: 125 mm (5 inch) reinforced concrete

C. Concrete: Natural color, air entrained ready mix, typically with color admixture and exposed aggregate or broom finish.

D. Stone: Natural stone materials with grouted joints from 3 mm (⅛ inch) to 10 mm (⅜ inch) wide dependent on material and paving pattern. Typically, selected to minimize staining. Provide stone at food services terraces, courtyards, pool and spa decks **<4>**, pool bar terrace.

E. Curbs: Provide concrete or stone curbs to match entry paving from site entrance to hotel entry.
Along outside edges of entry drive, provide rolled curb with matching curb / drive finishes.

F. Concrete Curbs: Provide concrete curbs and gutter with tooled joints as follows:

1. Integral curb and gutter at paved areas including site periphery, landscaping, lighting islands and parking.
2. Consider curb designs as dictated by local construction practices within governing jurisdiction.

G. Sealers: Provide penetrating type with a chemical composition that does not change finish surface color, slip resistance or visual qualities.

H. Drainage: Slope paving to infall drain structures in center of paving (unless otherwise dictated by code), not in pedestrian pathways, and connect to site storm piping. Locate at perimeter of terrace decks to avoid conflicts with deck furniture.

I. **Walkway Designs:** Designate pedestrian crosswalks, if required by code, establish throughout parking areas and identify accordingly.
   1. Sidewalks: 1.5 m (w) (5 ft.) at parking stalls and for primary circulation routes and 1.2 m (w) (4 ft.) minimum elsewhere and as dictated by governing codes.
   2. Accessible Walkways: At ramps, provide slope and texture that complies with governing codes / guidelines.
   3. Ramps: **<16>** When changes in elevation are required at walkways, accommodate by ramps wherever possible. Design ramps with sufficient shallow slope so handrails are not necessary, typically with a slope no greater than 1:20.
   4. Steps: **<16>** If steps are required, provide a minimum of three risers, slip resistant nosings and handrails on each side.
   5. Lighting: **<15C>** Pole lights or bollards. See below in this Module for Lighting Controls.

J. **Walkway Materials:** Create a hierarchy of walkway paving finishes that increase in detail and quality near hotel primary entrance, secondary entrances, hotel exits, recreation areas and as appropriate for garden areas:
   1. Service Areas: Concrete, light broom finish
   2. Parking Areas: Concrete, light broom finish or exposed aggregate
   3. Site Circulation: Exposed aggregate and decorative concrete, masonry paving or stone
   4. Landscape Walkways: Concrete, light broom finish, natural stone; exposed aggregate concrete, etc.
   5. Garden / Recreation: Exposed aggregate concrete or stone
   6. Concrete Finish: Exposed aggregate concrete surface, integrally mixed color, finish created by surface retardant or sandblasting and sealed with penetrating sealer.
   7. Wood: Do not use protected wood products containing chemicals, that may irritate skin. When wood walkways are used, attach with galvanized screws and install decking perpendicular to walking path to minimize splintering.
   8. Wood Alternative: Review with MI.

K. Vehicle Driveways: Provide driveways to access the hotel and other major site improvements and facilities.

1. Pavement: Medium duty asphalt paving, unless heavy duty asphalt or concrete is required because of soil conditions or service delivery demands.
2. Hotel Entrance: See Porte Cochere in this Module. Provide transition paving and walkway to a roll curb design beyond covered Porte Cochere.
3. Curbs, Curb Cuts and Ramps: Design from parking areas to meet guidelines of ADA and applicable governing codes.
4. Bollards: Design to minimize the need for bollards or similar protection devices around columns, planters, signs, trash enclosures, utility mains and other features vulnerable to damage by vehicular traffic.
5. Speed Control: Consider vehicle speed control devices and normal traffic control signage to avoid electronic signaling devices. Verify requirements with governing fire department and other officials.
6. Snow Storage: In areas of high snowfall, carefully analyze layout to ensure proper snow storage, if impossible or impractical to completely remove snow.

L. Queuing & Vehicle Holding Areas: Provide adequate queuing and holding areas at locations such as the Entry Canopy (or Porte Cochere), Ballrooms, Restaurants, Retail (if in the Facilities Program), building service elevators and other concentrated access and loading.

M. Pool Decks: See Module **<4>** - Recreation Facilities.

1.7 Main Site Entrance

A. Program: Provide entrance design that complements the site requirements as described above. Guests and other non-service visitors utilize the main site entrance. Provide with the following features:

1. Entrance walls with property signage integrated with the wall design (comply with governing code).
2. Separate ingress and egress lanes with island.
3. If a gatehouse is required, provide a turnaround area for vehicles directed to exit the property. Locate to avoid passing through access gate if possible. Provide a turn back area beyond the gatehouse.
4. Queuing space for vehicles within site to prevent traffic backup on public street.
5. Place and coordinate site irrigation system to ensure passing automobiles are not sprayed when entering.

6. Snow / ice melt system at the entrance drive, in the queuing lanes (when gatehouse is provided) and adjacent walkways that are susceptible to snow buildup, ice formation, or other climate hazards in climates of heavy snowfall. See requirements for site walkways in this Module.
7. Water feature (if in project Facilities Program).
8. Lighting to emphasize entrance wall graphics, landscape materials, water features and (if included) the Gatehouse. Avoid illumination into adjacent areas.

B. Site Entrance Gatehouse (option): **<16>** In master planned sites (may include hotel and community facilities), where required or included in the project Facilities Program, provide a property entrance gatehouse to control guest ingress and egress. In gatehouse provide working desk area for two staff and the following:

1. Mount on walls surveillance cameras and video monitors.
2. Computer monitor and keyboard.
3. One telephone with two lines for each position.
4. One emergency phone with 60 dB "whoop" ring.
5. Gooseneck microphone with foot pedal.
6. Storage for supplies and first aid.
7. Fire control and annunciation panels.
8. Administrative desk with one telephone with two lines and lateral file.
9. If code requires or if a public facility is not in reasonable proximity to the Gatehouse, provide utilities and fixtures for unisex toilet.

C. Miscellaneous Traffic Requirements: Coordinate requirements for fire lanes and hydrants with governing code authorities.

D. Enhanced Security: See Module **<16>** for security features (inspection points, sniffing dogs, video surveillance systems, etc.) required in High Level Threat Condition "Red" areas.

1.8 Service / Delivery Entrance

A. Program: Generally, a separate controlled access service entrance is required to exclude service and delivery vehicles from the main entrance.

B. Service Entrance Requirements: Similar to Main Site Entrance; see above.

1.9 Parking Areas

A. Traffic & Parking Analysis: Provide Owner's traffic and parking analysis for the proposed property.

1. As determined from the traffic analysis, accommodate valet service, cars with personal drivers and self parking.
2. If valet service is required, provide valet return route to Porte Cochere (or main Entry Canopy) for reduced guest waiting.
3. See Porte Cochere for other vehicle access, lane, driveway requirements, etc.

B. Slopes: 4% maximum; level at accessible parking spaces.

C. Traffic Flow: Two way traffic

D. Parking Spaces: 90 degree parking for two-way lot traffic.

1. Self Parking: 2.6 x 5.8 m (8'-6" x 19 ft.) spaces, 7.6 m (25 ft.) aisles.
2. Accessible Spaces: Provide in self parking areas in compliance with governing accessibility codes.
3. Valet (option): 2.6 m (8'-6") wide, 18.9 m (62 ft.) bays and may be stacked multi spaced valet parking. Accessible parking spaces not required for valet parking.
4. Compact Vehicle Spaces: Generally, not desired.

E. Lighting: A concept is created with the lighting consultant to define the approach for the landscape lighting design. Coordinate parking design with lighting and landscape consultants.

1. Fixtures: 6 m (20 ft.) maximum height and 3.6 m (12 ft.) maximum height in high profile areas such as building entry.
2. Parking Lot Fixtures: 100% down shielded
3. Lighting Levels: See Module **<15C>** for electrical criteria.

1.10 Parking Structures

A. Program: Provide parking structures to reflect the theme and quality of the project. See the project Facilities Program.

B. Circulation: Provide circulation with required 90 degree parking and design parking to separate service and delivery vehicles from guest parking.

1. Circulation Routes: Provide clear and distinct vehicle routes. If possible, provide separate entrances and exits for one-way in and one-way out circulation patterns and separate up and down scissors type ramps for changes in levels.
2. Bay Widths: Size minimum bay widths for double loaded standard size vehicles and two-way circulation at 17 to 19.5 m (56 to 64 ft.), wall to wall.
3. Ramp Gradients: Do not exceed 12% with a 6% blend at 3.05 m (10 ft.) from each end.

C. Parking Stalls: Adjust width based on climate, parking geometry, location and size of vehicles anticipated.

1. Standard Size Cars: 2.6 x 5.5 m (8'-6" x 18 ft.) minimum.
2. Define stalls with painted lines, white color.

D. Corrosion Protection: In parking structures subject to corrosion due to extreme weather, road salts, atmospheric salts or similar conditions, provide a method of corrosion resistance.

E. Floor Surfaces:

1. Wear Surface: Do not use lightweight concrete or similar standard for drive wear surfaces.
2. Concrete: Light broom finish concrete and sealed or similar to minimize tire squealing. Avoid smooth steel troweled concrete.
3. Ramps: Provide slip resistant surface appropriate to the slope, climate and function.
4. Drainage: Provide positive slope towards floor drains and trench drains at base of ramps.

F. Ceiling Heights: Design clear heights for vehicle routes and ramps (free from encumbrances).

1. Clear Height: Typically, 2.13 m (7 ft.) minimum, although 2.2 m (7'-4") to 2.3 m (7'-8") accommodates a greater range of vehicle heights and conveys a sense of openness.
   Comply with ADA and governing accessibility requirements for accessible vans with high roofs.

2. Tall Vehicles: When primary parking level occurs at grade, consider increasing overhead height at that level to accommodate taller vehicles. Concentrate accessible and special van parking on one level so that entire structure does not increase in height.
3. Signage: Provide ample signage and clearance devices, such as impact bars, to warn drivers of low clearance areas.
4. ADA: Provide 2.5 m (8'-2") clear height for van vehicles used by guests with disabilities.

G. Features – Parking Structures:

1. Paint Striping at Columns: Where columns occur, paint stall striping designations on each side of column.
2. Insulation: Provide adequate thermal and acoustical floor slab insulation if hotel is located above parking structure.
3. Wall Protection: Provide bumper rails (highway guards or similar protection) at walls.
4. Water: Consider wet type sweeping machine and include dedicated storage area for machine. Provide water fill connection at each parking level.
5. Natural Lighting: To reduce requirements for daytime lighting, lightwells are desirable at large decks.
6. Planting: Consider exterior planters or other feature of aesthetics value at perimeter of parking structure to mitigate an industrial appearance.

H. Loss Prevention: **<16>** Provide facilities and controls based on Marriott Loss Prevention Review.

1. Enclosures: Subject to Loss Prevention Review recommendations, parking decks may be enclosed with wire mesh or louver treatment if decks have open sides at, or below, street level.
2. Access Control: Provide guest, card activated access control gates or doors at entrances to parking structure.
3. Door / Gate: Provide upward action door / gate with safety retract swing operating mechanisms with padding on access bars. Provide override switch inside parking structure and include manual chain operators, if permitted by code.

I. Elevator Vestibules: In high wind areas, vestibules are required. Design elevator vestibules and entrance areas into buildings from parking structures to reflect the theme and quality level of the overall project.

1. Glass Areas: Provide large glass wall separations between parking structure and elevator lobbies when approved by governing authorities.
2. Elevator Access: At parking decks, provide access by use of guest electronic key card and intercom only. **<16>**

3. Storage: Provide area for storage of luggage carts at parking decks.
4. Telephone: Provide house phone to operator at each level. **<13B>**

J. Parking Graphics: Provide graphics to clearly indicate the following: **<GR>**

1. Project name and logo when required in multi-use projects.
2. Floor levels
3. Parking stalls
4. Parking stall numbers; 10 cm (4 inches) high
5. Stop signs at floor and ceilings
6. Determine if graphic pathways for pedestrian crossings are needed to control pedestrian routes.
7. Impact columns / pipes (orange or yellow stripes)
8. Segmented areas at large decks and No Parking areas
9. Compact car spaces
10. Directions into and out of parking structure
11. Directions to building entrances
12. Parking: Use wall color and signage to help orient guests to stairs and elevators.
13. Provide ample signage and clearance devices, such as impact bars at entrances to prevent vehicle or structural damage to, or by, oversized and tall vehicles entering the parking structure.
14. If ceiling heights in parking stalls are lower than in drives, (under ramps, near main distribution piping, etc.) provide very clear graphic warnings.

K. Fire Protection - Parking Structure: See Module **<14>**.

1. Enclosed Structure: Provide sprinklers, smoke detectors, alarms, smoke removal and other features of MI fire protection.
2. Open Structures: Typically, structures meeting the definition of "open" may not require some fire protection features.
3. Verify requirements with governing authorities for fire lanes, fire hydrants, smoke detector, fire extinguishers, strobes and horns, carbon monoxide detectors, etc.

L. Parking Structure Lighting: **<15C>** Design lighting to provide the appropriate level of illumination at the vehicle entrance, traffic lanes, parking areas and pedestrian circulation areas.

1. Provide clear sight lines and illumination at indoor / outdoor traffic transition areas to mitigate sun blindness effect.
2. At indoor / outdoor transition areas use light colored wall and ceiling finishes to minimize light contrast.
3. Design light fixtures without visible light sources (glare) from the parking exterior.

M. Lighting Levels: Provide the following maintained, average on pavement, horizontal light levels at parking structures:

1. General parking and pedestrian areas:
   - 54 Lux (5 foot-candles) average
   - 10 Lux (1 foot-candle) minimum
2. Ramps and corners:
   - Day: 110 Lux (10 foot-candles)
   - Night: 54 Lux (5 foot-candles)
3. Entrance:
   - Day: 540 Lux (50 foot-candles)
   - Night: 54 Lux (5 foot-candles)

N. Special Parking Structure Requirements:

1. Sweeping machine
2. Snow removal machine (if required)
3. Hose bib at each level spaced at a maximum of 60 m (200 ft.) on center; provide freeze protection where required.
4. Provide convenience power outlets at 30 m (100 ft.) on center.

O. Finishes - Parking Structure:

1. Floor: Light broom finish concrete, sealed to prevent dusting.
2. Base: None.
3. Walls: Exposed concrete masonry or cast in place concrete, painted.
4. Ceiling: Exposed structure, painted preferred.

1.11 Landscaping

A. Landscape Product: The finished landscaping product and the overall image and atmosphere of the exterior property environment are critical to the property's image.

B. Plant Standards: Comply with the American Association of Nurserymen Standards (AANS) for plant materials, minimum size, height, spread, caliper, rootball, etc. and for container grown and B&B trees, shrubs, groundcover and annual flowers.

1.12 Irrigation

A. System Design: Provide landscape irrigation.

1. Provide system that accommodates prevailing winds and static pressure reading to keep spray off of walks, terraces and tennis courts.
2. Design with sufficient quick coupler valves in irrigated areas to be reached with 30 m (100 ft.) of water hose.
3. Separate irrigation system from the domestic water system. Determine if irrigation system should be metered separately.
4. Consider "grey water" from water treatment facilities, or retained storm water, if available.

B. System Features: Fully automated and controlled by an electrical controller with 100% coverage of landscaped areas. Space heads in triangular pattern with overlapping head to head trajectory.

1. Control Valves: Electrically activated remote control valves. Provide separate valving for turf and planting beds because of different water requirements.
2. Automatic Controller: Electromechanical repeat cycle with a master control valve to prevent errant operation. Place in concealed locations.
3. Turf Heads: 10 cm (4 inch) minimum pop-up spray heads in small cut up areas of turf and rotary gear driven heads in large expanse areas of turf.

C. Shrub & Groundcover: 30 cm (12 inch) pop-up spray heads along turf borders, sidewalks and other areas along exterior perimeters without interference from vegetative growth.

1. At interior areas of the beds, provide shrub sprays on stationary copper risers with a flex pipe connection to lateral line.
2. Provide brass nozzles on the copper risers.

1.13 Water Features, Fountains & Site Amenities

A. Water Features: If programmed, provide fountains and water features not as add-on design features but reflect the intrinsic environmental characteristics of the project location.

B. Water Feature Design: Designed by a qualified fountain consultant, with the intent of creating a special theme compatible with the geographic region, area, culture or other circumstance of significance unique to the property. Provide solutions for water quality control.

C. Site Amenities: Incorporate site fountains, gazebos, pavilions, etc. exterior environment design as appropriate to project for creating special spaces, function areas and features of interest.

D. Furniture: Provide seating layouts for exterior food and beverage **<3>** areas, furniture layouts and plant containers at pool areas and terraces. Coordinate requirements with landscape architect and interior designer.

E. Exterior (Outdoor) Recreation Facilities: The location of exterior recreation facilities is a principal consideration of resort site planning. See Module **<4>** - Recreation for the following:

- Swimming Pools
- Whirl (Spa) Pool (hydrotherapy pool)
- Tennis Courts
- Golf Course Development
- Beach Improvement and Development
- Other Outdoor Recreation Facilities

1.14 Site & Landscape Lighting

A. General Requirements: **<15C>** The ambience afforded by landscape lighting is especially important in transforming landscaped gardens into a pleasant, special experience for guests.

1. Design Concept: A concept is created with the lighting consultant and landscape architect to define the approach for the landscape lighting design.
2. Design Coordination: Carefully coordinate with the exterior building lighting. See exterior building requirements in this Module.

B. Environmental: In coastal and environmentally sensitive areas, research and comply with regulations governing environmental issues such as sea turtle nesting areas or migratory bird routes, etc.

C. Electrical Service: See Module **<15C>** for landscape lighting and exterior electrical service requirements.

D. Lighting Control: Provide site lighting controls on separate circuits from landscape lighting through either time clocks and / or photocells.

1. Provide photocell controls for each building or area of exterior lighting, that are on a separate circuit.
2. Place photocells relative to natural light and shadow exposure for simultaneous operation.

E. Lighting for Driveways & Parking Lots: Provide a lighting concept to define the approach for the landscape lighting design.

1. Generally, low height, residential scale parking lot lighting fixtures are preferred over tall commercial type.
2. Provide lamps having a uniform soft white or 3000 K color range (not orange) color. Metal halide lighting is preferred.
3. Locate light fixtures adjacent to perpendicular parking spaces a minimum of 0.9 m (3 ft.) from the face of curb or wheel stop to avoid conflicts with vehicular overhangs.
4. Light poles not to exceed 6 m (20 ft.) high; 3.5 m (12 ft.) in high profile areas such as Entry Canopy.
5. Locate light poles to minimize the need for impact protection. If required, mount on 0.8 m (30 inch) high concrete pedestals or protect with bollards.
6. Coordinate light pole locations with landscape plan to avoid locating adjacent to trees.

F. **Walkway Lighting:** Illuminate paved pathways. Provide, very subtle and discreet lighting. Use the surrounding landscape illumination to serve the purpose of walkway lighting wherever possible.

G. **Tennis Court Lights:** 100% down shielded below the horizontal plane and back shielded to prevent light spillage away from the tennis courts.

H. **Sign Lighting:** Shroud to prevent spillage of light into areas other than lighted sign.

I. **Underwater Fountain Fixtures:** Permanently affix to bottom of fountain pool or recess within pool bottom.
   1. Conceal electrical cords and wires 100% under pool bottom and route in conduits to light locations.
   2. Underwater Fixtures: Comply with the NEC Article 680.

J. **Special Features:** Provide lighting for special feature items or holiday seasonal displays and points of interest through landscape lighting circuits. Provide additional circuit capacity at Entry Canopy and terraces.

K. **Installation:** Locate landscape lighting fixtures in the field as determined by lighting consultant after tree pits are dug. Coordinate locations with landscape architect.
   1. Transformers and Junction Boxes: Locate in exterior areas concealed from the public.
   2. Junction Boxes: Exterior weatherproof junction boxes rated for NEMA 4X.
   3. Timers or Sensors: For energy efficient and controllable lighting systems.

Building Exterior

1.15 Building Structure

A. Guestroom Towers – Preferred System: Design for flat plate structural concrete systems without beams projecting into spaces, including slab perimeter to minimize the visual impact on interior spaces. See Module **<7A>** for interior, clear distance requirements and ceiling heights.

B. Public Space: Design structure to accommodate coffered ceilings and mechanical systems. Use mild steel reinforced concrete designs at public and BOH areas.

C. Long Span Roofs: Provide structural steel designs.

D. Expansion Joints: Position outside perimeter of public spaces and at Foyers or other areas where they can be fully concealed.

E. Slab Depressions: Design structural floor slab depressions and slopes to accommodate public space stone flooring, public restrooms, kitchen, cooler / freezer unit flooring, public space slab concealed door closers, fitness center, pools, Guestroom, Suite entry, and bath and exterior balconies.

1.16 Building & Fire Codes <14>

A. Code Conflicts: Prior to start of the schematic design phase. The design team identifies conflicts between governing codes and MI Design Standards.

B. Area Separations: Plan and carefully design area separations away from public spaces or in the BOH areas.
Fire doors, if required in public spaces, provide flush with adjacent walls and with concealed electromagnetic hold open mechanisms.

1.17 Building Exteriors & Features

A. General: Reflect an image consistent with the Brand concept and design the themed facilities sensitive to the regional context and natural characteristics of the site.

B. Acoustic Control: Select building envelope materials, building systems (including roof, doors, windows, louvers, etc.) and mechanical equipment based on the criteria below.

1. Environmental Noise Sources: If the project site is near a source of noise (airport, highway, high traffic areas, trains, industrial activity, mechanical equipment, etc.) that could be disruptive to guests, employ an acoustic consultant to conduct an acoustics survey and define acoustic criteria and controls. Consider project location, day / evening operations and adjacency to noise sources.
2. Guestroom Areas: **<7A>** Limit highway noise intrusion levels to Hourly Equivalent Levels (LEQ) of 45 dBA for day; 40 dBA at night.
   a. Short Term Noise: 50 dBA for short term (day / night) noise such as sirens and low level helicopter flights.
   b. Day - Night Level (LDN) of 45 dBA for aircraft noise level intrusion.
3. Meeting Spaces: Limit noise intrusion levels to 40 dBA or as determined by consultant's report and accepted by MI.

C. Insulation / Vapor Barrier: Required to provide long term energy efficiency and guest comfort.

D. Weather Resistance: Avoid reliance on a single stage (barrier) system for water and moisture resistance. Consider cold roof design in ski areas where lower levels of site are susceptible to snow and ice falling or provide for roof snow melt system.

E. Windows & Safety Glass: See Modules **<GR3>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

F. Window Washing - Maintenance: Provide for window washing and exterior building maintenance. Comply with governing regulations.

1. Typically, window washing is provided by a service contract.
2. Contact local window washing companies to determine their standard for scaffold equipment arrangements and support requirements.

3. Design only for the equipment required to accommodate the selected contract equipment.
4. Provide window washing equipment supports such as davits, anchorage and power service.

G. Roofs: See material and product requirements in Module **<GR3>**

1. Long term, low maintenance service life; neat appearance.
2. Positive slope to drain water without "ponding".
3. Insulate to provide long term energy economy.
4. Screen flat roofs, facility service and mechanical equipment, including roof top units from guest and public view.
5. Develop designs to prevent snow and ice build up and subsequent hazard below.

H. Building Drainage: Design roofs for positive drainage to include gutters, downspouts and / or internal water collection and piping to storm drainage system.

I. Energy Compliance: Design building envelope / exteriors to comply with energy code and HVAC standards. Review exterior glazing for acoustical ratings, and resistance to condensation. See "Glass and Glazing" requirements above.

J. Air Intake: Locate outside air intakes minimum 10 m (30 ft.) above grade and away from public or accessible areas. See Modules **<15A> <16>**.

K. Building Utilities: **<15> <16>** Locate primary building utilities (water, electric, gas, etc.) to limit unauthorized access to mitigate the opportunity to contaminate or disrupt building activities.

1.18 Building Entrance - Porte Cochere

A. General: Facilitate the ability of MI to provide excellent guest service and create positive first and last impressions. Provide a well lighted, covered Porte Cochere that complements the building and architectural style of the region.

B. Entry Canopy Protection - Historic Buildings: Where a property occupies a historical city location it may be impossible to accommodate a covered structure due to strict fa ade and exterior modification restrictions. Therefore, consider the entry structure design on a case by case basis, dependent on existing historic context.

C. Space Planning: Avoid circulation conflicts between vehicles and guests, and waiting, arriving and departing guests. Identify reception entrance locations.

1. Provide cover to protect guests from rain and snow at the entrance.
2. Provide separate path for luggage handling by staff to a separate building entrance, away from guests' view, preferably near luggage storage room.
3. Allow space for taxi and airport shuttle queuing within visual sight of the entry **<2>**, but away from vehicle and guest entrance.
4. Provide bus routing and parking away from main entry Porte Cochere. Provide direction toward group arrival area for remote check in. See "Function / Tour Group Entrance and Desk" in Module **<6>** - Function Space.
5. Include space for ash and trash receptacles, and coordinate locations with landscape amenities.
6. Provide a protected entrance and drop off area at a secondary building entrance such as an exterior entry to large function and meeting area, restaurants and spa.
7. Provide exterior zones discreetly located away from entrances for public and staff smoking.

D. Size / Area:

1. Traffic Lanes: Typically, provide a minimum 3 lanes total, two 3.7 m (12 ft.) wide minimum covered traffic lanes through the Porte Cochere and one uncovered by-pass lane.
2. Curb to Entrance Distance: Minimum 3 m (10 ft.) by length of protected drop-off area.
3. Vehicle Clearance: Sufficient to accommodate tallest fire truck, shuttle bus or emergency vehicle anticipated to use the facility, typically 4.5 m (14 ft.) overhead clearance.

4. Protection: Design to provide protection from the elements for 12 m (40 ft.) length of sidewalk drop-off area and for the width of traffic lanes.
5. Supporting Columns: Position columns 0.9 m (3 ft.) in from curb lines (both sides) to prevent obstruction when opening vehicle doors.

E. Entrance - Porte Cochere Paving:

1. Paving Type: Minimize material types and patterns. Use products appropriate to the property location.
2. Rolled Curb: Provide rolled curb (to match paving) along both outside edges of entrance drive finished to match Entry Drive. Provide rolled curb at the entry side of drive. The intent is to avoid tire rub marks and damage to cars being quickly maneuvered in the Entry area.
3. Distinguish Entry Drive from walkway in material texture and color. Minimize material types and styles using paving appropriate for project site without elaborate patterns.
4. Paving Transition at Entry: Level and flush with walkway for full length of protected drop-off area to facilitate luggage carts and allow for disabled guest accessibility.
   a. Steps are not permitted.
   b. Warp shape of curb at ends of drop-off to avoid tripping hazard and to permit easy movement of luggage.
5. Slip Resistance: **<16>** Provide 0.6 wet / dry.
6. Joints: Avoid placement of expansion joint near entrance.
7. Drainage: Provide positive drainage to avoid ponding water. Slope paved surfaces to area storm drains.

F. Porte Cochere Features: Provide the following:

1. See Module **<2>** for other entry amenities doorman, and if required, valet stations.
2. At Entry walkway, use non-slip (such as masonry pavers).
3. Provide concealed hose bib adjacent to drive to maintain area.
4. Light the Porte Cochere (Entry Canopy) with ambient lighting consistent with the Entry and Reception area interior design.
5. Provide power outlets to operate cleaning equipment, and for holiday and seasonal lighting.
6. Provide at least one power outlet on emergency power to assist staff with arrivals / departures during power failures.
7. When the project is in a ski area or area with frequent snowfall, provide a snow / ice melt system at entrance drive.
8. In cold climates, provide radiant heating units integrated with the Porte Cochere or Entry Canopy. Design for the comfort of waiting guests.

G. Flagpoles: When provided, see Module **<GR3>**.

1.19 Exterior Building Lighting

A. Overview: See porte cochere requirements above. Provide unique style, custom designs by the Interior Designer and lighting designer.

1. Light Screening: Screen fixtures 100% from guest view with light source concealed by shield and louver attachments.
2. Timers or Sensors: For energy efficient and controllable lighting systems.

B. Environmental: See requirements above for Site Lighting.

C. Parking Structure Lighting: See section, "Structured Deck Parking" in this Module.

D. Lighting Levels: See Module **<15C>** for minimum illumination requirements.

1.20 Systems Coordination

A. Reference: Coordinate with requirements of other Modules including:

- 13A Information Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical - Plumbing - Electrical
- 16 Loss Prevention

AUTOGRAPH
COLLECTION®

AUTOGRAPH COLLECTION®

STANDARDS

MODULE

2

PUBLIC ENTRY

2A - Public Spaces

2B - Business Center

May 2014

AUTOGRAPH COLLECTION®

STANDARDS

MODULE

2A

PUBLIC SPACES

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Public Spaces

2A.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Concept: The Autograph Collection is a diverse group of Independent Lifestyle Hotels and Resorts that embody an upscale level of design and service. Each property is unique and represents its Brand position through its design. The purpose of this guide is to assist in the integration of the functions outlined in this Module together with the project's Facilities Program and it's unique character to create a memorable design and guest experience.

B. Program: The Public Spaces and Lobby are designed as the heartbeat of the property where business and leisure activities are combined seamlessly in an environment that is enjoyable and functional for guests and locals.

As the focus of guest touch-point interactions (arrival, lounge, departure) and signature service moments, the Public Spaces and Lobby are integrated with the property's theme to create extraordinary guest experiences.

With the focus on social, great design activates the themed spaces to enable socializing, impromptu meetings, recharging, unwinding, preparing for tomorrow, and celebrating the accomplishments of the day.

C. Space Planning: The Lobby is comprised of two areas that are comfortable and inviting while creating specific, well defined experiences to serve our guests in a modern way.

Guest Services	Information resource
Lobby Lounge	Work and celebrate, public privacy for relaxing work and individual play

Signature Service Moments: Each area contains "Signature Service Moments", that are centers of experiences supporting the various touch-points. The success of each area and the interrelation between areas depends on effective arrangement of the moments within both areas.

D. Lobby Design: Amplify the property's distinctive theme; warm and inviting with an open sense of arrival and orientation within the Lobby.

1. Provide an upscale and inviting introduction to the property, utilizing varied height ceilings for spatial interest and incorporating architectural and decorative focal points.
2. Market conditions most often dictate greater vertical height for more spatial volume; anything less than a two story height would require approval.
3. Allow for seating / waiting area in close proximity to the building entry.

4. Designs incorporate unique, artwork and artifacts that support the Brand for the property presented in an artistic manner and accented by overhead architectural lighting.
5. At transitional areas (public corridors, staircases, elevator foyers, etc.), extend finishes, furnishings and design treatment similar to the Lobby.
6. Avoid service circulation through the lobby and public spaces as much as possible.

E. Steps, Stairs, Ramps & Slip Resistance: See Module **<16>**. Make stairs and steps apparent through use of essential design elements (including ramps where required) and in compliance with governing codes.

F. Windows & Safety Glass: See Modules **<GR3>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

G. Water Features: When proposed for the Lobby (more often at resort hotels), employ a consultant familiar with the water feature type proposed and has the ability to address water filtration, aeration, treatment, maintenance, acoustics, aquatic life, waterproofing, loss prevention, electrical and lighting.

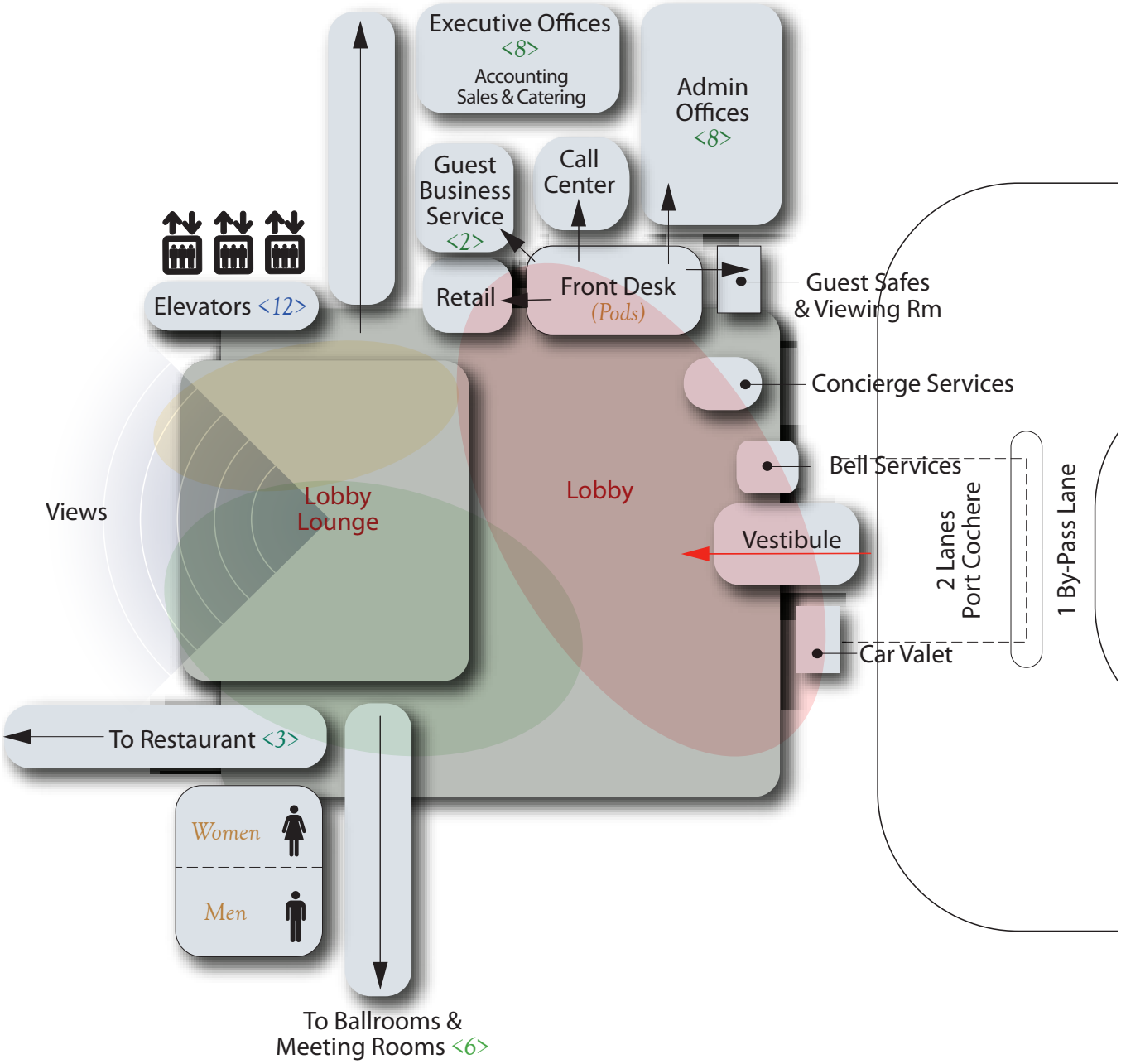
H. Property Systems: See Modules **<13A> <13B> <13C>**. Provide Wi-Fi, wired Property Internet (PI) and cell phone coverage throughout the public spaces for guest access, zoned sound system and power outlets.

I. Finishes - Lobby:

1. Floor: As a minimum, provide full bodied porcelain or natural stone floors accented by area rugs or carpets. Provide high quality grade marble, granite or similar natural stone.
2. Base: Wood base or stone base throughout consistent with floor material. Do not use carpet or resilient base.
3. Walls: Provide walls with stained or painted feature millwork, and unique textured commercial grade vinyl wall coverings.
4. Millwork: Provide detailed millwork, comprised of woods, stones and quality finishes, incorporating molding and detailing throughout the Lobby and at feature walls and similar areas.
5. Ceilings: Gypsum board or plaster ceilings with designs such as coffer, dome, soffits and similar details accented with millwork, decorative ceiling fixtures, light coves and recessed lighting. Do not use ceiling tiles.

J. Lighting: Working with a lighting consultant, provide unique design solutions with dimmer controls to enhance the theme for the space.

Figure 1 **- Example: Public Spaces - Adjacency Diagram**



2A.2 Building Entrance

A. Program: Provide a procession of spaces that give an energized and efficient sense of arrival and welcome. See the project Facilities Program.
Facilitate the ability to provide signature service moments and to create a positive first and last guest impression.

B. Space Planning:

1. Sequence: Including the Porte Cochere **<1>**, accommodate and start the emotional connection with guests by addressing the following functional requirements:
   - Entry Vestibule
   - Car Valet Station
   - Limousine Desk
   - Bell Captain
   - Luggage Room
   - Central Control Station (Fire Command Room)
2. Entries: Provide Entry Areas with Back-of-House (BOH) service, without that service crossing Public Entry and Reception Areas.
3. Sight Lines: Carefully screen the sight lines from Entry Areas to BOH to avoid undesirable sound and light transmission.
4. Utility Spaces: Carefully consider and incorporate the support, service and utility spaces (Janitor Closet, Luggage, MEP, etc.) necessary to complete the Public Entry area design.

C. Accessibility: Provide an accessible route for persons with disabilities to Entry Areas (typically corresponding to the primary route used by the public).

1. Public Entrances: Design 50% of public entrances, with at least one ground floor entrance and one pedestrian entrance from a parking structure for access by persons with disabilities.
2. Doorways: At exterior and interior doorways, provide an 82 cm (32 inch) clear opening with approach and strike side clearance to comply with the applicable accessibility regulations.
   Typically, provide 46 cm (18 inch) clear at the strike side to adjacent wall for an in-swinging door.

D. Porte Cochere: See Module **<1>** - Site / Building Exterior. Provide an exterior building entrance to protect guest from the weather.

E. Entry Vestibule: Incorporate high quality, durable wall and paving treatment, together with creative lighting, sound and local touches.

1. Size / Area: Minimum of 2.5 m (8 ft.) between sets of doors. Provide a vestibule area to accommodate arriving and departing guests, luggage handling, guest with disabilities, and emergency exiting requirements; see the project Facilities Program.
2. Entry Portal:
   a. Provide double door entrances with decorative hardware.
   b. Provide a separate luggage entrance to avoid congestion at the hotel entrance.
3. Vestibule: Enclose vestibule for guest and employee comfort.
   a. Address vestibule enclosure design considering potential for "stack effect" drafts in high-rise buildings.
   b. Design to reinforce the hotel theme.
4. Doors:
   a. Based on the anticipated traffic, provide combinations of fixed, swing, sliding doors, and revolving, glazed door panels or leafs.
   b. Panel / leaf size; 0.9 m (3 ft.) wide minimum.
5. Entrances From Parking Structure: Plan parking structure entrances to the Lobby (or public spaces) as dedicated stairs and shuttle elevators **<12>** that deliver guests directly to the Lobby and where guests transfer to passenger elevators in view of the Reception area.
6. Secondary Entry Vestibules: Emulate design concept at Main Entry vestibule.
7. Signage: See Module **<GR2>** for applicable entry signage and graphics.
8. Finishes: Extend the Lobby finishes into exterior entrance.

F. Car Valet Station: If required by the project Facilities Program, provide an exterior service counter near the entrance to support car valet staff and limousine service. Valet service is provided for guests arriving by private auto and short-term public parking for dining and function guests.

1. Location: Exterior between Porte Cochere and Hotel Entrance.
   a. Adjacent to exterior entrance of Luggage Room for efficient handling of luggage and shared use by Bellman.
   b. Contiguous with interior Limousine Desk at locations requiring limousine service.

c. Consider separate drop-off space for hotels with large function facilities **<6>**.

2. Size / Area:
   a. Car Valet Station: Counter or podium; 0.6 x 1 m (2 ft. x 3′-4″) minimum.
   b. Limousine Desk / Valet: 4.6 m^2 (50 sq. ft.).
3. Features: Include the following:
   a. Drawers, racks and shelves for holding car keys, luggage tags, pens, pencils, maps, etc.
   b. Key Organization: Provide a rack or drawers to organize and secure car keys out of view of guests.
   c. Telephone outlet. **<13B>**
   d. Task lighting on desk. **<15C>**
4. Parking Access: Review parking facility plans in the Loss Prevention Review process **<GR1> <16>**.
5. Finishes: Provide combination of high quality materials complementary to the entrance design and detail finishes for exterior exposure.
   a. Countertop: Stone or other exterior durable material, consistent with entrance finishes.
   b. Base: Stone or detailed wood.

G. **Limousine Desk:** At hotels where limousine and van service (chauffeured vehicles) is offered, provide a counter or office to support the service.
1. Location: Adjacent to hotel entrance. Based on the size of the hotel and extent of service, guest access to limousine service may be provided at the Concierge Station, interior Bell Stand or at a dedicated counter or office.
2. Size / Area: Facility is usually a concession that may include combined car valet and limousine type service. While convenient guest access at the Lobby is critical, shared resources, visual contact with traffic, and operational efficiency may dictate a combined service with the exterior Car Valet Station.
3. Features: Include the following:
   a. Counter: Quality millwork, similar to the Concierge Station.
   b. Telephone: See Module **<13B>**.
4. Finishes: Consistent with the Lobby interior design.
5. Driver's Lounge: At full service facilities, provide a waiting area for drivers with seating, television, toilets, etc. Locate the Driver's Lounge near the parking area or parking structure and not visible to hotel guests.

H. **Bell Captain:** Provide bellman services that are discreetly located to assist arriving and departing guests with their luggage to and from the main entry, the Lobby and guestrooms.

1. Locations: Bellman services include the following:
   a. Exterior: **<1>** At the Entrance / Porte Cochere and adjacent to the Luggage Room exterior entrance.
   b. Interior: Position a millwork counter / podium immediately adjacent to interior entrance to Luggage Room for efficient handling of luggage, for visual supervision of arriving / departing guests at entrance and having visual contact with Reception check-in area (if possible).
2. Size / Area:
   a. Exterior: **<1>** Provide 1 m^2 (10 sq. ft.) per cart for cart staging.
   b. Interior: Minimum 61 wide x 100 cm long (2'- 0" x 3'- 4") counter / podium.
3. Features: Provide exterior and interior features, concealed from guest's view, that support efficient Bellman services:
   a. Exterior: Provide a screened alcove to include the following:
      - Luggage Cart Staging: In an alcove, screened from guest's view, for staging a minimum of 4 luggage carts.
      - Counter / Podium: Millwork; small area for pens, pencils, maps and baggage tags (may be included at Car Valet Station, when present.)
      - Communications: **<13B>** Telephone outlet, radio or mobile phone.
      - Lighting: Decorative task lighting with control switch.
   b. Interior: Provide a counter / podium near the interior of the Lobby Entrance to support hotel staff assisting guests with arrivals, departures and luggage.
      - Counter / Podium: Design with lockable drawers, shelves, and include spaces for luggage tags, pens, pencils, paper, and small trash container.
      - Communications: **<13B>** Telephone outlet
      - Lighting: Decorative task lighting at counter with control switch.
4. Finishes: Provide the following:
   a. Exterior: Durable and consistent with exterior entry design.
   b. Interior: Fabricate counter / podium using millwork and stone / granite countertop to complement entrance and the Lobby finishes.

I. **Luggage Room:** Provide a secure room for temporary storage of guest luggage.

1. Space Planning: Provide a space or alcove, adjacent to luggage room and near Bell Stand, to conceal empty luggage carts to avoid visual clutter at the Entrance.
2. Location: Accessible direct from exterior (Porte Cochere) and interior from the Lobby.
   a. Position directly adjacent to Bell Stand accessible through interior service doors.
   b. Conceal guest views from the Lobby area into this room.
   c. Where possible, provide a service corridor from the Luggage Room to the service elevator to avoid transporting luggage through the Lobby.
3. Size / Area: See the project Facilities Program.
   a. Luggage Cart Storage: Total carts = 3 per 100 guestrooms. Typically, ⅓ in Porte Cochere and other ⅔ of carts in storage.
   b. Luggage Carts: 60 x 120 cm (2 x 4 ft.). Maintain clearance and stacking capacity in room and adjacent space.
4. Features: Include the following:
   a. Doors: 1.0 m (3′-6″) wide access door. Provide door locks to match guestroom lock system. **<7A> <16>**
   b. Shelving: Incorporate shelving and hanging storage devices.
5. Resorts: Provide additional capacity at resorts to include sports equipment and refrigerator for complimentary welcome drinks, flowers such as leis and gift storage.
6. Finishes:
   a. Floors: Vinyl composition tile with resilient base
   b. Walls: Painted
   c. Ceiling: Exposed structure

J. Central Control Station (Fire Command Room): **<14>** In high-rise buildings, provide an enclosed room for fire department personnel to access fire alarms, annunciators, controls and hotel emergency systems.

1. Location: Coordinate location with fire department. Typically, locate at the main hotel entrance, receiving dock or engineering area. **<9> <16>**
2. Size / Area: Coordinate size to accommodate equipment and fire department's requirements. Typically, provide 8 m^2 (80 sq. ft.).
3. Access: Typically, provide a door with direct exterior access.

K. Interior Signage & Graphics: **<GR2>** Coordinate the design and placement with MI Interior Design Management and illustrate these elements on the Interior Design drawings.

2A.3 Guest Services

A. Program: The guest services area is primarily about arrival and orientation. It is a one stop experience where arriving and departing guests are welcomed throughout the day with a well orchestrated choice of personalized services including Check-in/out, Bell Captain, Concierge, business services, retail, ATM and boarding pass printing.

1. Location: This area is strategically placed upon entering the hotel but is not in the direct path of entry. It is best positioned close to the hotel entrance, and within view of passenger elevator foyer and open stairs.
   a. Create efficient traffic flow for check-in at Reception, and support office adjacency.
   b. Provide visibility from this area to the Bar where possible.
2. Size / Area: See the project Facilities Program for size and area requirements.

B. Space Planning: Locate administrative check-in and guest support activities immediately adjacent to Check-in. Transaction area includes the following zones:

- Reception
- Concierge & Business Services
- Bell Captain
- Boarding Pass Printing
- ATM
- Tour Desk
- Guest Safe Deposit Boxes & Viewing Room
- Retail

C. Reception: Provide this signature moment as the guest services and destination information resource for; check-in, Concierge, business services and local information resource.

Reception stations are strategically positioned not in the center of the Lobby, but visually connected to the Lobby Lounge.

Design the check-in as follows:

1. Length: 1.2 m (4 ft.) minimum. Provide one work station for each 75 to 100 guestrooms; determine actual requirements based on property needs.
2. Accessible Check-In: Coordinate accessible check-in to comply with governing regulations for persons with disabilities.
3. Work Space: 1.5 m (5 ft.) minimum, clear work space measured from back (employee side) edge of counter to parallel back wall.

a. Integrate registration and cashier functions into the counter and not zoned.
b. Separate Check-in area from Administration / Guest Support Office **<8A>** by a wall and door.

4. Guest Queuing: 3.7 m (12 ft.) minimum distance in front of Reception.

D. Finishes - Check-in: Design to conceal equipment on employee side from guest view.

1. Floor: For area behind Check-in, provide 80/20 *Axminster* carpet, complementary to the Lobby finishes, with pad material, or other floor materials and finish combinations designed for long-term comfort of standing attendants.
2. Rear Wall: A feature wall as a unique signature element, provides a moment of discovery for the guest, while forming a back-drop for the employees. It features only quality artwork, millwork, custom finish or sophisticated, decorative and well lighted elements. Avoid property logos, clocks and other functional elements.
3. Lighting: **<15C>** Provide architectural lighting that is dimmable (for day to night transition) and appropriately and dramatically accents the check-in area. Include sufficient task lighting for transactions.

E. Concierge & Business Services: Guest business services are typically provided at Reception (shared with Check-in).

1. Based on hotel size and the project Facilities Program, the services may be performed from a Concierge Station, which is separate from, but adjacent to Check-in.
2. When the Guest Business Center is required per the project Facilities Program (either remote from or connected to the reception area), see Module **<2B>** for requirements.
3. Concierge Station: When required, provide a desk or counter as a guest information resource. Guest registration and currency transactions (cashier) occur only at Reception.
   a. Location: Convenient to Hotel Entrance, and next to, but apart from Check-in for guest privacy. Situate in the path of guest circulation, readily identifiable to guests, although secondary to Reception, and within visual contact of Check-in.
   b. Size / Area: 20 m^2 (215 sq. ft.) total. No smaller than a two-person counter or desk in any area or market.

c. Design:
- Counter or Desk Area: Minimum 1.5 m (5 ft) long counter or executive quality desks; configure similar to Reception. Determine size by region and based on amount and type of services provided in each area.
- For Resorts, provide a seated version with dual recessed (flat) screens, and for urban properties, provide a stand up version with integrated (flat) screen.
- Provide ample lockable storage space for placement of communications and travel planning support information.

d. Equipment Technology: **<13A> <16>** Provide the following equipment:
- Computer with required guest service applications and flat screen monitor
- Power Outlets: 2 per work station
- Network connection
- Telephone: Provide with PBX termination
- Card key unit

F. **Tour Desk:** If required by the project Facilities Program, provide a Tour Desk **<6>** in the project to avoid congestion in vicinity of Check-in when tour groups register.
1. Location: Tour desk may be located at a secondary entrance and positioned to avoid circulation congestion with Hotel Entrance.
2. Design: Replicate assisted check-in / registration facilities. **<13A> <16>**

G. **Boarding Pass Printing:**
- Locate near Reception, but not part of check-in experience.
- Built-in and encased in millwork to complement the Lobby interior finishes.
- Provide a second printing set-up for properties with more than 300 rooms.

H. **ATM:** Provide the following:
1. Position out of direct sight from the Lobby, but not in Retail.
2. Built-in and encased in millwork; not free-standing.

I. **Guest Safe Deposit Boxes & Viewing Room:** **<16>** Provide enclosed rooms to permit guests to store and privately view valuables. Design the Viewing Room so that guest maintains visual contact (visual custody) of their box as it is removed from the bank of boxes to when it is passed through the pass window to the guest.

1. Space Planning: Guest enters the Viewing Room immediately adjacent to Check-in.
2. Location: Arrange the Viewing Room to provide the guest with privacy.
3. Size / Area: Provide guest access doors with 82 cm (32 inch) clear opening and a maximum threshold height of 1.2 cm (½ inch).
4. Deposit Boxes: In the safe deposit box room, provide the quantity required by the Loss Prevention Review (typically 1 box for every 10 guestrooms).
5. Loss Prevention: **<16>** Position camera to view safe deposit boxes and guest counter. Provide a duress alarm in the Safe Deposit Box Room.
6. Features: Coordinate Safe Deposit Boxes and Viewing Room designs with Front Office Areas **<8A>** and Check-in Area requirements in this Module above.
   a. Guest Access: Provide a entry door to Viewing Room with an electronic lock controlled from the guest side.
   b. Pass-Through: Connect the Viewing Room to the Safe Deposit Box Room with a glass window and pass-through with stone counter.
   c. Furniture: In Viewing Room, provide a table and chair with mirror and a telephone.
   d. ATM: In designated properties, an ATM is placed inside the Viewing Room, and not in the public space. The machine is built-in and encased in millwork, not free-standing. Position for servicing from the Safe Deposit Box Room side.
7. Finishes: Provide finishes in Viewing Room similar to the Lobby; see **<GR3>** **<8A>** for Guest Deposit Room.

J. **Retail:** Create a streamlined and signature retail outlet near Reception that can provide amenities and sundries for hotel guests while easily accessed by front desk staff. An integral component of the Lobby, the retail program fulfills the guest needs based on retail expectations and delivery.

2A.4 Lobby Lounge

A. Design: This inviting space enables guests to meet, dine, socialize and entertain, as they combine business, pleasure and personal activities. Provide flexible seating for small group or team interaction with full food and beverage service.

1. Lighting: A layering of residential style lighting is on one automated dimming system to support, reading, work and social interaction and day to night transition.
2. Audio: **<13C>** An quality sound system with volume controlled zones, supports the day to night transition.
3. Electric Outlets: Multiple concealed electrical outlets with easy access in seating areas satisfy energy needs of electronic devices.

B. Space Planning: Design a unique environment for the social, leisure and business travelers to enable bonding, downloading the day's events and transitioning to evening activities. As the center of the Lobby, this area is designed and sized to suit the uniqueness of each property.

1. Circulation: Create guest circulation patterns that facilitate interaction within this area, as well as easy connection to key nodes such as open stairs, passenger elevator foyer, check-in, and related services.
2. Bar: The Bar may be the central focus for the Lounge area and always has visibility from Check-in.
3. Commercial Kitchen: Provide easy access to the commercial kitchen or secondary food prep area.
4. Zones: The area includes the following:
   - Entry Vestibule
   - Bar
   - Lounge
   - Retail (see Module **<5>**)
   - Restaurant
   - Outdoor Seating
   - Elevator Lobby / Foyer (see below)
   - Restrooms (see below)

C. Entry Vestibule: Introduce the hotel Brand and experience through design, sound, technology and lighting in this area.

1. Entry Vestibule: Coordinate the Entry with the functional requirements of the Hotel's Entrance.
2. Furnishings: Provide console / credenza, lamps, artwork / artifacts.
3. Accents & Accessories: Reinforce theme through accents and accessories.
4. Scent: Provide applicable to the Brand.

5. Music: Separately zone from the porte cochere and the Lobby.
6. Lighting: Provide programmable and dramatic lighting consistent with the theme.

D. **Bar:** This versatile element provides a lively venue, with specialty foods and drink, in an environment equally conducive to business and social interaction.
1. Size: The size of the Bar and equipment specification is site specific, and there is always a side bar for material storage for ease of transition between day and night.
2. Back Bar: Liquor is always concealable and securable either in-place or in storage units behind the bar.
3. Lighting: To create drama and contrast.
4. Pantry: Provide food service at the Bar and Lounge area. If the Restaurant kitchen is not positioned to support food service, provide a pantry. See Modules **<3>** and **<10>**.

E. **Seating:** The area is the center of the Lounge and acts as the hotel's "living room".
1. Design: Flexible design elements allow the space to transform in character from day to night.
2. Senses: Scent, botanicals, light and sound enhance the hotel theme.
3. Seating: Create residential style seating vignettes that integrate intimate groupings with cocktail tables of varied height for semi-privacy within the space.
4. Tables: Provide communal tables with discreet power and data ports.
5. Storage: Provide ample storage to ensure ease of day to night transition.
6. Do not include desktop computers in the area.

F. **Restaurant:** **<3>** An authentic culinary experience with local flavor.
1. Planning: Integrate with the overall concept. See Module **<3>**. for design and functional requirements.
2. Exterior Entrance: Provide a street entrance where possible.
3. Lighting: Provide lighting on dedicated dimming controls located within the space.

G. **Outdoor Seating:** When possible, provide an outdoor living room with expressions of nature and reflective of the locale as extension of the Lounge.
1. Focal Point: Example - a fire pit or fountain.
2. Audio: Integrated, zoned quality sound system.
3. Lighting: Concealed and unique lighting; include free-standing lanterns.

2A.5 Elevator Lobby / Foyer

A. Features: Accommodate and include areas for furnishings such as credenza, framed mirror, decorative items and guest seating.

B. Finishes: Extend finishes and millwork details from the Public Space Lobby.

1. Ceiling: Smooth painted substrate; no ceiling tiles. Provide coffered ceiling or stepped millwork design with feature lighting.
2. Elevator Cab Doors: No painted finishes. See **<12>** for controls and indicators.

C. Elevator Cab Interior Design: Coordinate passenger elevator cab design with interior design, architectural character and theme of the public spaces served. Cab configurations may require custom designs. **<12>**

1. Floor: Tile or stone
2. Interior Walls: Millwork panels
3. Interior Doors & Side Panels: Stainless steel No.4 brushed finish or bronze
4. Ceiling: Suspended ceiling; coordinate design and material selection with the Lobby interior design. Paint flat black above suspended ceiling.
5. Lighting: Decorative; coordinate with the Lobby interior design.
6. LCD T.V.: Accommodate a digital signage screen in each car **<13A> <13C>**.
7. Sound System: Provide a quality system that is zoned separate from the public space sound system.
8. Advertising: Property service advertisements not permitted.

2A.6 Public Telephones

A. **Program:** **<13B>** Because cell phones, computers and technology are minimizing public telephone use, verify public phone requirements with the project Facilities Program.
When public telephones are required, provide the following:
1. House Phone: Minimum of one wall phone.
2. Location: Discreetly locate for privacy in heavy traffic areas.
3. Signage: Identify phones with signage and graphics.
4. Accessibility: Comply with governing regulations and include requirements for the hearing impaired in the property design.

B. **Cell Phones:** Verify that area location and hotel construction permits cell phone reception and availability throughout.

2A.7 Public Restrooms

A. **Program:** Provide public restroom facilities with janitor closet to serve public and guests areas. Restrooms Supporting Lobby Lounge are designed to reinforce Brand concept through unexpected details, artwork and accessories.

B. **Space Planning:** Base quantity and proximity of facilities on the following criteria:
1. Location: Locate to serve primarily the Food & Beverage facilities **<3>** and secondarily the Lobby.
   a. Generally, a separate restroom facility is required to serve the Function Spaces **<6>**.
   b. Provide separate facilities for male and female.
   c. Include at least one public toilet (male / female) at each public area level.
   d. Some floor plans may require two separate restrooms if distance between areas is too great or if areas are located on separate levels.
   e. Do not exceed 40 m (130 ft.) travel distance to a public toilet.
2. Size / Area: Accommodate calculated toilet fixture quantities.
   a. Include baffled entries, with minimum 0.91 m (3 ft.) wide doors.
   b. Entrances for male and female rooms are distinct and separate unless unisex restrooms are supported by brand concept.
   c. Provide a (dry) vanity with stone counter, framed mirror and lighting in each restroom.

C. Plumbing Fixtures:

1. Fixture Types: See "Plumbing Fixture Schedule" in Module **<15B>**.
2. Fixture Quantities: At a minimum, provide fixtures as follows:
   a. Food & Beverage as follows: 1 toilet fixture for male and one for female for every 40 seats.
   b. The Lounge: 2 toilet fixtures for male and female, minimum.
   c. Function Space: Minimum of 1 toilet fixture for every 100 m^2 (1,000 sq. ft.) and comply with governing code; prefer to divide equally between male and female toilet rooms.
   d. Adjust quantities if necessary to meet region requirements and governing regulations.

D. Features:

1. Vanity: Continuous vanity top using unique materials such as; glass, engineered stone, slate, granite or marble. Final material is to relate to the style of bowl to ensure an overall effect that is consistent with the theme.
2. Mirrors: Decorative wall mirrors for each vanity with unique lighting solutions for varying day and night effect. Include a full length decorative mirror.
3. Accessories: Provide residential style (not "institutional") fixtures, accessories and finishes to support transition of the space from day to night.
4. Toilet Enclosures: **<GR3>**
   a. Front: Framed wall with same finish as room with wood louvered or paneled door.
   b. Partitions: HPL; 178 cm (70 inch) height minimum and floor clearance of 18 cm (7 inch) maximum.
   c. Privacy: Provide "no sight line" or "gapless" design details at door and side partition.
5. Privacy Screens: Provide stone modesty panels at men's urinals.
6. Light Switch: **<15C>** Provide remote switch at circuit panel.
7. Sound: Provide a dedicated sound system.

E. Finishes:

1. Floor / Base: Stone or full bodied porcelain tile.
2. Walls: At a minimum, stone vanity and surrounding wall with other walls in commercial grade vinyl wallcovering (20 to 21 oz. minimum) or water resistant accent finish.
3. Ceiling: Smooth painted gypsum board or plaster. No ceiling tiles.

2A.8 Janitor Closet

A. **Program:** Provide a central janitor service space with shelf, accessory supports (hooks), floor service sink, hot and cold water supply with hose connection, and area drain.

B. **Entry Door:** Arrange door in a foyer, not visible from public spaces so housekeeping does not need to cross public spaces.

C. **Finishes:**
1. Floor / Base: Porcelain tile.
2. Walls: Painted, except at service sink area provide ceramic tile (porcelain preferred) up to 48 inches AFF.
3. Ceiling: Acoustical tile and suspended system.

2A.9 Furniture, Fixtures & Equipment (FF&E)

A. **Furniture (Casegoods) & Fixtures:** **<GR4>**
1. General: Provide high quality, light weight furniture, and appropriately sized for the public spaces with the following features:
   a. Select materials for durability, maintenance, guest comfort and commercial application.
   b. Select softgoods, casegoods artwork and accessories that reinforce the Brand position in terms of design and experience.
2. Furnishings: These are combined to create a residential, upscale, modern and layered feel, always with commercial grade construction for hospitality use and selected for their multiple function.
3. Comfortable and intimate groupings of lounge seating for waiting.
   a. Fabric: Pass Wyzenbeck Test (minimum of 30,000 double rubs).
   b. Provide ample quantity of end tables with table lamps to create warm, intimate and inviting seating groups that are light weight for flexible arrangement and for guest to rearrange. Provide single electric outlet in base of table lamps.
   c. Furnishing Tops: Stone or commercial wood tops for food and beverage service.

B. Public Spaces:

1. Stairs: Use wood or stone material. If carpeted, incorporate hard edge stair nosing. See "Stair Criteria" at the front of this Module.
2. Flooring: Natural hard materials such as stone, wood and terrazzo are mixed to create interest and a residential feel. Where carpet is used; *Axminster* 80% wool; 20% nylon, 9 row.
3. Window Drapery: Upscale drapery treatments; include natural light through, architecturally detailed windows.
4. Planters and Plants: Decorative planters with live plants that introduce green and flowering plants or ground covering for warmth and color.
5. Artwork & Accessories: As part of the design concept (vs. an afterthought) these pieces are selected to reinforce the hotel category and theme.
6. Light Fixtures: See Module **<15C>** for lighting levels. Select styles influenced by the hotel's design theme.

2A.10 Systems Coordination

A. Mechanical / Electrical Devices: Conceal or carefully incorporate into wall & ceiling designs, HVAC grilles, sprinkler heads, smoke detectors, alarms, access panels and similar exposed devices; do not randomly place.

B. Reference: Coordinate with requirements of other Modules including:

- GR General Requirements
- 3 Food & Beverage
- 10 Food & Beverage Production
- 12 Elevators & Escalators
- 13A Information Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical - Plumbing - Electrical
- 16 Loss Prevention

AUTOGRAPH COLLECTION®

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STANDARDS

MODULE 2B BUSINESS CENTER

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Business Center

2B.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Concept: The Autograph Collection is a diverse group of Independent Lifestyle Hotels and Resorts that embody an upscale level of design and service. Each property is unique and represents its Brand position through its design. The purpose of this guide is to assist in the integration of the functions outlined in this Module together with the project's Facilities Program and it's unique character to create a memorable design and guest experience.

B. Program: The Business Center provides the guest with an array of service amenities to support business activities of meeting and conference, reading, writing, computing and telecommunicating.

1. Business Services: At small properties with limited demand for services, business services are provided from the Front Desk, Concierge Desk or within the Public Spaces - Lobby **<2A>**.
2. Business Center: At large hotels with higher demands from guests and frequent international travelers (FITs), a full range of business services may be provided in a staffed Business Center. See Module **<6>** for properties with large multi-use function facilities.
   Large full service Business Centers (outside North America) are called the "Executive Business Center" (EBC).

C. Facilities Program: At a minimum, provide the business facilities required by the project Facilities Program.

D. Planning - Business Services: The guest service program depends on sharing services provided from the property's administration, front desk, and function activities in order to leverage and share staff, support equipment and space.
This service concept works from either the Front Desk, Concierge Desk or a connected Business Center adjoining the front desk area utilizing the design concept in this Module.
The opportunities (in order of priority) to integrate activities are as follows:

1. Administration Reception: Locate the Business Center so the reception area and reception attendant serves as the reception to the administrative offices **<8A>**.

2. Administrative Conference. Locate the Business Center to permit the administrative staff to share the Business Center's meeting space for staff meetings and sales presentations.
3. Office Equipment: Position the office equipment support area so the Front Desk, Concierge, Administration, and Business Center share printers, copiers, faxes, and office equipment.
4. Personnel: Adjacent location of Administration, Front Desk, Concierge, and Business Center permits shared staffing and back-up support.
5. Function Area: Locating the Business Center adjacent to Pre-function and Meeting areas **<6>** promotes the efficient utilization of meeting room capacities.
6. Sales and Catering: Positioning the Business Center near the Function spaces offers the opportunity to locate the Sales and Catering office within the Business Center to share administrative support, to offer services to meeting attendees, and to serve as a headquarter center for large conferences.
7. Optional Spaces: For larger properties, the requirement for optional spaces, as described in this Module, is determined in the development of the Facilities Program.

E. **Location:** Consider locations near Lobby guest and group service areas, commercial arcades and galleries, and general guest circulation corridors.
1. Position on a primary public or function level of the hotel, other than a guestroom level.
2. Adjacent to function area circulation at hotel with large conference areas.
3. Where appropriate, direct street or semi-outside access or frontage; especially within mixed-use office or commercial projects.

F. **Steps, Stairs, Ramps & Slip Resistance:** See Module **<16>** - Loss Prevention.

G. **Windows & Safety Glass:** See Modules **<GR3>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

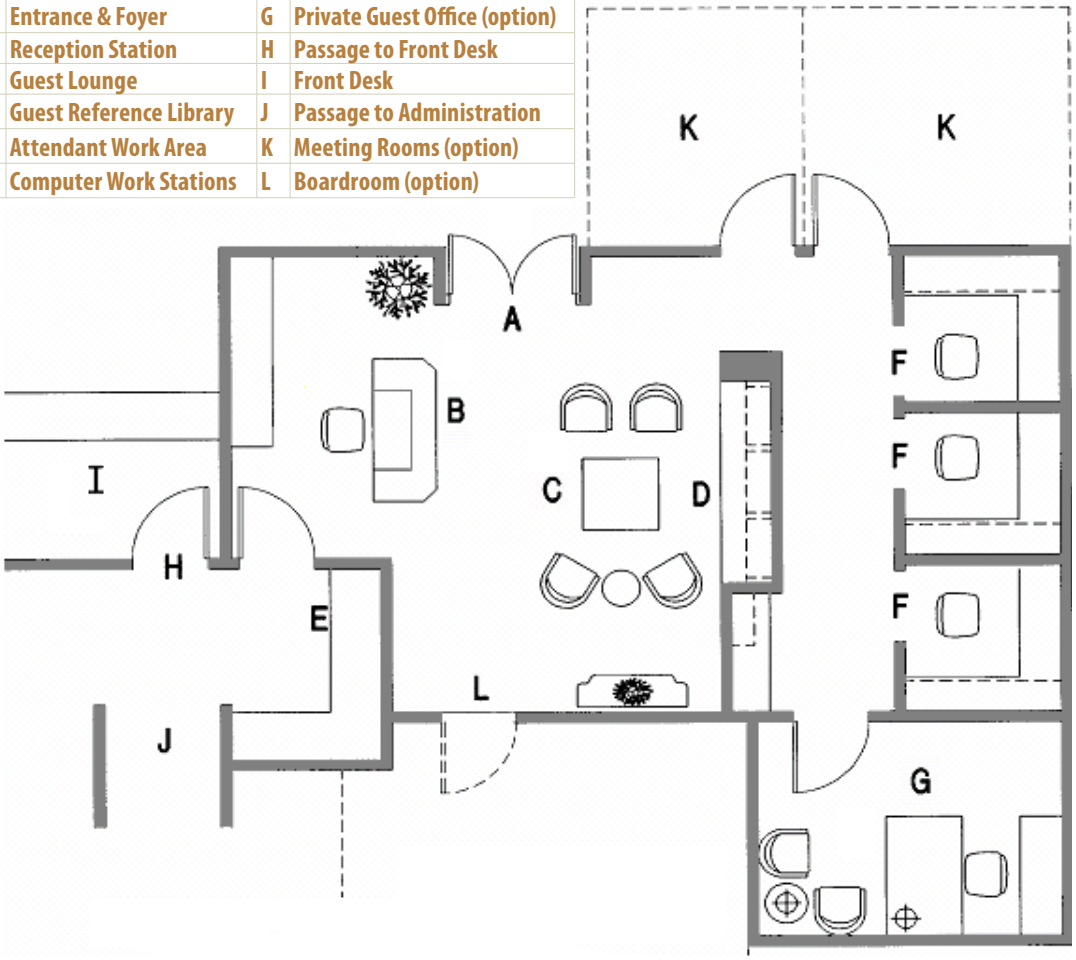
H. **Property Technology:** See Modules **<13A>** **<13B>**. Provide Wi-Fi, wired Property Internet (PI) and cell phone coverage throughout the facility.

I. **Size / Area:** Varies; see the project Facilities Program and accommodate the following as required. The minimum size of a full service Business Center is 70 m² (750 sq. ft.) gross total, excluding optional areas. Business Centers in Middle East and Asia require larger spaces, including "option" areas.

J. **Spaces:** See *Figure 1* and the following criteria.

Figure 1 - Example: Business Center - Plan

A	Entrance & Foyer	G	Private Guest Office (option)
B	Reception Station	H	Passage to Front Desk
C	Guest Lounge	I	Front Desk
D	Guest Reference Library	J	Passage to Administration
E	Attendant Work Area	K	Meeting Rooms (option)
F	Computer Work Stations	L	Boardroom (option)



2B.2 Entrance & Foyer ("A")

A. Program: Identify and visually announce location with formal business like entrance.

1. Generally, provide elegant glass doors or millwork doors and glass / millwork storefront to introduce the EBC from public circulation.
2. Include direct views from the Lobby by use of large framed glass areas.
3. Design a securable and business like entrance with a formal sophisticated appearance and simple, graphic identification.
4. As appropriate to the location, provide an entrance that allows privacy and acoustically separates the Business Center from adjoining activities that may disrupt patrons.

2B.3 Reception Station ("B")

A. **Program:** Provide a professional appointed reception area with a distinctive reception station.

B. **Location:** Position and locate to assure passive surveillance of the Business Center and provide easy and convenient guest reception and greeting area.

C. **Reception Station:** In large Business Centers, provide single-station general reception counter. Dependent on the size of the Business Center, provide receptionist desks or a multi-station counter.
   1. An additional single executive reception desk may be needed to accommodate private and sensitive guest requests. Semi-private desk may also function as the Business Center Manager's desk.
   2. Desk Construction: Millwork or stone or a combination of materials; stone top.
   3. Back Wall: Behind desk, keep clear and simple. Use wall space for property logo or identification, focal art or artifacts. Provide finish wall materials to complement Lobby.
   4. Lighting: Provide recessed ceiling fixtures for accent on wall art and to highlight back wall. Provide sufficient light for desk attendants to work.
   5. Equipment: Conceal or position out of view from guests.

D. **Features:** Include the following features and devices at Reception Station:
   1. Duress Alarm. **<16>**
   2. PBS (computer). **<13A>** work stations; may share single common printer at other stations
   3. Printers: Dedicated or conveniently shared
   4. Digital phones; fax machines (2); Call Accounting **<13B>** printer for billing.
   5. Remote control for Lounge TV **<13C>**

2B.4 Guest Lounge ("C")

A. Program: Adjacent to reception station; provide lounge seating and waiting area.

B. Size / Area: Accommodate a minimum of 4 people. At larger Business Centers and when used as Administration Reception, accommodate up to 8 people.

C. Seating Area:

1. May be shared with hotel Administrative Office; include multiple seating groupings; relate seating directly to different guest categories.
2. Complement furniture design and furnishing styles with the Public Spaces - Lobby.

D. Guest Reference (Library) ("D"): Provide built-in shelves to house local business reference materials and books.

1. Open Shelving: Accommodate broad selection of business journals; directories and listings; government and regional codes; regulations and ordinances; local and immediate telephone directories; airline schedules; geographic atlas guides; dictionaries.
2. A portion of the display area should be securable to manage and display valuable reference material.
3. Where possible, include one library table and chairs for convenient use of reference materials.
4. Displays: Standing and hanging display for regional and international periodicals and newspapers.

E. Equipment & Devices: Provide the following:

1. Television: Minimum 42 inch, flat screen; for quiet viewing of international news and information broadcasts, such as CNN and BBC. **<13C>**
2. TV Control: Controlled from reception station.

2B.5 Attendant Work Area ("E")

A. **Program:** Provide work area with direct access by attendant (typically shared by front desk) with fax machine, copy machine and other necessary business equipment.

B. **Location:** Place out of direct view from entrance and lounge and reception area.

C. **Features:** Include the following features and devices:
1. Fax Machines: Full feature, minimum of two.
2. Copier: Commercial, mid-size with collating, assembly and binding; color and black and white.
3. Printer: Dedicated or conveniently shared laser printer; color and black and white.
4. Postal and courier scales and equipment.
5. Document and parcel packaging.
6. Storage cabinets for securing office equipment and supplies.
7. Access to employee toilets if remote from public toilet, and access to a small beverage pantry if possible; typically, associated with the Public Spaces - Lobby.

2B.6 Computer Work Stations ("F")

A. **Program:** Provide three semi-private work stations for use by guests.

B. **Features:** Provide the following:
1. Computer Work Stations: Digital phone; fax **<13B>**; PC work station (at least one station with dedicated printer; one with desktop publishing options).
2. Data port for PCs; allow for Property Internet (PI) and wireless connection.
3. Printers: Dedicated or conveniently shared; may share single common printer at attendant workstation.

2B.7 Private Guest Office ("G")

A. **Program:** Provide as required by the project Facilities Program.

B. **Features:** Provide the following:
1. Accommodate executive desk, desk chair, desk lamp, credenza, two guest chairs, electrical outlets, and PC and fax data port (located at desk height); allow for PI connection.
2. Digital telephone; speakerphone; computer jack(s). **<13B>**

2B.8 Private Meeting Rooms (option)

A. Program: Based on the requirements of the Facility Program, the Business Center may incorporate meeting rooms to supplement the hotel's meeting area program or to make Business Center services convenient to guests.

B. Size/Area: Accommodate 6 to 8 persons to include flexible and adjustable conference table and chairs.

C. Features:

1. Include direct public area access (where feasible).
2. Design surrounding walls to receive or mount presentation material.
3. Built-in presentation equipment such as non-permanent grease pen type marker boards.
4. Digital phone; speaker phone; televideo; computer jacks; electrical outlets; PC / fax data port (located at desk height); allow for internet connection. **<13B>**

2B.9 Conference Room (option)

A. Program: Incorporate, as a minimum, one conference room. Business Center may be supplemented by hotel's meeting area program or as dictated by the Facility Program.

B. Size / Area: Accommodate 10 persons minimum to include flexible and adjustable conference table and seating.

C. Features:

1. Include direct public area access (where feasible).
2. Design surrounding walls to receive or mount presentation material.
3. Provide conference table, conference chairs, built-in cabinet with TV, DVD, telephone, sufficient data ports and electrical outlets for computer use.
4. May include an area for coffee and tea set up and light food service.

2B.10 Boardroom (option) ("L")

A. **Program:** Based on requirements of the Facility Program, the Business Center may incorporate a boardroom to provide a higher level of guest service and convenience.

B. **Size / Area:** Accommodate a minimum of 12 persons.

C. **Features:** Provide the following:
1. Upscale space with technology advancements.
2. Provide business quality, executive furniture, furnishings, and leather style seating.
3. Interior Design: Similar to finish and furnishings of boardroom.

2B.11 Phone Alcove or Booth (option)

A. **Program:** Due to the evolution of telephone technology and cell phone use, requirements for a dedicated phone booth are minimized.
1. Verify requirements with MI. At a minimum, provide a public phone access.
2. In large Business Centers such as in the Middle East and Asia, provide a private guest phone booth (room).

B. **Size / Area:** Accommodate phone booth with chair and work area.

C. **Features:** In phone booth, include digital phone; speaker phone; **<13B>** electrical outlet and PC jack (allow for Internet connection).

2B.12 Toilet Facilities

A. **Program:** Provide access to toilet facilities; requirement for a designated Business Center toilet facility is dependent on the Business Center size, location, and region.

B. **Options:**
1. If public area toilet rooms are not conveniently located to the Business Center, provide a minimum of one unisex restroom facility.
2. In large Business Centers, typically in the Middle East and Asia, include segregated men's and women's restroom facilities.

2B.13 Interior Design - Finishes

A. General: Coordinate interior design concepts, styles, and materials with Public Spaces -Lobby. **<2A>**

B. Floors: See Module **<GR4>**. At a minimum, provide 80/20 *Axminster* carpet.

C. Walls:

1. Entrance & Lounge - Waiting & Reception: Combination of wood paneling and quality wallcoverings or wood panels.
2. Work Areas & Meeting Rooms: High quality wallcoverings; with base and chair rail molding.

D. Work Stations: Polished stone countertops, millwork and wood finishes.

E. Ceilings: Gypsum board throughout; may be multi-level in reception and lobby area. Incorporate grilles, vents, registers and similar devices into ceiling design.

F. Lighting: Provide durable quality decorative light fixtures.

2B.14 Systems Coordination

A. Reference: Coordinate with requirements of other Modules including:

- GR General Requirements
- 2A Public Space
- 6 Function Spaces
- 13A Information Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical, Plumbing & Electrical
- 16 Loss Prevention

AUTOGRAPH COLLECTION

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STANDARDS

MODULE

3

FOOD & BEVERAGE

May 2014

Contents

Module Organization

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Food & Beverage F&B

3.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Concept: The Autograph Collection is a diverse group of Independent Lifestyle Hotels and Resorts that embody an upscale level of design and service. Each property is unique and represents its Brand position through its design. The purpose of this guide is to assist in the integration of the functions outlined in this Module together with the project's Facilities Program and it's unique character to create a memorable design and guest experience.

B. Brand Essentials: The importance of food and beverage increases exponentially in independent and lifestyle hotels, quality and sophistication of the experience is key. Provide a full-service, all day dining restaurant and bar to attract hotel guests and local consumers, Autograph Collection hotels are encouraged to deliver dining options with a strong perspective and a clear position in the market. Provide guests with access to a variety of food and beverage experiences. At a minimum, provide beverage service, lounge seating and a full service restaurant offering three meals a day.

1. Bar: The beverage service solution is as defined for the Lobby Lounge. See Module **<2A>** and the outline that follows in this Module.
2. Restaurant: If appropriate, the restaurant may be integrated with the Public Spaces - Lobby. See Module **<2A>**.

C. Steps, Stairs, Ramps & Slip Resistance: See Module **<16>**. Make stairs and steps apparent through use of essential design elements (including ramps where required) and in compliance with governing codes.

D. Windows & Safety Glass: See Modules **<GR3>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

E. Property Systems: See Modules **<13A> <13B>**. Provide Wi-Fi, wired Property Internet (PI) and cell phone coverage in the F&B service spaces for guest access.

3.2 Program

A. Food & Beverage (F&B) Criteria: Develop a food and beverage program for each project based on a market analysis that evaluates a variety of factors.

Design restaurants and lounges with a definitive concept to offer unique and imaginative themed dining experiences, that are competitive with external restaurants in the project's market. Retaining a restaurant designer on the design team is strongly recommended.

B. F&B Program: The following factors influence the F&B program:

- Lobby, Public Space and F&B integration **<2A>**
- Facilities Program requirements
- Property size
- Availability of competitive facilities
- Property location / region
- Quantity of function space
- Availability of program area within the project
- Regional / cultural influences
- Potential for use by general public

C. F&B Concepts: Based on a MI accepted F&B program, F&B concepts and menus are selected that guide the design of food and beverage facilities.

D. F&B Spaces: Provide the following F&B program facilities as required by the project Facilities Program:

1. Bar / Pantry / Lounge **<2A>**: 40 seats minimum
2. Restaurant: 40% of room count minimum for seating.
3. Specialty Restaurant: As required by the project Facilities Program.
4. Private Dining Area: Include as part of or associated with one restaurant.

E. Entertainment Lounges: These Facilities are only included in the program under limited conditions when reviewed and approved by MI. Refer to the Entertainment Lounge section below in this Module for approval and management restrictions.

3.3 Bar

A. Program: The Bar acts as the beacon for the public space. After serving as a coffee bar in the morning, the Day / Night Bar evolves into a hot spot lounge in the afternoon.

1. Location: **<2A>** Integral part of the Lobby.
2. Size / Area: See the project Facilities Program as the size and area are specific to the project and site locations.

B. Day Bar Service (option): Professionally design the following Day Bar components, required to support menu programming and business volume:

1. Back Bar Coffee Station: Meet current MI standards.
2. Pastry Display: Complement the interior design.
3. Fruit, Bottled Water & Bottled Beverage Displays: Select fixtures to support design direction.
4. AM Coffee Menu Boards: Complement the interior design and provide the ability to disappear after morning business is concluded.
5. Tea Selection Display
6. Dedicated Pick-up Area: Integrate into the bar counter a place to pick up completed beverages.
7. Remote Condiment Station: Provide a station for condiments and trash, located away from the pick-up area.
8. Countertop with base cabinet storage for "to go" packaging

C. Night Bar Service: Professionally design the following components to support menu programming and business volume.

1. For equipment design and layout, follow MI's Standard Bar Design Modules.
2. See Module **<10>** for bar diagram and plan, equipment standards, criteria, functionality, location, P.O.S. and back bar design.

D. Audio / Visual: See Module **<13C>**.

3.4 Lobby Pantry

A. Program: Provide to support Bar and Lobby food and beverage service when service cannot be provided from the restaurant kitchen. See Module **<10>.**

B. Planning: Provide a dedicated Pantry if the following Kitchen to Bar distance prevails during the facility design process:

- more than 61 m (200 ft.) or,
- on a different floor

C. Equipment: See Module **<10>** for equipment requirements.

D. Facilities: At a minimum, provide the following service functions:

- Breakdown facilities for soiled service wares
- Sandwich preparation station with turbo chef oven or equal
- Storage cabinets
- Ware washing
- Wet beverage station

3.5 Three-Meal per Day Restaurant

A. Program: Provide a restaurant design with destination qualities that can efficiently produce, and provide quality food and beverage services. Provide facilities offering a varied menu that generally includes breakfast, lunch and dinner (3 meals a day). See Module **<2A>** for integration with the Public Space - Lobby.

B. Design Concept & Development: Follow the Momentum Design Development Criteria for the following:

1. Analysis Phase: Conduct market research to produce a concept design and market position.
2. Concept Phase: Develop a concept brief and obtain approval from stake holders to include the Design Phase.
3. Design Phase: Final schematic design and food service designs are reviewed and accepted by MI.
4. Execution Phase: Operational Execution Plan begins when Continent Lodging Services (CLS) team receives the final design details and concepts.

C. Spaces: Accommodate the following:

- Entrance
- Host Station
- Waiting Area
- Coat Area (based on climate)
- Seating Area
- Buffet / Exhibition Cooking (option)

- Service Stations
- Storage Space
- Cashier Station (if required)
- Private Dining Area (if not provided at Specialty Restaurant)
- Bar

D. Location: Locate based on the following criteria:

1. Visibility: The success of the restaurant is dependent on location. Provide an easily visible location from the Lobby with frontage on public circulation paths.
2. Kitchen: Direct access.
3. Daylight: Provide as much natural day light as possible.

E. Size/Area: Space includes seating, circulation and buffet. Coordinate with Facilities Program.

1. Fine Dining: 2.6 to 2.8 m² (28 to 30 sq. ft.) per seat, gross area.
2. Casual Upgrade: 2.2 to 2.4 m² (24 to 26 sq. ft.) per seat, gross area. Seating area to be 1.2 to 1.4 m² (14 to 16 sq. ft.) to emphasize a high energy experience.
3. Ceiling Height: 3 m (10 ft.) minimum.

F. Building Level Differences: Design restaurants so that entrance, buffet, kitchen and seating is on one building floor level to accommodate food service equipment and guests with disabilities.

G. Exterior Entry:

1. Design to distinguish entry to restaurant from Public Space - Lobby area.
2. Design entrance to make a statement consistent with restaurant theme. Evaluate the possibility of a direct exterior entrance.
3. Provide menu board to give guests an understanding of the restaurant concept and value level, if appropriate.
4. If provided at the property, provide separate Valet Parking.

H. Entrance Foyer: The foyer sets the mood for the facility and provides the following:

1. Easy access from public areas with prominent graphics to identify entrance. **<GR>**
2. Directs guests and public to the Host Station.
3. An area for a Host Station and coat check with reasonable access control (based on climate and custom).
4. A securable entrance (if the restaurant is enclosed with a perimeter wall) when the restaurant is not in use. Coordinate the closure design with Interior Design.

I. **Host Station:** (may be Maitre d')
   1. Accommodate two host positions. Provide area for P.O.S. and Table Management System integrated with the desk but out of direct guest view.
   2. Locate one host point to greet guests, control access to room sections, handle guest checks, and supervise coat check area.
   3. Welcoming Design: Provide non-intimidating podium positioned to permit good eye contact with arriving guests and minimize desks and walls that separate the host from the guest.
   4. Provide guests an opportunity to observe menu, restaurant interior and buffet, if possible.
   5. Include waiting areas independent of dining area for small groups if not available at an adjacent Lounge or Bar area.

J. **Service Stations:** **<10>** Design to integrate with restaurant interior design, while keeping out of direct line of sight to entering guests.
   1. Dry Service Station: Provide for every 75 seats; including water pitchers, coffee pitchers, house wine display, bread, linen, and tableware.
      a. Some concepts are accommodated with one large focal dry service station and several small dry stations.
      b. Consider using casegoods or custom millwork to make the station a focal point of the space.
   2. Wet Service Station: Provide for every 120 seats; including sink, coffee brewer, beverage equipment, and ice. Locate main station in back-of-house along path to soiled dish drop.
   3. Size: Base size on concept and selected equipment.
   4. P.O.S.: Integrate and recess P.O.S. into stations.
   5. Walls & Views: Configure walls enclosing wet service stations to conceal food service equipment while permitting servers to maintain visual contact with seating areas.
   6. Cabinets: Provide open cabinetry.
   7. Location: Locate to minimize noise at adjacent dining areas, unless dictated by concept.

K. **Seating Area:** Divide seating into two or more sections that are closed during slow periods and can accommodate private dining.
   1. Quantity: Provide seating for 40% of room count or as based on market study and the project Facilities Program.
   2. Seating Types: Provide a large variety of flexible seating choices such as paired deuces (minimum 50% of tables), 4 tops and a straight banquette.
      a. Seating percentages may vary by region and concept.
      b. Feature communal tables are acceptable.

c. Avoid "institutional" seating arrangements. Use single seat, banquette seating and soft seating based on food concept.

3. Plan & Layout: Provide the following if buffet or exhibition kitchen are provided:
   a. Views of the buffet.
   b. Easy access from seating to the buffet and back. Avoid placing tables too close to the buffet so as to be disturbed by traffic to and from the buffet.
   c. View of the exhibition kitchen
4. Wine Storage: Provide glass front refrigerated storage for wines at 5.5º C (42º F) for white wines and 15.5º C (60º F) for red wines.

L. **Private Dining (option):** Provide a seating area to accommodate small groups that can be acoustically and visually separated from the main dining area by operable doors and walls.
1. Seat Quantity: Provide seat count as required by the Facilities Program; usually 12 to 30 seats.
2. Flexibility: Integrate seating with restaurant seating so that private dining area can be opened when not in use to accommodate restaurant guests during peak use or serve as meeting space.
3. Entry: Dependent on layout, locate entry adjacent to the restaurant entry foyer so guests do not have to traverse the main seating area.
4. Exterior View / Location: The private dining room can be located to take advantage of a prime exterior view or terrace location.

M. **Bar:** Provide a "bar experience" to activate the restaurant unless the restaurant is integrated with a Lobby Lounge.

N. **Food Production:** **<10>** 3-Meal per Day Restaurant food is produced by a variety of methods, based on the F&B program variables. As appropriate for the restaurant concept, service is provided in the following manner:
1. Buffet / A' La Carte: An enclosed a' la carte kitchen supports the buffet service and the a' la carte service. The breakfast buffet is provided as defined in the "Buffet Service" section.
2. A' La Carte: An enclosed a' la carte kitchen supports the a' la carte service.
3. Exhibition Kitchen: An exhibition kitchen is integrated with a buffet line to support a self-serve buffet or a' la carte service.

O. **Service:** In general, food is served utilizing one or more of the following service types. Buffet services are provided as required by the F&B concept.
   1. Buffet Service (Breakfast, and Grand)
   2. Display Cooking
   3. Exhibition Kitchen
   4. A' La Carte Service

P. **Buffet Service (option):** Use of quality millwork and furniture pieces as the base buffet design is highly encouraged.
   1. It is preferred to break up buffet counters to provide better customer access and avoid queuing.
   2. For preparing food items in the dining area, a chef's station is typically incorporated, built-in or portable.
   3. Provide rear access to buffet to allow food replenishment without interrupting the flow.
   4. Prepared food is served to guests in a self-service or semi-assisted service mode by one or combination of the service types described below.
   5. Buffet solution is a minimum of 7.6 m (25 ft.). Provide either a vanishing or convertible buffet counter with below counter storage or adjacent storage.

Q. **Breakfast Buffet (option):** Only breakfast is served from this buffet; service for lunch and dinner meals is served "a la carte" from the kitchen. For evening dinner service, the breakfast buffet may be concealed, screened off or arranged into a feature display.
   1. The four functional buffet components are:
      a. Hot Buffet: Design to support the breakfast program.
         - Counter: Provide space for induction units with hot breakfast offerings.
         - Length: 3.0 to 3.7 m (10 to 12 ft.)
      b. Cook Station: Signature Buffet feature, design to meet breakfast volume.
         - Length: 1.5 to 1.8 m (5 to 6 ft.)
         - Type: Fixed or modular
      c. Cold Food Area: Design to support refrigerated and chilled items.
         - Provide space for juice, fresh fruit, yogurt, and milk display.
         - Length: 2.4 m (8 ft.)
      d. Bread, Pastries & Cereals Area: Design to support the buffet bakery components.
         - Location: Separate from other areas for increased circulation.
         - Menu: Include dry cereal.
         - Counter: Provide space for toaster and condiments.
         - Length: 1.8 m (6 ft.).

2. If the breakfast buffet in use for evening meals, locate the buffet in an alcove or provide architectural partition system. Food service equipment **<10>** typically is built into a granite counter.
3. Food service equipment for this buffet typically is not left exposed to guest view on the granite counter. Provide an undercounter refrigerated top to chill food display without use of ice pans.
4. For preparing food items such as omelets and waffles, a chef's station typically is included.

R. Grand Buffet: When required, provide as follows:

1. Design specific to *Momentum C3 Concept Development Tool*.
2. Typically, position as the focal point of the restaurant.
3. Arrange buffet in zones and separate counters for hot entries, cold items, and desert table.

S. Display Cooking Station: In conjunction with and in support of the buffet, food is custom prepared to the guest's request or freshly cooked to replenish the buffet. This service can include a single chef's station for preparing eggs at a breakfast buffet up to a limited cooking line supporting a grand buffet. **<10>**

T. Exhibition Kitchen: Certain restaurant concepts expose the food preparation and cooking areas to the guests to showcase the facility's menu, culinary talents, and sanitation conditions. Exhibition kitchens may be integrated with a buffet, support a buffet or exist as a stand alone feature. Coordinate seating at buffet with accessibility criteria, buffet height and views of Exhibition Kitchen. **<10>**

U. A' La Carte Service: Guest selected menu items are prepared in a concealed and enclosed kitchen and served by a waiter.

V. Service Entrance:

1. Avoid views into kitchen from dining areas (unless concept is an exhibition kitchen).
2. Provide one entry and one exit door that cohesively work with the flow of kitchen to dining areas.
3. Include doors to kitchen with 0.9 m (3 ft.) wide clear opening and door vision panel; door swing not to exceed 90 degrees.
4. Provide entrance baffle to prevent kitchen noise and light from entering dining area.

W. Egress: **<14>** At facilities with 50 or more seats, include emergency egress as follows:

1. Provide a minimum of two exits.
2. Primary exit may exit to the lobby.
3. Provide secondary exits to the exterior through an exterior door, a protected corridor or stair enclosure and not egress to or through the lobby.

4. Exiting through kitchen is not permitted.
5. Equip exit doors with local alarms and graphics / signage. **<GR>**

X. Toilet Rooms: Preferred location is adjacent to the restaurant to avoid circulation conflicts with the public areas. Follow restaurant interior design concept and theme and include a unique feature element. **<2A>**.

Y. Janitor Closet: Provide a dedicated Janitor's Closet to store cleaning supplies and equipment to service all food service venues on a floor. Locate in close proximity to primary food service venue.

☒ **Storage Space:** Provide space in each restaurant as follows:

1. Size: Large enough to accommodate child seats, trays, extra chairs, and similar furniture.
2. Location: Locate to avoid obstruction to exits and general circulation. Possible locations are reception, service stations or near kitchen entry.

3.6 Finishes - Restaurants

A. Floor / Base: Combination of durable hard surface and carpet, depending on food concept.

1. Hard surface, wood, natural stone or other high quality and durable material at major traffic circulation areas, main entry, surround at bar and buffet areas.
2. Slip Resistance: 0.60 wet / dry
3. Marble or Wood: Do not use at the buffet.
4. Base: Match floor and décor; no carpet base.

B. Walls: Heavy wall millwork, influenced by current design trends. Ensure finishes are suitable quality and durability.

C. Ceiling: Design ceilings to include such design elements as millwork details and multi-level ceilings (coffers, domes or soffits).

D. Decorative Ceiling & Pendant Light Fixtures: Locate in a field or area of smooth ceiling (gypsum board, plaster, etc.).

3.7 FF&E - Restaurant

A. Criteria: See Module **<GR4>** for general FF&E requirements.

B. Furniture:

1. Dining Seats: Leather; fabric can be used on back of chairs and banquettes only; use treated fabrics.
2. Tables Sizes (Standard): Sizes vary based on menu, place setting, food concept, restaurant type, size and regional culture. Consult with MI to define table sizes. Typically size the table 60 to 76 cm (24 to 30 inch) wide per setting on a side by 86 to 107 cm (34 to 42 inch) across.
   - 60 x 86 cm (24 x 34 inch) 2 places
   - 86 x 86 cm (34 x 34 inch) 4 places
   - Larger table sizes require a proportionally larger restaurant area.
   - Asian themes typically require larger table sizes to accommodate larger place settings.
3. Table Top: Stone or protected durable finished wood. Flip up table tops can be used to provide more flexibility of seating.
4. Table Bases: Durable finish; resistant to scratching and marring.
5. Hardware: Conceal in millwork.

C. Seating: Arrange using 50% of tables as deuces and mixture of larger grouping combinations. Percentage may vary by design and concept.

D. Buffet (option): See Module 10 :

1. Locate where visible and accessible to most dining spaces and restaurant entry.
2. Provide a minimum of 8 to 15 cm (3 to 6 inch) of linear buffet counter per dining seat.
3. Provide buffet as multiple counters, not a single one.
4. Provide an area for a staffed station with kitchen access at the buffet.
5. Granite top (avoid marble because of staining); extensive millwork / casework base and details.
6. Coordinate buffet millwork and casework design with the design and theme of the restaurant concept and food service equipment such as induction cooking units.
7. Avoid a “cafeteria food service” image by integrating lighting, ceiling, floor, wall, and casework design to form a food service “show case” display.
8. Where exhaust hoods are required, conceal the hood elevations into casework or ceiling design.

9. At "grand buffet", consider high intensity halogen pin spots to highlight the display.
10. Integrate below counter storage and food service equipment into buffet casework. **<10>** Front panels of buffet cabinet are required to be removable to facilitate cleaning.
11. Provide and integrate design of sneeze guards into the buffet design to protect exposed food on the buffet.
12. Provide illuminated plate niches.
13. If buffet concealment is required during evening dinner, provide detailed, high quality sliding screens or doors on concealed tracks that are consistent with the concept of the restaurant or provide another acceptable solution.

E. Lighting Controls: **<15C>** Provide three scene, pre-set dimmers. Locate light controls out of guest view with easy accessibility to employees.

3.8 Specialty / Leased Restaurant

A. Specialty Concepts: A Specialty Restaurant is not required, unless included in the Facilities Program. Provide guest with a quiet formal or informal and intimate place for experiencing lunch and dinner.

1. Specialty restaurants encompass a wide variety of themed menus, seating styles, food service displays, and décor for special food concepts.
2. Developing concepts for specialty restaurants requires coordination with the Facilities Program, market studies and MI.
3. Food and Beverage concept documents for a select group of facilities are available from MI after concepts for the project have been determined.

B. Leased Concepts: Leased Restaurants are only included in the hotel program under limited conditions when reviewed and approved by MI. The Restaurant may take the place of a hotel managed restaurant and is owned and operated by an outside restaurateur.

C. Location: Locate based on the following criteria:

1. Exterior Access: The success of the restaurant is dependent on location. Provide an easily visible location from lobby with frontage on public circulation paths.
2. Visibility: Where available, the restaurant may benefit from exterior frontage and a direct exterior entrance.
3. Access: Provide clear, direct access route for hotel guests and public.

4. Kitchen: Direct access; multiple hotel operated restaurants to share kitchens facilities where possible. Leased restaurants require self contained kitchens.

D. Size / Area: Provide seating, circulation, and features. Coordinate with Facilities Program.

1. Fine Dining: 2.6 to 2.8 m² (28 to 30 sq. ft.) per seat, gross area.
2. Specialty Upgrade: 2.2 to 2.4 m² (24 to 26 sq. ft.) per seat, gross area.
3. Specialty: 2.0 to 2.2 m² (22 to 24 sq. ft.) per seat, gross area. Seating area to be 1.1 to 1.3 m² (12 to 14 sq. ft.) to emphasize a high energy experience.
4. Size can range from 2.0 to 2.8 m² (22 to 30 sq. ft.) per seat, gross dining area.
5. Ceiling Height: 3 m (9'-10") minimum.

E. Bar / Waiting Area: Some specialty restaurant concepts may benefit by including a small bar / waiting area separate from the main hotel Lounge.

F. Spaces: Accommodate the following spaces in the design:

- Entrance
- Host Station
- Bar / Waiting Area
- Coat Area (climate option)
- Seating Area
- Private Dining (if not in 3-meal per day restaurant)
- Exhibition Cooking
- Service Station / Wait Side Stations
- Storage Space
- Cashier Station (only where required)
- Wine Display (when concept requires)

G. Leased Features: A fully functional space integrated with but separate from the hotel.

- Direct secure access to Receiving Area
- Employee facilities separate from hotel employees
- Full kitchen separate from hotel's kitchen
- Separate metering of utilities
- Direct exterior access
- Dedicated restrooms
- Restaurant P.O.S. capable of reporting to hotel PMS.

3.9 Entertainment Lounge

A. Program: Entertainment Lounges are only included in the project program under limited conditions when reviewed and approved by MI.

Customarily, Entertainment Lounge facilities are "open to the public" and offer social activities (singing, dancing, meeting, etc.) in addition to F&B menus. Typically, entertainment facility examples are:

- Discos
- Karaoke Bars
- Night Clubs
- Social Clubs

B. Management Approval: Facilities and services of any such Entertainment Lounge not approved or directly managed by MI shall be separate and independent of the property and therefore shall not be located within, proximate to, or associated with the property.

There shall be no contractual relationship between the property or property manager and the unapproved Entertainment Lounge, including for example, any ownership interest or profit sharing.

The property will not provide, promote, support, assist, reimburse, barter, or share any hotel operational services or facilities or any others of a similar nature to Entertainment Lounges:

If such property support facilities or services are requested by an Entertainment Lounge, the property facilities or services will be offered at non-preferential, market rates at MI's sole discretion.

For Entertainment Lounges approved by MI, base the facility on the following program criteria and factors.

C. Size / Area: Allow 2.6 m² (28 sq. ft.) per seat gross area. Coordinate with the project Facilities Program and review implementation with MI.

D. Location for Entertainment Lounge: Base the facility location on the following factors:

1. Acoustically isolate lounge from guestroom, function space, and other public spaces where entertainment activity and noise would adversely disturb occupants.
2. Locate exterior entrance based on analysis of users, such as guests and public.
3. Indirect access to Lobby area without visually or acoustically disrupting the Lobby.

4. Adjacency to Kitchen is beneficial, but not critical; food and beverage services are limited and usually self contained.
5. Include lighting and audio/visual systems for live entertainment at stage area. **<13C> <15C>**

E. Space Planning / Interior Design: Coordinate design implementation with MI. Develop a concept for the Entertainment Lounge.

F. Spaces: Verify lounge space program requirements with MI. Possibly design to accommodate the following:

- Reception
- Socializing area and seating
- Dance area with wood floor; minimum 3.6 x 3.6 m (12 x 12 ft.).
- Bar of freestanding design; beverage service and limited food menu.
- Entertainment stage; production facilities.
- Audio / Video facilities.

3.10 Retail Coffee Service

A. Program: Provide a location to purchase coffee and light food items as required by the project Facilities Program. Recommended service method is integration with the Public Spaces - Lobby and Bar; see Module **<2A>**.

B. Location: Locate in public area along main circulation path.

3.11 Systems Coordination

A. Reference: Coordinate with the requirements of other Modules including:

- 2A Public Spaces
- 10 Food & Beverage Production
- 13A Information Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical, Plumbing & Electrical
- 16 Loss Prevention

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STANDARDS

MODULE 4 RECREATION FACILITIES

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Recreation Facilities

4.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Concept: The Autograph Collection is a diverse group of Independent Lifestyle Hotels and Resorts that embody an upscale level of design and service. Each property is unique and represents its Brand position through its design. The purpose of this guide is to assist in the integration of the functions outlined in this Module together with the project's Facilities Program and it's unique character to create a memorable design and guest experience.

B. Brand Essentials: At a minimum, provide the following:

1. Fitness Center
   - Arrival Area for Fitness Center
   - Circulation / Corridors / Service Areas
   - Exercise Area
   - Manager's Office / Storage
2. Swimming Pool: Provide at resorts and in leisure markets as appropriate to the market served.

C. Program: Provide a range of recreational activities to offer guests a variety of fitness and relaxation experiences. Provide recreation facilities with health club quality equipment.

Typically, Recreation Facilities and amenities are dictated by the project Facilities Program and require special consultants for Recreation, Fitness and Spa.

Influences: The following factors influence the recreation program development and amenity offerings:

- Property size and facilities
- Availability of building area
- Climate
- Availability of competitive facilities
- Relationship to swimming pool and outdoor activities
- Opportunity to attract local community memberships
- Compliance with Marriott's Spa Design Standards
- Relationship to full service Spa facility

D. Ancillary Facilities: Additional recreation facilities may consist of the following when required by the project Facilities Program:

- Locker / Dressing, Grooming, Shower & Toilet Areas
- Sauna and Steam Rooms
- Food & Beverage Service
- Spa Amenities
- Indoor & Outdoor Recreational Facilities
- Full Service Spa

E. Spa Requirements: Based on MI's accepted project Facilities Program, the Fitness Center may be related to a hotel spa or may be designed to include a full range of spa activities. Spas are typically classified by the following criteria:

1. Property Spa:
   a. At least 324 m^2 (3,500 sq. ft.), excluding Fitness Center (based on a 300 room property)
   b. Two manicure / pedicure stations
   c. A minimum of three multi-purpose treatment rooms
2. Resort Spa:
   a. At least 740 m^2 (8,000 sq. ft.), excluding Fitness Center
   b. Salon area: Two manicure / pedicure stations; one hair station, one make-up station
   c. A minimum of six treatment rooms

F. Locker & Shower Facilities: The requirement to provide (or minimize) Locker & Shower facilities is based on the following:

1. Governing Law: The facilities may be required by governing law for the Swimming Pool or Fitness Center.
2. Disrobing: The facilities are required when the activity requires disrobing (sauna, steam, massage, dip pools, etc.)
3. Memberships: Lockers and showers typically are required when the property is intended to support local membership use.
4. Early Check-in: Hotels may benefit by having lockers and showers available for guests (early check-in or delayed departure) that do not have immediate access to a guestroom.
5. Hotel Size: Larger hotels with more diverse guest needs and longer distances between the guest room and Fitness Center may require a locker and shower area.
6. Hotel Amenities: Lockers and showers are most beneficial when they are located to serve multiple adjacent recreational functions (Pool, Fitness Center, Relaxation).

G. Location: In order of priority, use the following criteria to generally position the recreation facilities:

1. Convenient and directly accessible by passenger elevator from guestroom areas.
2. In close proximity to or contiguous with other recreation facilities such as swimming pool and other indoor and outdoor recreational areas.

3. Do not allow access to recreation facilities from or through formal public spaces, such as Lobbies, Pre-function or Function assembly spaces and Food & Beverage areas.
4. Avoid placing exercise areas adjacent to guestrooms, function areas or other areas that would be disrupted by exercise activity.
5. As an independent / destination facility.
6. A direct exterior entrance if outside memberships are planned with a staffed access control desk.
7. Coordinate exterior recreation facilities with site planning criteria. See Module **<1>**

H. Size / Area: At a minimum, size facilities to comply with the project Facilities Program. The exact size and type of facilities and services are based on the following:

- Marriott approved project Facilities Program
- Market analysis
- Membership opportunities
- Climate
- Property location

I. Accessibility for Guests with Disabilities: Locate recreation facilities and guest amenities along accessible routes and design facilities for access for guests with disabilities.

J. Steps, Stairs, Ramps & Slip Resistance: See Module **<16>** - Loss Prevention.

K. Windows & Safety Glass: See Modules **<GR>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

L. Management Control: Facilities and services of Recreation Facilities not accepted or directly managed by Marriott shall be separate and independent of the hotel and therefore shall not be located within, proximate to, or associated with the hotel.

4.2 Circulation, Corridors & Service Areas

A. Program: Provide inviting, clear, efficient circulation paths between recreation functions and areas to create the mood or concept as intended.

1. Features: Provide millwork (crown moldings, base and feature wall millwork), artwork, decorative and accent lights.
2. Corridor Width: 1.5 m (5 ft.) minimum.
3. Circulation: Avoid unnecessary walls and doors.

B. Lighting: Surface mounted fluorescent lighting is not permitted in public spaces and front of house areas.

C. Finishes: In circulation area and corridors, provide the following:

1. Floors: Wood, porcelain tile, nylon tuft cut pipe carpet or stone.
2. Ceilings: Smooth painted gypsum board with skylights (where possible).

D. Service Areas:

1. Service Closet: Provide a janitor closet, adjacent to the common circulation path, containing floor sink and shelves for cleaning products and equipment to maintain the common areas and adjoining corridors.
2. Storage Room: Provide a secure room for storage of equipment, supplies, and retail product.
   a. Clean / Soil Areas: Provide a separate area for storage of clean towels and for storage of soiled towels.
   b. Service Entry: Where possible, provide service entry direct to storage and laundry storage to avoid traffic through public areas.

4.3 Fitness Center

A. Program: Provide a state of the art Fitness Center as defined by the project Facilities Program offering guests the latest in training facilities and equipment.

1. The Fitness Center allows guests to engage in the latest trends in fitness available today. The center caters to both the conditioned athlete and the fitness novice. Current trends in the fitness industry are moving towards more personalized fitness centers, providing guests with areas where they can perform various fitness activities without feeling on stage.
2. If programmed, limited executive memberships may be offered.
3. Representative layouts are provided by MI
4. The facility is designed with finishes consistent with the property. Provide areas with a residential feel and complementary finishes. Utilize soft colors, artwork and soft lighting.

B. Co-Location with Spa: If the hotel is integrated with a full service spa, provide one, shared Fitness Center adjacent to the spa. Provide the Fitness Center with a dedicated Locker, Shower / Toilet Facility for men and women to avoid operational conflicts with the spa.

C. Location: Locate the Fitness Center so guests do not have to cross Public Areas to arrive from guestrooms or go to exterior recreation.

D. Manager's Office: Provide a private Fitness Manager's Office as required by market conditions and the project Facility Program.

1. Manager's Office is required in Asia / Pacific.

E. Storage: Provide a room to store small training equipment and other exercise items.

1. Location: Locate near exercise areas.
2. Size: 5 m^2 (54 sq. ft.)
3. Features:
   - a. Shelving: Wall mounted, adjustable, wood
   - b. Lockable door
   - c. Resilient flooring

F. Amenities: The following amenities are required:

1. Welcome Station:
   - a. Beverages: Consider offering bottled water or other beverages in addition to providing an upscale, filtered water dispensing station.
     - Provide glass front counter height refrigerator for bottled beverage display, if offered.

- Consider using reverse osmosis systems for consistent water supply. The system provides an attractive built-in look, eliminating the unsightly water container

b. Headsets: Complimentary headsets for cardio equipment.

c. Newspapers & Magazines: Complimentary, current and recent issues of fitness, health, or wellness publications.

d. Cleaning Wipes Dispenser: For anti bacterial wipes.

2. Fitness Center: Provide the following:

a. Television: 42 to ~~5~~60 inch flat panel; locate near strength training area.

b. Shelving / Cabinets: Furniture grade purpose built shelving unit or custom built-in cabinetry.

c. Towels: Work out, hand towels and soiled towel disposal.

d. Fruit: Complimentary fresh, whole seasonal fruit (available during peak hours, optional)

e. Clock: Provide with second hand and mount on wall in each room of the facility.

f. Cleaning Wipes Dispenser: For anti bacterial wipes.

g. Trash receptacle and recycle bins concealed in millwork.

G. Design Features: Accommodate the following:

1. Circulation: To the extent possible, the Fitness Center plan provides for staff visual observation of Fitness Center circulation, a clear division of male and female changing facilities and clear paths of travel to emergency exits.

2. Ventilation: Facilities which use chemicals with a strong odor, provide a self-contained ventilation system that prevents odors or chemicals from migrating to food and beverage or other hotel areas.

3. Privacy: Sensitively design locker, lounge, toilet and shower areas to minimize views. Generally, provide separate sauna, steam rooms, massage and locker areas for male and females. Accommodate governing laws, customs and cultural norms regarding privacy.

4. Ceilings: Generally, 2.4 m (8 ft.) minimum height; 2.7 m (9 ft.) preferred.

5. Exercise Equipment Area: Do not locate exercise equipment next to or in the indoor pool environment because moisture, condensation, chlorine and wet bathing suits corrode equipment.
6. Wet / Dry Areas: Consolidate wet functions (whirl pools, steam, sauna, shower) into zones to minimize the migration of water to dry areas.
7. Sanitation: Plan facilities, detail materials and select finishes with a high priority for durability, ease of maintenance and sanitation. Do not provide white grout for floors.
8. Emergency Telephones: Provide house phones with direct dial to the "Call Center" from the exercise room areas.
9. Acoustics: Acoustically separate areas (passive) from exercise and public circulation areas (high activity). Design and construct separation enclosures with STC 55 rating.

H. Audio

1. Music Provide low volume background music.
2. Speakers: When required, architecturally integrate speakers in reception area.

I. Lighting: A lighting designer is recommended to coordinate requirements for the lighting design and installation.

1. Locker, Exercise, & Service Areas: Utilize general illumination of recessed, warm (triphospher, 2700 to 3000 k color) fluorescent lights for good skin tones and lower heat output.
2. Relaxation & Arrival Areas: Use indirect wall and ceiling lights on dimmers.
3. Grooming & Vanity Areas: Use halogen spotlights to highlight focal points and to increase light levels.
4. Dimmers: Provide individual, dimmer controls at aerobics and exercise area.
5. Lighting Levels: **<15C>**
   a. Entrance Foyer: 108 to 161 Lux (10 to 15 fc)
   b. Exercise Areas: 323 to 540 Lux (30 to 50 fc)

J. Natural Light: Incorporate natural daylight and views into the plan wherever possible through the use of windows, skylights and outdoor areas (while safeguarding the privacy of lockers, showers and bathing areas).

K. Controlled Indoor Air Quality: See Module **<15A>**.

4.4 Arrival Area for Fitness Center

A. **Program:** Provide an area that is an inviting introduction to the Fitness Center.

B. **Location:** At the entrance, identify the entry with a combination of signage, lighting and a pair of glass doors. Provide with a direct view to the Welcome Station.

C. **Entrance and Foyer:** As a minimum, identify and announce the Fitness Center location with an entrance portal. When required by the project Facilities Program, provide a waiting area with seating for approximately four guests.
   1. Entrance Door: Control guest entry with an electronic remote access reader compatible with guestroom lock **<16>**.
   2. Circulation: Plan circulation to avoid service traffic through the Reception area.
   3. Interior Design: Provide quality finishes in the entrance and Arrival Area. Include artwork and decorative lighting.

D. **Welcome Station:** If provided, locate as the focal point of the Arrival Area.
   1. Location: Position Welcome Station to provide direct accommodation of arriving guests and passive surveillance of the exercise areas.
   2. Size: A generous desk that may be unstaffed or accommodate employees.
   3. Finishes: A combination of millwork and stone with granite counter.

E. **Storage / Audio Room:** Provide secure room for general storage adjacent to Welcome Station and locate controls for the Fitness Center TV and audio systems on shelving.

F. **Retail:** If provided, Welcome Station or adjacent cabinet may include an opportunity to merchandise logo and sports related items.
   1. Location: May serve as the entry or circulation path of the Fitness Center arrival to related health and beauty retail such as hair styling, facial, barber or nail care.
   2. Design Criteria: For Retail areas, comply with the MI acceptance process and retail design resource in Module **<5>**.
   3. Ventilation: Facilities that utilize chemicals with a strong odor, provide a self-contained ventilation system that prevents odors or chemicals from migrating to the Fitness Center, food and beverage, or other building areas.

G. **Food & Beverage (F&B):** If provided, include within or adjacent to the Fitness Center Reception area, a juice bar to provide a variety of refreshing drinks and snacks.
   1. Small Facilities: Where Fitness Center does not rely on outside memberships provide a furniture grade purpose built shelving unit or custom built-in cabinetry offering refreshments on an honor or complimentary basis.
   2. Large Facilities: Where outside memberships are accommodated, the Juice Bar consists of an adjacent self-contained food and beverage outlet.
   3. Outdoors: When the Fitness Center is located adjacent to the outdoor recreation terrace and swimming pool the Juice Bar is integrated with the pool's food and beverage program. The program for the facility follows the design process outlined in the Food & Beverage Module **<3>**.
   4. Juice Bar - Features:
      a. Buffet: Provide buffet with granite counter and millwork cabinet.
      b. Seating: Provide casual, wood or metal framed, upholstered with fabrics that are easy to maintain in an athletic environment Use only teak wood or synthetic woven rattan for outdoor seating.
   5. Finishes: In general, the Juice Bar finishes are similar in quality to the Reception area.
      a. Juice Bar - Food & Beverage Facilities: Generally, include wood, porcelain tile or stone floors and millwork walls with decorative lights and artwork. Incorporate concealed trash receptacle and recycling bin.
      b. Ceilings: Multi-level, smooth painted gypsum board surface with recessed lights.

4.5 Exercise Areas

A. Program: Assigned areas generally accommodates the following core functions:

- Cardiovascular Area
- Strength Training Area
- Core Training and Stretching Area
- Movement Studio (when programmed, a separate room)

B. Size / Area: At a minimum, size the facility to meet the following area criteria:

Guestrooms	Minimum m² (sq. ft.)
200 or less	47 to 65 m² (500 to 700 sq. ft.)
201 to 325	84 to 121 m² (800 to 1300 sq. ft.)
326 to 500	121 m² (1300 sq. ft.)
Properties with over 500 rooms add 7 m² (75 sq. ft.) for every 100 rooms.	

1. Comply with the project Facility Program and Fitness Center SOP.
2. Ceiling Height: 2.7 m (9 ft.) minimum; proportionally higher in larger spaces.
3. Area requirements do not include swimming pools, indoor and outdoor recreation and recreation decks.

C. Cardiovascular Area: First area accessible from the Arrival Area and Locker facilities. Area typically includes exercise equipment such as professional grade treadmills, ellipticals, bikes, etc.

1. Position and orient area to maximize natural light and to benefit from exterior views; visible to / from the Arrival Area.
2. Equipment use should not be hampered by external distractions.
3. Provide integrated or attached personal LCD / LED TVs on each piece of equipment with licensed public content. If possible include views to the swimming or other recreational decks..
4. Clearances:
   a. Provide 1.2 to 1.8 m (4 to 6 ft.) clearance minimum behind treadmills.
   b. Provide 1.2m² (13 sq. ft.) minimum clear floor space for each equipment; 1.8m² (20 sq. ft.) preferred.

D. Strength Training Area: Provide exercise areas to support many work out opportunities, such as selectionized weight stack machines, plate load machines and free weights; benches with dumbbells / barbells.

1. Area Activities: Generally, activities in this area are individual and typically require a high level of concentration and self monitoring.
2. Lighting: Provide high lighting levels.
3. Down Lights: Do not locate directly above stations where guests are reclining and lights shine in their eyes.
4. Mirrors: Provide full height wall mirrors starting above wall power outlets.
5. Sound: Include background music **<13C>**.
6. Views: Exterior views are not required.
7. Natural Lighting: Maximize natural lighting into the space through full-height windows and skylights.

E. Equipment: Provide guests with the latest state of the art exercise equipment and features consistent with the property size and market based on current Marriott SOP.

1. Typical Exercise Area Equipment - Minimum Requirements:

Table 1

Area m^2 (sq. ft.)	Strength Equipment	Cardio Equipment
74 (800)	1 dual adjustable pulley 1 dumbbell rack 5 to 50 lb / 2.27 to 22.7 kg dumbbell set 2 adjustable benches 1 leg press	4 treadmills 3 ellipticals 1 upright bike 1 recumbent bike
84 (900)	1 dual adjustable pulley 1 dumbbell rack 5 to 50 lb / 2.27 to 22.7 kg dumbbell set 2 adjustable benches 2 single stations to include: • leg extension • seated leg curl	5 treadmills 3 ellipticals 1 upright bike 1 recumbent bike
121 (1300)	1 dual adjustable pulley 1 dumbbell rack 5 to 50 lb / 2.27 to 22.7 kg dumbbell set 2 adjustable benches 1 abdominal bench 7 single stations to include: • leg press • leg extension • seated leg curl • lat pull down • seated row • chest press • shoulder press	6 treadmills 5 ellipticals 1 upright bike 2 recumbent bikes

- Do not provide multi station machines to satisfy strength requirements.
- Provide each cardio equipment piece with a personal viewing TV screen integrated with the equipment.
- See SOP for larger Exercise Areas and larger property requirements.

2. Exercise equipment for properties in Europe, APAC, MEA:

Table 2		
Area m^2 (sq. ft.)	**Strength Equipment**	**Cardio Equipment**
65 (700)	1 dual adjustable pulley 1 dumbbell rack 5 to 50 lb / 2.27 to 22.7 kg dumbbell set 2 adjustable benches	3 treadmills 3 ellipticals 1 upright bike 1 recumbent bike
84 (900)	1 dual adjustable pulley 1 dumbbell rack 5 to 50 lb / 2.27 to 22.7 kg dumbbell set 2 adjustable benches 2 single stations to include: • leg extension • seated leg curl	5 treadmills 3 ellipticals 1 upright bike 1 recumbent bike
121 (1300)	1 dual adjustable pulley 1 dumbbell rack 5 to 50 lb / 2.27 to 22.7 kg dumbbell set 2 adjustable benches 1 abdominal bench 7 single stations to include: • leg press • leg extension • seated leg curl • lat pull down • seated row • chest press • shoulder press	6 treadmills 5 ellipticals 2 upright bike 1 recumbent bikes
• Do not provide multi station machines to satisfy strength requirements. • Provide each cardio equipment piece with a personal viewing TV screen integrated with the equipment. • See SOP for larger Exercise Areas and larger property requirements.		

3. Accepted Equipment Manufacturers: *Matrix Fitness, Life Fitness* and *Technogym*

F. Stretching and Core Area:

1. Size / Area: 2.8 m^2 (30 sq. ft.) minimum.
2. Features: Provide at a minimum, the following equipment:
   - Floor Mats: Two, 90 x 183 cm (3 x 6 ft.).
   - Stability Balls: 3
   - Ball Holder: Stainless steel, 3 ball rack.
3. Television: Provide a 107 to 127 cm (42 to 50 inch) flat panel HD TV.

G. Movement Studio: Provide when required by the project Facilities Program. Isolate the area with an enclosed acoustical separation, with a sense of privacy from other areas.

1. Activities: Accessible to guests taking classes or for personal activities.
2. Views: Maximize introduction of controlled exterior views and natural light.

3. Mirrors: Typically, 2 mirrored walls with wall mounted ballet bars.
4. Audio / Visual:
   a. Provide separate audio system, controlled in studio.
   b. Integrate into wall or cabinet with surround sound speakers.
   c. Consider a drop down projection screen for scheduled or on demand group classes. Include a wall mounted touch screen control.

H. **Finishes:** Provide the following:
1. Floor:
   a. Rubber floor and base at exercise areas.
   b. Resilient mounted wood floor in non exercise areas and movement studio.
2. Walls: Accent vinyl wall covering, paint, one mirrored wall and millwork.
3. Ceilings: Acoustic tile system, slim-line frame with tegular edge ceiling tiles or smooth painted gypsum board.

4.6 Swimming & Whirl Pools

A. Program: If provided, retain a certified pool consultant.

1. Consider contiguous indoor / outdoor swimming pools in seasonal locations.
2. Larger facilities may require separate pools, especially where the outdoor pool is the center of a resort environment.

B. Standards & Codes: Comply with the current edition of IBC (International Building Code) including governing building, structural, mechanical, electrical, health regulations and codes, considering climate and soil requirements.

C. Location: Where feasible, position recreation areas and swimming pools close to the Fitness Center, which are jointly accessed from guestroom elevator core and Fitness Center.

1. Provide indoor pools with exterior views, if possible.
2. Exterior pools require a location with exposure to direct sun light.

D. Access Control: Develop a program to secure the perimeter of swimming pool and whirl pool areas during after hours and unauthorized use based on the following:

- Loss Prevention review. **<GR> <16>**
- Governing codes and regulations.
- Operational logistics and location of pools and recreation areas.
- No path of building emergency egress through the swimming pool and whirl pool area.

E. Control Features: Based on the control program, provide controlled access to pool perimeters and recreation areas using one or more of the following features:

1. Barrier: Provide 1.2 m (4 ft.) high barrier (fence or landscape hedge) when the pool is within the confines of the hotel or 1.5 m (5 ft.) high barrier when bordering adjacent properties. Comply with the Loss Prevention Program and governing regulations.
2. Doors: To limit access by unauthorized persons and control access at unauthorized times, provide magnetic electronic operated lock mechanism **<16>** to pool enclosure and whirl pool areas.
3. Gates: To limit entry by small children, provide child resistant gate hardware in compliance with the following:
   a. Provide self-closing / latching gate with release hardware.

b. Locate the hardware on the pool side of gate and install 137 cm (54 inch) minimum from bottom of gate.
c. When the hardware is located less than 137 cm (54 inch) from the bottom of the gate, install the device at least 8 cm (3 inch) below top of gate.
d. Design gate and barrier without an opening greater than 13 mm (½ inch) within 46 cm (18 inch) of the self-latching hardware.

F. **Safety:** Safety is of prime importance in pool design and associated areas.

G. **Signage:** Provide regulatory / safety and "No Diving" signage. **<GR> <16>**

H. **Pool Designs:** Mechanical and structural engineers or a qualified swimming pool design / build contractor develops the pool mechanical operation and structural design.
1. Structure: Gunnite concrete structure with pool plaster or tile.
2. Configure swimming pool to facilitate simultaneous usage by lap swimmers and recreational bathing.
   a. Minimum Pool Depth: 1.0 m (3'-4")
   b. Maximum Pool Depth: 1.5 m (5 ft.)
   c. Maximum Slope of Pool Bottom: 1 to 12
3. Minimum Pool Depth Area: Approximately 15 to 20 percent of the total pool area.
4. Pool Perimeters: Fully accessible for general maintenance and life saving / rescue purposes.
5. Diving is prohibited.
6. Pool Entry: Provide a stepped entry with handrails at primary access point for guest arrival at pool, typically toward shallow end of pool with additional stairs or ladders every 23 m (75 ft.) around pool perimeter. Include railings on both sides of stairs or a central handrail at small stairs.
7. Steps: Provide 5 cm (2 inch) slip resistant edge, contrasting in color on vertical and horizontal nose of each pool step and bench.
8. Accessibility: See ADA requirements. Provide a permanent transfer lift at each pool and whirl pool. See ADA for additional pool access criteria.
9. Accessories: Slides, swimming tunnels and bridges are prohibited unless reviewed and approved by Marriott Loss Prevention **<16>**.
10. Coping: Provide a continuous coping band with integral hand / finger grip at the pool edge consistent with the project paving and hardscape materials. Use pool coping compatible with the finish texture and material used for the slip resistant, pool deck paving.

11. Skimmers: Provide NSF approved, in-wall skimmers.
    a. Quantity: 2 minimum; 1 for every 38 to 45 m^2 (400 to 500 sq. ft.) of water surface, typical.
    b. Covers: Provide cover to match pool deck to conceal skimmer cover.
    c. Equalizer Lines: Design in compliance with the Virginia Graeme Baker Pool and Spa Safety Act.
    d. Gutter: Larger pools may require a continuous perimeter gutter by code.
12. Return Inlets: Locate at 4.5 m (15 ft.) intervals along the pool perimeter wall.
13. Lighting **<15C>**: Provide underwater incandescent lights of 5 watts / m^2 (0.5 watts / sq. ft.) or equal intensity by energy efficient LED lights.
    a. Protection: GFCI
    b. Circuit: Emergency.

I. Pool Deck Design:

1. Deck Width: Provide a minimum of 1.2 m (4 ft.) at pool perimeters for rescue assistance circulation. Provide 1.5 m (5 ft.) at ADA required access paths. Not less than 3 m (10 ft.) at any point with seating.
2. Deck Slope: Provide slope away from pool to perimeter drains or deck drains at a minimum of 2% (2:100) (¼ inch per foot) and a maximum of 4%. Standing water on pool deck is not permitted.
3. Deck Drains: Install flush to deck finish surface.
4. Deck: Provide deck finish with minimum coefficient of friction factor of 0.6 wet / dry.
5. Concrete & Carpet: Smooth troweled concrete finishes and carpet are not permitted at patios, walkways, pool decks or areas where people are circulating with wet feet.
6. Deck Joints: Seal deck joints with color matching polysulfide sealant rated for pool use. Do not use wood divider strips.
7. Decorative Fittings & Nozzles: If exposed to view, provide stainless steel, corrosion resistant metal or bronze plumbing fittings and nozzles.
8. Shower / Foot Wash: Provide shower head and drain as follows:
    a. Provide as required by the governing authority.
    b. Provide when pool is adjacent to a beach or play area to avoid sand and soil on pool deck and in pool.
    c. Provide when a shower is not available at an adjacent facility (locker, guestroom, etc.).
9. Toilets: If not immediately accessible to the Fitness Center, include separate men's and women's toilet facilities.

10. Lighting: Locate lighting at pool perimeter to avoid maintenance / replacement activities over the water surface.

J. Indoor Pool: Comply with the "Pool Designs" and "Pool Deck Design" criteria above and the following:

1. Heated: Maintain 29º C (84º F)
2. Size: See the project Facilities Program. Indoor pools are typically a minimum of 6 x 12 m (20 x 40 ft.), 1.2 m (4 ft.) deep with an adjacent whirl pool.
3. Whirl Pool: Consider a design that places the whirl pool above the pool deck to permit seating around the edge or more closely at eye level of surrounding seating and can provide a side transfer bench for wheelchair access.
4. Enclosure:
   - Floor: Slip resistant; 0.6 wet / dry
   - Walls: Ceramic tile wainscot with high performance epoxy paint above
   - Ceiling: Exposed structure (skylights, concrete deck, etc.) with high performance epoxy paint with areas of gypsum board or plaster soffits. Avoid suspended ceilings and opportunities for corrosion.
   - Windows & Skylights: Aluminum frame, thermally broken with insulated glass
5. Heating, Ventilation and Cooling: See Module **<15A>.**
6. Acoustics: Pool enclosure Reverberation Time (RT) 60 Max = 4 seconds.

K. Whirl Pool: 3 m (10 ft.) diameter minimum.

1. Location: Typically, locate in close proximity to deep end of Swimming Pool. Contain within restricted adult only areas.
2. Heating: Include heating equipment to maintain 40º C (104º F) pool water temperature with an in-line thermometer graded in 1º C (2º F) intervals installed in the filter room between the filter and heater.
3. Equipment: Locate whirl pool mechanical equipment in a designated, programmed room unless otherwise accepted by the Owner and MI.
4. Slip Resistance Factor: 0.6 dry / wet for decks, copings, benches, and pool floors.
5. Pumps: Provide separate pumps for circulation and jet supply. Equip pumps with programmable, variable frequency drives (VFD) for energy savings.
6. Suction Outlets: To avoid entrapment install suction outlets in accord with the U.S. Pool Safety Act (Virginia Graeme Baker Pool and Spa Safety Act).

7. Decorative Fittings & Nozzles: If exposed to view, provide stainless steel, corrosion resistant metal or bronze plumbing fittings and nozzles.
8. Air Injector: Install for jet action during whirl pool use.
9. Jet Timer: Provide a 15 minute time switch to permit users to activate whirl pool jets. If air blower is provided, interlock timer with air blower and jet pump. Locate timer so that the whirl pool user is required to exit the pool to reactivate.
10. Stop Button: Provide emergency stop button adjacent to jet timer, interlocked to the whirl pool pump and jet pump.
11. Signs: Include regulatory and safety signage. **<GR> <16>**

L. Water Playground, Play Area (option) or Children's Pool (alternate): Resorts and leisure markets may require one of the following water play areas for children:

1. Play Area: An MI preferred accessible water play amenity for children.
   a. Pad & Base: Reinforced concrete with a durable, slip resistant **<16>** finish of 0.6 (wet / dry). Provide a resilient material flooring approved for use in pool environments.
   b. Features: Provide a variety of water experiences (water jets, showers, fountains, etc.) proportioned to the facility.
   c. Sanitation & Filtration: Provide a system. See "Pool Mechanical Operation - General".
      - Turnover Rate: Less than 2 hours
      - Sanitation: Traditional system with an ultra violet (UV) bacteria mitigation system on the water supply at the pump.
   d. Diverter Valve: Provide on the drain line to divert rain water, wash-down water and run-off to the storm water system.
   e. Controls: Consider an activation bollard and computer system that allows guests to turn the features on and off.
   f. Disability Access: Required. Typically provided if the pad is a single level design.
2. Children's Pool: An alternate to the splash pad if appropriate and facilities are designed for persons with disabilities.
   a. Filtration: Provide a system dedicated to the children's pool.
   b. Depth: Typically 46 cm (1′- 6″) maximum
   c. Access for the Disabled: Provide a sloped entry with a maximum slope of 1:12 to a depth of 46 cm (1′-6″).

M. Depth Markings: Indicate water depth in meters and feet, using permanent materials, at swimming and whirl pools.

1. Letters / Characters: Minimum 10 cm (4 inch) high; in contrasting color to tile.
   a. Incorporate NO DIVING international logo tile signs adjacent to each depth marker.
   b. Paint-on characters are not acceptable.
2. Marking Placement: Space markers no more than 7.6 m (25 ft.) intervals and arranged to be uniformly located at irregularly shaped pools.
   a. Depths / Shapes: Place pool markings at maximum and minimum depths, all points of slope change, and at every 30 cm (1 ft.) of depth increment; also place at major deviations in shape.
   b. Vertical Pool Walls: Place in upper most position; easily readable from water side.
   c. Horizontal Surface: Place within 46 cm (18 inch) of water's edge and positioned readable while standing on deck facing the water.
   d. Slip Resistance: Provide 0.6 wet / dry for horizontal depth markers.

N. Pool Mechanical Operation - General:

1. Safety Features: Design and construct pool details and equipment to prohibit hazards from tripping, slipping. Design to avoid entrapment of clothes, hair and people in compliance with the U.S. Pool Safety Act (Virginia Graeme Baker Pool and Spa Safety Act)
2. Pumps: Provide recirculation, filtration, water treatment and pumping system to maintain water in a clear, sanitary condition with a minimum amount of maintenance. Provide energy efficient pumps in standard sizes to simplify pump procurement and replacement.
3. Filtration: Provide a separate system for each pool and whirl pool. Include NSF approved sand filters. Provide a minimum system filter flow rate of one water turnover in 5 hours for pools and in 20 minutes for whirl pools.
4. Treatment: Provide water treatment type as required by MI. Do not use chlorine gas. Provide automatic, adjustable injection system with test kit.
5. Heater: Natural gas type required for whirl pool. Heating required for swimming pools unless outdoor climate maintains water above design temperature.
   a. Provide high efficiency heaters (with sealed combustion chamber and ducted, exterior combustion air to avoid pool chemical corrosion) integrated with heat recovery system using the pool dehumidification system **<15A>**.

b. Provide constant design temperatures:
- Pools: 29º C (84º F)
- Whirl Pool: 40º C (104º F).
- Temperature Rise: 0.25º C (0.5º F) per hour.

6. Signage: See **<GR2> <16>** for applicable signage.

O. Plumbing – General

1. Pipes and Fittings: Provide Schedule 40 PVC for pools and whirl pools
2. Fresh Water Supply: Copper or CPVC Schedule 80
3. Heater Supply and Return: Copper or CPVC Schedule 80
4. Pipe Size: Do not exceed flow velocities required by codes and the following:
   a. Velocity through open area of return: not to exceed 3 m / sec. (10 ft. / sec.)
   b. Velocity through suction lines: not to exceed 1.8 m / sec. (6 ft. / sec.)
5. Underground Pipe: Solvent welded connection only. Threaded or flanged connection are not permitted.
6. Testing: Prior to back filling, pressure test at a minimum of 1.7 bars (25 psi) for a minimum of 24 hours. Maintain pressure on pipes during back filling to verify pipes are not damaged.

P. Swimming / Whirl Pool Equipment Rooms:

1. Location: Locate the Pool Equipment rooms close as feasible to pool and whirl pool, and away from guestrooms, residences, meeting rooms and other public spaces to avoid the transfer of noise and vibration.
2. Drainage: Provide a sump or other positive drainage.
3. Storage / Maintenance: Provide storage space for maintenance supplies and equipment. Avoid moving pool equipment and water treatment materials through public spaces.
4. Chemical Storage: Store and separate liquid chlorine from acid in ventilated, corrosion resistant rooms or cabinets away from pool equipment.
5. Eye Wash Station: Connect to tepid, piped water system. **<15B> <16>** Locate near chemical handling with unobstructed access.
6. Construction:
   a. Floor: Concrete, hardened and sealed
   b. Secure and mount pumps and heaters on raised housekeeping pads.
   c. Walls & Ceiling: Provide water resistant materials and epoxy painted finish.

7. Plumbing:
   a. Support and secure with corrosion resistant fasteners and accessories.
   b. Clearly label and color code with flow direction arrows.
   c. Install to avoid tripping hazards, head height obstructions and obstructions to equipment service.

Q. Pool Accessories:

1. Deck Equipment: Include the following:
   - Grab Rails
   - Stair Hand Rails
   - Life Guard Chair (only if required by Code)
   - Deck Mounted Stair Rails
   - Portable Accessibility Lift (each pool area)
   - Deck Anchors
   - Escutcheon Plates
   - Pool Cover & Deck Anchors: Provide in cold climates where outdoor pools are typically closed for the season.
   - Thermal Cover: Provide thermal covers and racks for pools if the pool is intended to continue in service during cold weather.
2. Maintenance Equipment: Include the following:
   - Pool Cleaning System - vacuum with hose and robotic cleaner (dedicated vacuum ports - not recommended)
   - Nylon Brush
   - Telescopic Pole
   - Stainless Steel Brush
   - Zinc Anodes (cathodic protection)
3. Safety Equipment: Include the following:
   - Life Buoy with throw line equal to the pool width
   - Life Hook (Sheperd's hook) and pole
   - First Aid Kit
4. House Phone: see **<13B>**

R. Pool Deck & Terrace Amenities: Provide design that is compatible with the project's design concept and quality level.

1. Landscape: Provide sophisticated landscaping at outdoor pool and sunbathing deck areas that is appropriate to the climate, space available, and project concept.
   a. Use landscaping to provide quiet and public areas and shady and sunny zones.
   b. At indoor pools limit landscaping to areas of natural light to support live plants.
2. Walkway Access: Paths to pool; 1 5 m (5 ft.) wide to allow two persons to pass or walk side-by-side.
3. Attendant Kiosk: Provide pool attendant's, towel and sundry issuance kiosk at primary point of access to pool compound; position to permit passive observation of the swimming pool, children's pool, and whirl pool.
4. F&B Facilities: Consider opportunities for pool terrace food and beverage outlets and function / catering facilities.
5. Deck / Terrace / Beach Furniture: Include stackable deck furniture in seasonal climates.
   a. Chaise Lounge Quantity: 1 per 10 keys. (MI designates specific count); warm climates and resorts may require higher quantity based on demand. Quantity may vary from 1 per 4 guestrooms to 1 per 1 guestroom or more.
   b. Additional chairs, tables, and umbrellas; base quantity on facility size, market demand, food and beverage type, and location.

Ancillary Facilities

4.7 Project Requirements

A. Program: Market variables for each project dictate requirements and opportunities for related recreation facilities. Provide ancillary recreation facilities as follows:

1. Facilities Program: At a minimum, provide recreation facilities required by the project Facilities Program.
2. Competition: Provide facilities that permit the property to effectively compete in the market.
3. Resort: When a resort property does not provide a full service spa, provide the appropriate selection of spa amenities integrated with the Fitness Center area.
4. Market Opportunities: Consider providing facilities that capitalize on market opportunities (membership, local customers, etc.).

4.8 Locker / Dressing, Drying / Grooming, Shower & Toilet Areas

A. Program: Provide separate and complete men's and women's locker, drying / grooming, shower and toilet facilities. Facility size / area requirement is based on the criteria noted at the beginning of this Module.

B. Locker / Dressing Areas:

1. Location: Adjacent to grooming areas. Sensitively design locker, lounge, toilet and shower areas to minimize views.
   a. Generally, provide separate sauna, steam rooms, massage and locker areas for male and females.
   b. Accommodate governing laws, customs and cultural norms regarding privacy.
2. Features: Provide the following:
   a. Lockers: Double tier with wood doors and end panels with latch, electronic locks and number. Provide 15% of the key count plus lockers required for membership.
   b. Seating: Individual seating cubes or fixed hardwood top benches.
   c. Weight Scale: Provide a minimum of one commercial "doctor office" or digital type scale.
   d. Towels: Locate towel dispensing and return hamper near entry.
   e. Private Booth: Where feasible, minimum of one private changing room.
   f. Casegoods: Locate focal case piece or stone top credenza along circulation paths or at focal point to avoid institutional image.

g. Clock: Large wall clock with second hand
h. Audio: **<13C>** Central sound system

3. Finishes: Provide in the Locker / Dressing areas:
   a. Floor: Porcelain tile; and/or carpet, nylon, looped, antimicrobial
   b. Walls: Vinyl wallcovering 15 oz. minimum or paint.
   c. Ceiling: Smooth painted gypsum board or plaster or accessible acoustic tile, slim-line frame with tegular edge ceiling tiles.

C. Drying / Grooming:

1. Location: Position as a transition area between shower and locker areas.
2. Features:
   a. Vanity: Stone top, back and side splash. Arrange as individual basin or as a continuous counter with well defined grooming stations.
   b. Grooming Stations: At each station include a decorative framed mirror, wall light sconce, recessed ceiling light, lavatory bowl, electric outlet (GFI) and hand held hair dryer.
   c. Towels: Provide open shelves, alcove or cabinet for dispensing and displaying clean towels.
3. Lighting: Provide recessed, indirect and direct lighting to meet lighting levels **<15C>**.
4. Finishes:
   a. Floors: Porcelain tile, stone, with a slip resistance of 0.6 wet / dry or carpet (nylon, looped, anti-microbial).
   b. Walls: Vinyl wall covering with tile or stone trim.
   c. Ceiling: Smooth painted gypsum board or acoustical tile, slim-line frame with tegular edge ceiling tiles.

D. Shower Areas:

1. Enclosures: Individual, two-chamber (wet and dry) enclosures approximately 1 x 2 m (3'-0" x 6'-6"), minimum.
   a. Include divider door at shower and privacy door at entry.
   b. At drying chamber, provide bench seat and robe hook.
2. Quantity: Provide a minimum of one shower for each 100 keys for men and equal quantity for women plus showers required for membership use.
3. Lighting: Provide recessed, indirect and direct lighting to meet lighting levels **<15C>.**

4. Finishes:
   a. Floors: Stone or large module porcelain tile (wet/dry 0.6 slip resistance).
   b. Walls: Stone or large module porcelain tile.
   c. Ceiling: Smooth painted gypsum board or cement plaster.

E. Toilet Facilities:

1. Location: Strictly separate from, but contiguous to locker / dressing and wet areas.
   a. Directly accessible from Foyer to Locker Rooms to allow guest access without traversing the locker and wet areas.
   b. Where feasible, position spaces to permit joint usage by swimming pool users and other outdoor activity areas.
   c. Include vestibules to toilet area.
   d. Provide toilet facilities for Fitness Center based on size and location. See Module **<2>** if Fitness Center is located near the Public Toilets.
2. Features:
   a. Views: Control views (garden courts or architectural glass walls and screens).
   b. Toilet Enclosures: Wall and louvered doors front with high pressure laminate compartment dividers.
   c. Urinal Screens: Enameled steel or stone; floor and wall supported.
3. Lighting: **<15C>** Provide indirect and direct lighting to meet lighting levels.
4. Finishes:
   a. Floor: Porcelain tile or stone with a slip resistance of 0.6 wet / dry.
   b. Walls: Porcelain or glazed ceramic tile or stone wainscot and vinyl wallcovering.
   c. Ceiling: Smooth painted gypsum board or plaster or accessible acoustic tile, slim-line frame with tegular edge ceiling tiles.

4.9 Sauna

A. Program: If required by the project Facilities Program, provide separate Saunas in men's and women's wet lounge area for guest relaxation prior to treatments or as a dry relaxation amenity to be enjoyed in combination with adjacent Steam Room and / or Dip Pool facilities.

B. Space Planning:

1. Wet Lounge: Locate Sauna in a common "wet area" adjacent to steam room, whirl pool, dip pools if programmed.
2. Shower: Position Sauna near locker room showers within a common wet zone to avoid traversing dry areas.
3. Accessibility: Comply with ADA and governing regulations for persons with disabilities.

C. Size / Area:

1. 7.5 m² (80 sq. ft.) minimum, to 15 m² (160 sq. ft.)
2. Ceiling: 2.2 to 2.4 m (7 to 8 ft.) maximum

D. Features:

1. Construction: Commercial; prefabricated redwood or cedar walls, ceiling, two tiered benches, heater guard and removable ductboard floor.
2. Insulation: Minimum of R11; continuous foil faced vapor barrier.
3. Floor: Waterproof, when above occupied area.
4. Door and Frame: Prefabricated wood with insulated, tempered glass vision panel for passive surveillance of interior.
5. Controls: Time and temperature; programmable with high temperature alert control to limit system.
6. Heater: Commercial grade, wall mounted, electric, stainless construction with rocks; sized per sauna volume. Typically, size to maintain 65º to 82º C (150º to 180º F).
7. Signage: See **<GR>** for applicable safety signage. Provide equipment operation signage and safety signage adjacent to timer and temperature control at exterior of sauna.
8. Lock: Provide a keyed, deadbolt lock (no interior function) to permit management to secure room.

E. Duress Alarm: **<16>** Security alarm; (red mushroom design) locate at interior of room near entrance door.

F. Utilities:

1. Floor Drain: For cleaning floor
2. Lights: Waterproof
3. Ventilation: Passive fresh air intake below heater and exhaust near ceiling.

G. Finishes - Sauna:

1. Floor: Porcelain tile with a slip resistance of 0.6 wet/dry and removable ductboard floor over tile.
2. Walls / Ceiling: Wood.

4.10 Steam Room

A. Program: If required by the project Facilities Program, provide separate Steam Rooms in the men's and women's wet lounge area for guest relaxation prior to treatments or as a wet relaxation amenity to be enjoyed in combination with adjacent facilities.

B. Space Planning:

1. Wet Lounge: Locate Steam Room in a common "wet area" adjacent to sauna, whirl pool, dip pools, if programmed.
2. Shower: Position Steam Room near locker room showers within a common wet zone to avoid traversing dry areas.
3. Accessibility: Comply with ADA and governing regulations for persons with disabilities.

C. Size / Area: 7.5 m² (80 sq. ft.) minimum, to 15 m² (160 sq. ft.)

D. Construction:

1. Floor: Water proof membrane if above occupied area; positive slope 4 cm / m (½ inch per ft.) to floor drains.
2. Walls: Typically field constructed of masonry; vapor proof construction to prevent migration of moisture.
3. Ceiling: Sloped: 6 cm / m (¾ inch per ft.), domed or vaulted (not flat) to prevent condensation from dripping on occupants. Cement plaster; vapor proof construction to prevent migration of moisture into ceiling structure.
4. Bench (built-in): Typically, field constructed similar to wall construction. Two tiered (to permit seating at different temperatures); 45 cm (18 inch) high; slope seat 3 cm / m (⅜ inch per ft.) to avoid ponding condensation.

E. Features:

1. Nozzles: Position steam outlet nozzles to avoid contact burns with occupants.
2. Signage: See **<GR> <16>** for applicable safety signage.
3. Controls: Remote at steam generator to maintain room at 43° to 49° C (110° to 120° F).

4. Emergency Shut Off: **<16>** Provide in each room.
5. Shower: Option at larger steam rooms.

F. Door & Frame:

1. Frame: Aluminum
2. Door: Aluminum and tempered glass.
   a. Glaze to provide passive surveillance of interior; insulated.
   b. Manufactured for steam room applications - not "storefront" doors that do not control condensation.
3. Lock: Provide a keyed, deadbolt lock (no interior function) to permit management to secure room.
4. Seal: Vapor proof, to avoid steam in adjacent areas.
5. Hardware: Push / pulls; wood (or other nonconductive material) for hand gasping comfort.
6. Threshold: Porcelain tile or marble; set slightly above floor finish to contain water.

G. Duress Alarm: **<16>** Locate red design mushroom button at interior of each room near entrance door.

H. Utilities: **<15>**

1. Ventilation: **<15A>** Provide exhaust from above ceiling area (not from steam room).
2. Steam Generator: Locate in adjacent room.
3. Drains: Place at low points of sloped floor. Provide trench drain at exterior side of door to manage water from foot traffic and door condensate.
4. Lighting: **<15C>** Waterproof type; under bench and wall sconces.

I. Finishes: **<GR>**

1. Floor: Porcelain tile. Slip resistant (wet / 0.6)
2. Walls: Glazed ceramic or porcelain wall tile. Consider incorporating a graphic design element with the tiles, consistent with the spa theme, to provide visual interest.
3. Ceiling: Glazed ceramic or porcelain tile

4.11 Steam Generator Room

A. Program: Provide a utility room for the remote steam generator equipment that produces steam for the Steam Rooms.

1. Location: Locate Steam Generating Rooms as close as possible to Steam Rooms being served and within manufacturer's recommendations.
2. Size / Area: As required to locate equipment and provide maintenance clearance.

B. Features:

1. Access: Provide access from a common corridor or from locker / attendant area for maintenance and to adjust controls.
2. Steam Generators: Commercial grade for continuous use.
3. Controls: Independent thermostat to control each room, automatic flush, high temperature limit, sight glass, low water cut-off, pressure gauge with alerts reporting to Loss Prevention **<16>** office.
4. Door and Frame: Wood; provide louver if required for ventilation.

C. Utilities: Provide water and electric service, and access to drain.

D. Finishes:

1. Floor: Sealed concrete or VCT or epoxy paint.
2. Walls: Painted; epoxy is preferred.
3. Ceiling: Exposed (not painted).

4.12 Treatment Rooms

A. Program: Provide one or more quiet, soothing functional rooms for performing massage and related treatments.

1. Provide quantity and type of rooms required by the Facilities Program.
2. Comply with the Marriott Spa Design Guide Standards.
3. The environmental comfort of the patron is essential and requires adjustable control of temperature, lighting and audio.

B. Space Planning:

1. Type: Group massage rooms together for efficient operation by attendants.
2. Acoustics: Massage rooms require an absolutely quiet operation by attendants.

C. Size / Area: 11 m² (120 sq. ft.) minimum (per room).

D. Features:

1. Table: Adjustable, massage table.
2. Counters: 91 cm (3 ft.) high; 61 cm (2 ft.) deep; length, 1.8 to 2.4 m (6 to 8 ft.); granite or *Corian*.
3. Cabinets: Wall and base cabinets with:
   a. Positioned not as a focal point as one enters the room.
   b. Painted wood.
   c. Adjustable shelves with locks at drawers and doors.
   d. Door and drawer silencers (felt or rubber).
   e. One section of the wall cabinet with glass doors and light for product display.
   f. Section for laundry hamper; covered.
   g. Section for trash; covered.
   h. Sink: Porcelain with hot and cold water, mixing valve and gooseneck spout.
4. Ceiling: Patrons view the ceiling for most of their treatment, so every design aspect of the ceiling requires review. Integrate the design features to reinforce the patron's relaxation.
   a. Lights: Avoid harsh, direct lights above massage area.
   b. Speakers; sprinklers: Coordinate placement with ceiling design.
   c. Diffusers and Grilles: Avoid direct drafts on patrons. Integrate or conceal diffusers and grilles with ceiling design.
   d. Design: Include interesting features utilizing coffers, vaults, etc.

5. Window: The natural light provided by a window is beneficial. Provide operable or fixed operation based on location and climate. Provide an appropriate privacy treatment.
6. Door: Solid core wood with the following:
   a. Acoustical seal.
   b. Latch set only (no lock) with quiet operation.
   c. Solid door frame of wood (preferred) or filled hollow metal to minimize noise.
7. Mirror: One wall of room may include a decorative mirror.

E. Audio: Equip each room with an individual sound system with channel and volume controls.**<13C>**

F. Thermostat: Provide each room with individual controls. **<15A>**

G. Lighting:
1. Decorative and indirect lighting or wall sconces on dimmer controls.
2. Undercounter lights for counter work.

H. Electrical: <15C>
1. Floor outlet for massage table.
2. Counter outlets; 4 for related appliances.
3. Wall outlet; 2 near head for steamer and product trolley (so that room can also accommodate facials).
4. Controls: Organize audio, temperature and lighting controls in one location with a unified appearance.

I. Finishes:
1. Floors and Base: Resilient surface for the long-term comfort of the attendant. Resilient wood or resilient vinyl composition; may be dictated by law.
2. Walls: Paint or wallcovering.
3. Ceiling: Gypsum board, painted

4.13 Dispensary – Attendant

A. Program: Provide a storage area to accommodate bulk storage of supplies (towels, robes, slippers, etc.) required by the attendant and general equipment, supplies and accessories for grooming and locker area.

B. Space Planning: Adjacent to Locker Area to conveniently resupply lockers and to passively supervise access to the room.

C. Size: At small facility provide large closet or accommodate in treatment room. At larger facility base on Marriott operations.

D. Features:

1. Shelving for towels, robes, slippers and equipment.
2. Door: Lockable.
3. Access: Provide solid ceiling or walls to underside of structure above to deter theft.

E. Finishes:

1. Floor and Base: Vinyl or porcelain tile.
2. Walls: Painted.
3. Ceiling: Painted gypsum board or acoustical tile.

4.14 Relaxation Area

A. Program: Provide a quiet room for relaxing before or after treatments as required by the project Facilities Program.

B. Space Planning:

1. Separate facility for male and female, typically.
2. Locate adjacent to locker area with convenient access to treatment areas.
3. Position to avoid direct views into locker or treatment areas.

C. Features: Provide the following features and amenities:

1. Visual features such as artifacts, water features and exterior views are encouraged.
2. Adjustable lounge seating with drink table and reading light for 4 to 8 occupants.
3. Television and audio entertainment. **<13C>**
4. Locate a small beverage hospitality station at the entry.
5. Lighting: Provide indirect and direct lighting to meet lighting levels. **<15C>**

D. Finishes:

1. Floor: Carpet or wood with area rug
2. Wall: Millwork and vinyl wallcovering
3. Ceiling: Smooth painted gypsum board

4.15 Kids Club & Teen Facilities (option)

A. Overview: Although not a Brand requirement, provide a Kids Club & Teen Facility when required by the project Facilities Program particularly for resorts, leisure destinations and large properties.

B. Program: When required, design and provide facilities for guests' children and teenagers that comply with a recreation program on a case by case project basis. Typically, the following spaces are included in the facility:

- Entrance / Reception
- Activities Room
- Storage Room
- Pantry
- Toilet
- Playground
- Teen Facility

C. Size: See the Facilities Program.

D. Design Parameters: Design the facility to accommodate children.

1. Select durable materials and finishes that are easy to clean.
2. Accessibility for Guests with Disabilities: Locate facilities and amenities along accessible routes and design facilities for access for guests with disabilities.
3. Avoid fixtures with sharp edges and corners. Tables and chairs with rounded corners are preferred.
4. Doors intended to be operated by children must not be too heavy or closers too strong to prevent opening.

E. Finishes: **<GR>** Design interior spaces with appropriate durable finishes. Design to be thematically aligned with location and age group. Current pop culture icons and themes are incorporated into the interior decoration.

1. Floors: Carpet, wood; VCT at service areas
2. Walls: Murals, paint, vinyl wall covering, ceramic tile at food areas and toilet rooms
3. Ceiling: Acoustic ceiling tile

F. Loss Prevention: **<16>**

1. Security: If required by Loss Prevention Risk Assessment, provide video surveillance equipment.
2. Vision Panels: In order to avoid opportunities for inappropriate contact with children, provide windows, door sidelights or glazed windows in doors at enclosed rooms (offices, storage, preparation, etc.) to permit passive surveillance of activities. Not required at toilet or retail dressing rooms.

3. Glazing: Provide safety glazing and decals at all large glazed areas that are subject to human impact.
4. Windows & Safety Glass: See Modules **<GR3>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and safety glass requirements.
5. Steps, Stairs & Ramps: See Module **<16>**.

G. Kids Club

1. Entrance / Reception: Provide an attractive entrance portal and reception area to greet guests and their children.
   a. Entrance: Provide a well lighted and attractive entrance portal. This is the child's first impression of the facility.
   b. Doors: Glazed (safety glass) doors to permit passive monitoring of arriving and departing guests.
   c. Chime: Provide an electronic door chime for perimeter doors to alert employees when exterior doors are opened.
   d. Reception Desk: Provide a reception desk and chairs for employees and guests to discuss and exchange information about the program. Provide computer (PMS), POS, telephone, printer and file cabinet. **<13A> <13B>**
2. Activities Area: Provide a large open space to accommodate a variety of play activities.
   a. Open Area: Provide groupings of tables and chairs to accommodate small groups of children. Select chair and table heights to accommodate children of different ages.
   b. Floor: Divide floor surface into carpeted areas for floor play activities and wood or tile floor surfaces for high maintenance activities.
   c. Library Wall: Provide a counter, cabinets and wall shelves to store books, games and toys. Provide a TV with DVD and cable connection for viewing from chairs or the floor.
   d. Computer Area: Provide a counter or alcoves for computer stations. **<13A>** Internet access is not provided to avoid unintentional access to unauthorized websites.
3. Storage Room: Provide a lockable room (10% of activities area) with shelving to accommodate play equipment and games.
4. Pantry: Provide a pantry to prepare light snacks and beverages. Provide a counter, sink, microwave, refrigerator and base and wall cabinets.

5. Toilet: Provide a toilet and vanity with sink.
   a. Design fixtures for use by small children.
   b. Design facility for use by children with disabilities.
   c. Avoid automatic flush toilets that may frighten small children.
6. Service Closet: Provide a service area to store cleaning equipment and supplies, and to access a utility sink for wet crafts and cleaning.
7. Playground: Typically, provide the following features:
   a. Safety: Follow industry standards for play equipment design and play surface impact criteria.
   b. Playground Equipment: Pre-manufactured, commercial grade equipment is preferred.
   c. Avoid hot surfaces that could burn skin in hot climates.
   d. Furniture:
   e. Provide seating for parents.
   f. Picnic bench for outdoor snacks and activities.
   g. Ground Material: Provide wood chips or other natural or recycled cushioning materials below play equipment to cushion falls.
   h. Perimeter Enclosure: Provide 1200 mm (4 feet) high enclosure in landscaping around playground area to contain children and provide perimeter access control. Avoid enclosures and details that could entrap children. Integrate the enclosure with landscaping material to maintain the natural resort ambiance.
8. Water Play Area: See "Water Playground" above.

H. **Teen Facility:** Provide as required by the Facilities Program. The teen area is separate from the childrens' area and designed for guests between the ages of 13 and 17. A physical space for both structured and relatively unstructured leisure is preferred. The ideal space is divided into three zones: gaming, snacking and hanging out.

1. The Activity / Gaming Zone, depending on property location and requirements, could include the following:
   - TV and casual seating
   - Table tennis
   - Pool table
   - Computer stations
   - Craft / project area
   - Game tables
   - Gaming arcade
   - Beauty salon area
   - Tour / activity sign up / announcement board or desk
   - Kitchen area for cooking classes
   - A small storage room or office (required)

2. The Snacking Zone, depending on property location and requirements, could include the following:
   - Pizza oven
   - Ice cream parlor counter
   - Telephone station for room service with special menu
   - Soda fountain
   - Kitchenette area
   - Dining area with table and chairs, communal tables or counter
   - A small pantry with sink (required)
3. The "Hanging Zone" could include the following:
   - Large, comfortable, durable lounge seating
   - Coffee tables, lamps and side tables
   - Large screen television
   - Book shelves supplied with teen oriented reading materials including books and a magazine display, a DVD display, and video games including Wii
4. Some type of musical enhancements are included in the teen facility. Depending on property location and program, the following could be considered: Karaoke with stage area, jukebox, portable media player docking stations, dance floor and DJ room.
5. Toilets: Provide teens with convenient access to Public Area Toilets or provide a dedicated facility.
6. Support Areas: Provide storage, pantry and service closet as noted above for the Kids Club.

4.16 Indoor & Outdoor Facilities

A. Program: Include additional recreation facilities for indoor / outdoor recreation, activities when required by the project Facilities Program.

B. Indoor Facility: Locate in conjunction or in close relationship to Fitness Center. The following indoor facilities may be included:

- Handball and Racquet Ball Courts
- Game Room
- Billiard Room

C. Outdoor Facilities: When required, provide the following outdoor facilities:

- Outdoor swimming pool
- Tennis Courts
- Volley and Basketball Courts
- Outdoor Hand and Squash Ball Courts
- Golf Putting Greens and Practice Driving Cage
- Running / Jogging Path (where feasible)
- General Lawn Area

D. Rest Kiosk: When required, provide a small kiosk for outdoor activity areas situated beyond reasonable distance from Fitness Center.

1. Seating Areas: Protected (combination of trellis and roof) seating area.
2. Towels: Area for disbursement of towels (non-attendant / self-serve).
3. Refreshments: Drinking fountain and / or refrigerated beverage dispenser.

4.17 Systems Coordination

A. Reference: Coordinate with requirements of other Modules including:

- 13A Information Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical - Plumbing - Electrical
- 16 Loss Prevention

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STANDARDS

MODULE 5 RETAIL SPACES

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Retail Spaces

5.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Concept: The Autograph Collection is a diverse group of Independent Lifestyle Hotels and Resorts that embody an upscale level of design and service. Each property is unique and represents its Brand position through its design. The purpose of this guide is to assist in the integration of the functions outlined in this Module together with the project's Facilities Program and it's unique character to create a memorable design and guest experience.

B. Brand Essentials: Provide guest access to a variety of retail essentials and desired retail products as required by a market review.

1. Urban Market: Retail may be reduced (front desk staffed) at locations where 3rd party retail outlets are readily available in the immediate areas.
2. Remote Market: Staffed retail facilities for standard core products are required when 3rd party retail outlets are not available in the area.
3. Market Analysis: An analysis may dictate requirements for additional retail outlets as outlined in the project Facilities Program.
4. Resorts: At resorts, provide multiple retail outlets that support the destination experience.
5. Retail Programs & Core Products: Program and product selections require careful development to avoid conflicts with local laws, religious customs and cultural sensitivities of the hotel's region.

C. Planning: To avoid operational conflicts, coordinate retail requirements with Module **<2A>** - Public Spaces, Lobby, adjoining areas and interior design.

1. Entrance: Develop an entry with unobstructed display windows.
2. Resorts: Typically more extensive and may include a broader retail program.
3. Comply with governing codes and ADA guidelines for persons with disabilities.

D. Steps, Stairs, Ramps & Slip Resistance: See Module **<16>**. Make stairs and steps apparent through use of essential design elements (including ramps where required) and in compliance with governing codes.

E. Windows & Safety Glass: See Modules **<GR>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

F. Retail Reviews: Submit the following associated retail outlet features to MI for program review and acceptance.

- Retail design consultant
- Retail market concepts
- Location of assigned retail areas
- Retail mix and placement of concession spaces
- Merchandise assortment
- Operating hours / time
- Lease agreements - additional conditions and retail requirements and exclusive agreements
- Retail graphics / merchandising signage visible in public areas
- Illuminated signage / lighting designs, permanent and temporary, when appropriate and if allowed
- Graphics to support retail concept / theme. Vendor provided equipment and fixtures are not allowed unless prior MI acceptance is obtained.
- Proposed finish millwork and cabinetry design features for built-in and free standing displays.

G. Other Retail: Market analysis may dictate requirements for other retail outlets as outlined in the project Facilities Program.

- Hotel (Foodservice) Retail Outlets (option)
- General and Service Retail (option)

When a dedicated retail outlet is not integrated with the Lobby - Lounge concept, or the retail program includes multiple retail outlets or is a resort location, then comply with the following criteria for retail planning.

1. Resorts: Provide multiple retail outlets that support the Brand concept and theme.
2. Core Products: Develop retail core product selections to avoid project conflicts with governing laws, religious customs and cultural sensitivities of the region.
3. MI Reviews: Obtain and review related MI retail information that includes design principles and elements. Generally, fixtures and wall elevations are interpreted by a retail design professional.

5.2 Retail Spaces

A. Program: The Lobby Shop is the minimum essential retail component and guest amenity, sometimes incorporating grab & go for food and beverage items.

Express the Brand's core values. Provide multi-level displays and components utilizing the following principles:

- Excellent sightlines
- Displays with style
- Spacious feel
- Discreet signage

Based on market demands, utilize and proportion a retail mix of core, pantry and regional gift items.

B. Location: Position in the path of travel between the main property entrance, Registration and passenger elevators, and visually apparent, but never distracting from public area **<2>**.

C. Retail Mix: Determine the proportion of products in the retail mix by market demands.

1. Core: Sundry Items (basics for rushed shopping)
2. Pantry: Light food, beverages and snacks
3. Regional: Gifts and food that reflect the local flavor of the area (casual shopping)

D. Features:

1. Fixturing: Provide high quality retail fixtures such as the following:
   - *ALU*
   - *B&N Industries*
   - *Eric Brand Furniture*
   - *Patina V*
2. Refrigerators: Integrate refrigerated self-serve glass front beverage coolers with the interiors. No visible interior light when refrigerator door is closed.

E. Operating Hours: Typical hours are (7 days per week):

Opening Time:	0700 to 1000
Closing Time:	2200 to 2400

F. Loss Prevention: <16> Provide per Loss Prevention Review:

1. Surveillance Cameras (VSS): When required, locate per Loss Prevention Review. Prohibited in changing areas.
2. Theft Deterrent System: When required, conceal under floor magnetic product tagging theft deterrent system (no exposed pedestals).

G. **Finishes:** Examples include:
   1. Floor: Complement Lobby experience with natural materials such as wood, stone or terrazzo.
   2. Ceiling: Smooth finish

5.3 Lobby Shop

A. **Program:** If provided, a self contained store with a generous shop front window display, welcoming entrance and products within easy reach.

B. **Size / Area:** 32.5+ m² (350+ sq. ft.)
   1. Coffee: When included, provide additional floor space.
   2. Office: Allocate approximately 15% additional floor space for office and bulk retail storage.

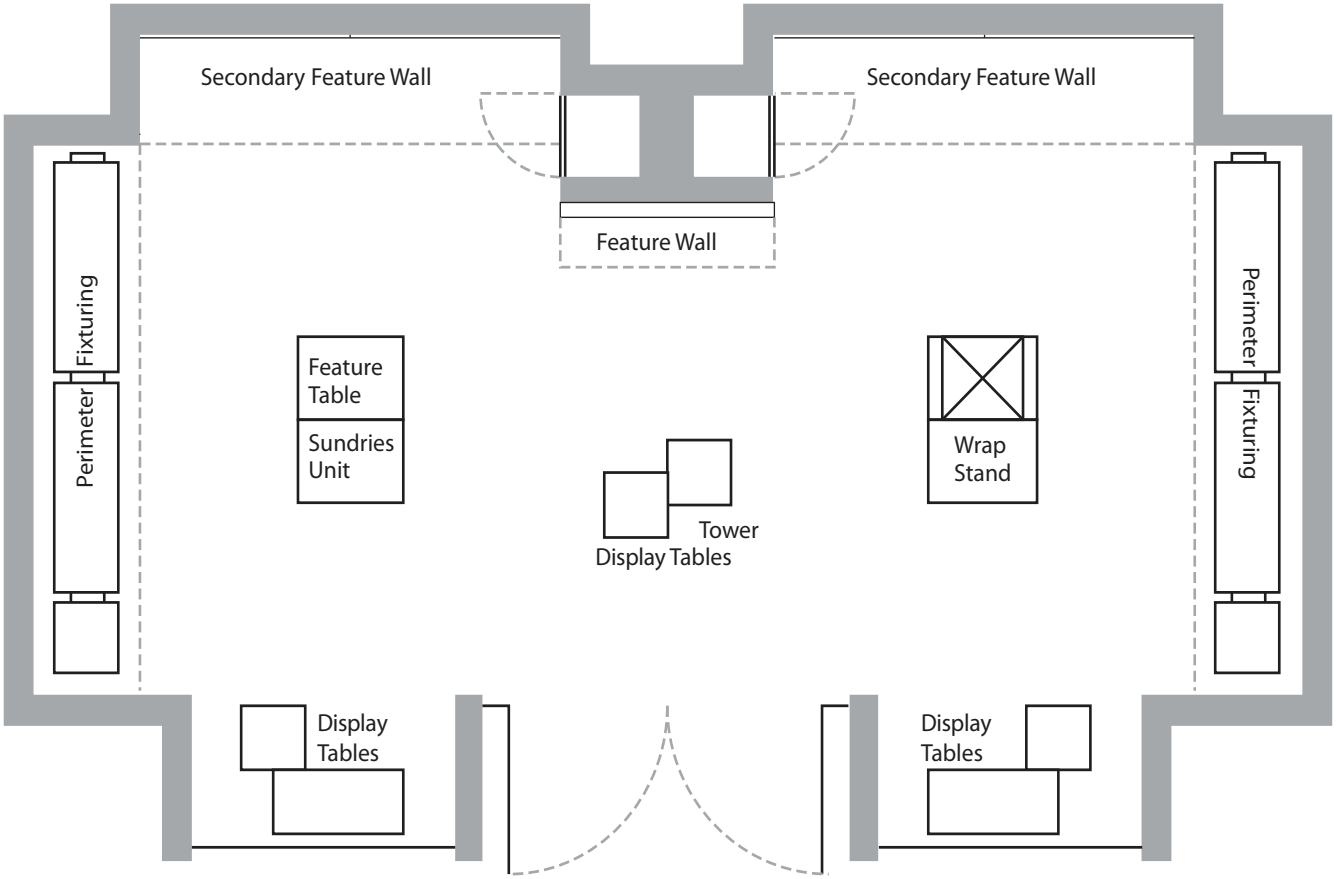
C. **Space Design:**
   1. Storefront: Provide a customized storefront that blends with the overall Lobby area character to provide visual exposure of merchandise from the public circulation area.
   2. Cash Wrap: Provide in a central location to maximize customer recognition allowing for site lines to store areas facing the store entrance.
   3. Merchandising Areas: Maximize areas to display retail products. Provide unobstructed wall areas, shelving, counter tops and cabinets to locate and display merchandise.
   4. Storage: Provide merchandise storage in undercounter, solid millwork storage cabinets (not to exceed 46 cm high (18 inch)) without compromising merchandising area. Provide bulk retail storage at adjacent retail Office.

D. **Fixturing Millwork:** Provide systems to feature products, and accommodate maximum flexibility. Utilize millwork for storefront and merchandising display consistent with the Lobby and Public Spaces.

E. **Construction:**
   1. Walls: Three solid perimeter walls that extend to structure above, for controlled access.
   2. Doors: Secure wide openings with sliding grill. Secure narrow openings with hinged full light glass door.
   3. Store Front: Limit glazed walls to entry and front of the store and coordinate open or glazed portions of storefronts with merchandising display to avoid unsightly views.

F. **Dressing Room:** If apparel is offered for sale.
   1. Location: Near cash wrap area to permit convenient sales assistance and to permit passive observation of Dressing Room use.

Figure 1 **- Example: Lobby Shop Plan - 350 sq. ft.**



2. Size: Comply with the Americans with Disabilities Act requirements.
3. Features: Include the following:
   - Mirror: Full length
   - Seating: Bench or chair
   - Clothes Hooks: Double
   - Door: With privacy latch
   - Lighting: Incandescent

G. Cash Wrap Desk: Provide to support retail transactions and manage customer activity. Include the following:

1. Location: Position to provide visual observation and shop control and guest service impact.
2. Features: Include the following:
   - Computer (conceal from direct guest view)
   - P.O.S. Station with printer, card swipe, cash drawer, barcode scanner (recessed, conceal from direct guest view)
   - Telephone
   - Counter for wrapping and bagging products at 90 cm (36 inch) height.

- Audio controls (unless in Office)
- Lighting controls (unless in Office)

H. Retail Manager's Office & Storage: Provide a desk work station at the retail shop for activities associated with managing the retail programs and storing inventory.

1. Size: 15% of retail area or 5 m² (50 sq. ft.), minimum.
2. Furniture: Desk, chair, file cabinets and storage shelves.
3. Storage Area: Provide for retail inventory and additional locked storage for bulk deliveries, if required.
4. Computer / PMS: **<13A>** Provide data connection.
5. Telephone / Fax: **<13B>** Provide device connections.

5.4 Boutique

A. Program: The Boutique is the minimal retail outlet located in clear view of the Registration area.

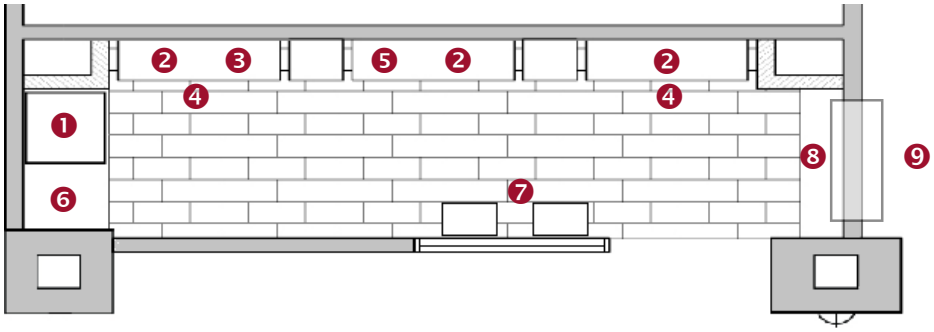
B. Size / Area: 14+ m² (150+ sq. ft.)

C. Features:

1. P.O.S. Station: Provide at Reception Desk to support retail transaction.
2. Millwork: Design millwork for storefront and merchandising display consistent with the Lobby.
3. Refrigeration: Undercounter only

D. Locking System: Provide discreet locking mechanisms to secure the Boutique products after hours. Provide glass doors or secured drapes. Gates in front of shelves are prohibited.

***Figure 2* - Example: Boutique Plan**



LEGEND

1. Refrigerator: <10> Undercounter glass front
2. Perimeter Retail Fixtures with Display Wall System
3. Sundry Retail Drawers: Apothecary style
4. Storage Drawers: For sundries, pullout type with locks
5. Feature Display Wall
6. Countertop & Backsplash: Stone
7. Display Table
8. Potential Transaction Counter
9. Reception Pods

5.5 Retail Outlets - Foodservice

A. Program: When required, provide guest options for food and beverage items and to generate additional revenue. Secondarily, a retail outlet promotes the property's culinary talents, reputation for food and beverage and outlets for catering department.

1. See the project Facilities Program and Module **<3>** Food & Beverage Concepts for project specific requirements.
2. Size / Area: Approximately 10 to 93 m² (100 to 1000 sq. ft.) excluding any adjacent cafe seating; see the project Facilities Program.
3. Facilities are managed by the property and are limited to complementary extensions of the property's adjacent food and beverage outlets.
4. Merchandising Program:
   - Bakery
   - Beverages
   - Cheeses
   - Fruits
   - Gourmet coffee
   - Liquor, wine and beer (if allowed)
   - Salads
   - Sandwiches

B. Relationship: In order of priority, the following criteria typically guides positioning of the spaces.

1. Tangent to and in conjunction with the reception area of the Three Meal a Day Restaurant **<3>**. This position permits shared utilization of personnel and in particular, cashiering functions.
2. At a position close to, but not directly associated with the Lobby. Location may permit direct exterior exposure that is advantageous to direct outside marketing and sales programs.
3. In conjunction with the retail area.
4. When possible, locate retail spaces with direct access to Back-of-House service and circulation.

C. Features:

1. Architectural Configuration: Outlet may be a prototypical shop concept or an open front cafe / brasserie design.
2. Product Displays: Provide in refrigerated and non-refrigerated display cases, self serve and attendant assisted bins, canisters and shelving kiosks that complement store / shop interior.

5.6 General & Service Retail

A. Program: Occasionally, and in response to a market analysis of location and commercial opportunities and demands, the property may support additional managed or leased retail shops, services, or independent retail arcade of concession shops. Additional retail shops may include the following:

- Jewelry and accessories
- Barber/beauty salon
- Florist
- Business Center
- Shoe shine
- Rental counters
- Travel agency

B. Reviews: Location, type and size is subject to MI review and acceptance.

C. Retail Management:

1. MI Managed Retail: Comply with the general principles and guidelines as established by MI.
2. MI Leased Space: If MI leases retail concessions, at a minimum, provide unfinished "shell" space with access to mechanical, plumbing and electrical.
   a. Access to and dependence of the property's facilities, services, and employees is restricted.
   b. For leased Retail, complement the overall property retail program, not to compete with other outlets.
3. Non-MI Management: General and Service Retail spaces are only included in the property program under limited conditions when reviewed and accepted by MI.
   a. Facilities and services of any such General Retail space not acceptable or directly managed by MI are separate and independent of the property and therefore not located within, proximate to, or associated with the property.
   b. There shall be no contractual relationship between the property or property manager and the unapproved General and Service Retail operation, including for example, any ownership interest or profit sharing. The property will not provide, promote, support, assist, reimburse, barter, and share any of the operational services or facilities or any others of a similar nature.
   c. If such property support facilities or services are requested for General and Service Retail spaces, they will be offered at non-preferential, market rates at MI's sole discretion.

D. **Relationship:** Generally, the following criteria guides the leased retail area facilities design:
   1. Shopping Area: Position and design as independent and self-contained facilities. Restrict access to and dependence on the property's Back-of-House, service and dock areas.
   2. Guest Access: From connecting gallery from the Registration and Lobby; securable and controlled by property management.
   3. General Public Access: From an independent arcade entrance, separate from the property.
   4. Facades: Provide layouts and facades to maintain consistent and uniform merchandising.

E. **Retail Features:** MI normally leases additional retail.
   1. Storefronts: Provide complete storefronts and shell space.
   2. P.O.S.: **<13A>** Leased spaces are not connected to property P.O.S. system.
   3. Telephones: **<13B>** Provide a minimum of two outside phone lines per tenant.
   4. Loss Prevention: **<16>** Provide conduit and wire for duress alarm to each tenant.
   5. HVAC: **<15A>** Provide dedicated HVAC unit.
   6. Electric Service: **<15C>** Provide 40 amp minimum electrical panel for each tenant space. Each tenant space may require separate metering if desired.
   7. Retail Displays: Provide lighted retail displays, when acceptable to MI, as desirable revenue producing fixtures, either built-in or as freestanding fixtures as designed by the Interior Designer.

5.7 Systems Coordination

A. Property Technology:

1. Point of Sales (P.O.S.) for Shop only: Include a cash register recessed in counter top at sales counter. Wiring and back of register shielded from customer view. **<13A>**
2. Telephone: **<13B>**
3. Computer: **<13A>**
4. Audio / Visual: **<13C>** Provide a full sound system with individual content zone and volume controls. Conceal speakers in ceiling and locate control discreetly in non-merchandise area. **<13C>**.
5. HVAC: Locate requisite thermostats, vent ducts, receptacles and alarms discreetly in non-merchandise spaces.
6. Utilities: Conceal utilities in the wall or floor. Vertical utility poles are unacceptable. **<13> <15>**
7. Discreetly locate power and data lines, light switches, thermostats and alarm system controls in non-merchandise spaces. **<15> <13>**
8. Water lines: Coordinate if needed in the design concept.

B. Lighting: <15C> Coordinate high end retail lighting ambience with surrounding light levels and interior design.

1. General Lighting: Provide pleasing light levels while spot lighting products.
   a. Ambient Lighting: Include recessed fluorescent or incandescent lighting with 480 to 540 lux (45 to 50 FC) at 76 cm (30 inch) AFF.
   b. Accent Lighting: Provide surface mounted track lighting at 1500 to 2000 vertical lux (150 to 200 vertical foot-candles) to highlight retail presentations.
2. Perimeter Lighting: Provide recessed LED or halogen adjustable downlights at 700 to 1000 lux (70 to 100 FC).
3. Decorative Lighting: Provide pendant lighting, located for maximum effect in display windows and at key points in the space.
4. Task Lighting: Provide task lighting over the register area in the Shop
5. Dimmers: Provide lighting on dimmers to enable light levels to transition throughout the day in sync with adjacent public space.
6. Controls: Locate lighting controls behind the desk or in the office. Do not locate in public areas or within display walls.

C. Reference: Coordinate with requirements of other Modules including:

- 2A Public Spaces
- 13A Information Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical - Plumbing - Electrical
- 16 Loss Prevention

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STANDARDS

MODULE 6 FUNCTION SPACES

May 2014

Contents

Function Space Overview

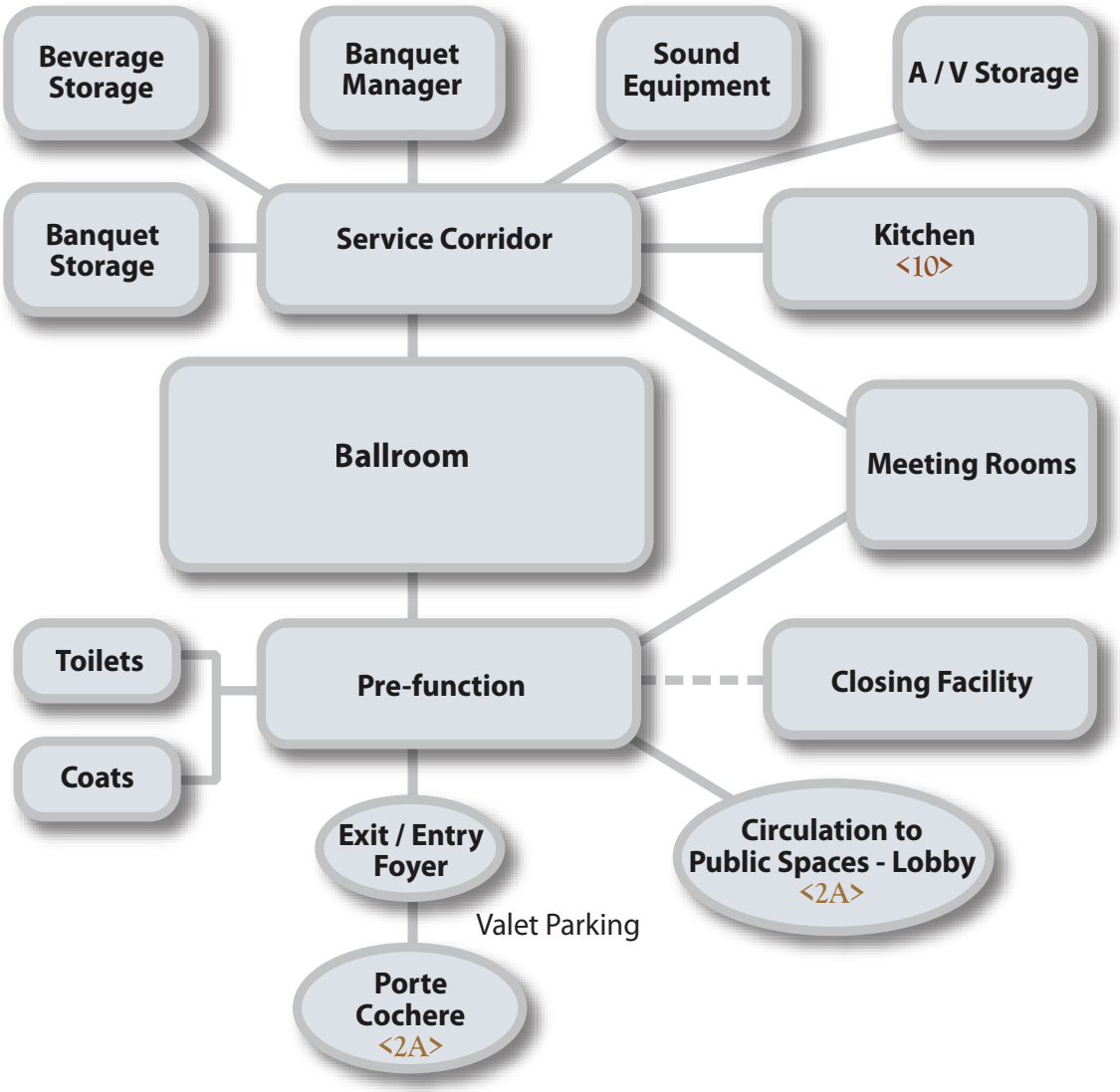
Function Spaces

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Contents

Figure 1 - Function Spaces Adjacency Diagram



Function Spaces

6.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Concept: The Autograph Collection is a diverse group of Independent Lifestyle Hotels and Resorts that embody an upscale level of design and service. Each property is unique and represents its Brand position through its design. The purpose of this guide is to assist in the integration of the functions outlined in this Module together with the project's Facilities Program and it's unique character to create a memorable design and guest experience.

B. Program: Provide hotel function spaces to include a series of rooms that accommodate a variety of guest meetings, conferences and social gatherings.
Select high quality finishes and materials similar in quality and design theme of Public Spaces **<2A>**.

C. Function Spaces - Overview

1. Pre-function Spaces: Each Function Space requires a pre-function area with requirements based upon the specific function space needs. The ballroom pre-function requires dedicated spaces.
2. Ballrooms: Multi-functional, column free meeting and event spaces with high quality finishes. Finishes are at the highest level for the function spaces.
3. Meeting Rooms: Divided spaces grouped together and associated with specific ballrooms, and function as independent meeting areas or as breakout meeting spaces in ballrooms with operable partitions.
4. Boardrooms: These rooms have dedicated reception area, fixed furniture and a high level of finishes.

D. Occupancy Load Factor: **<14>** In order to accommodate a variety of function activities, utilize 0.65 m² (7 sq. ft.) per person for emergency exit capacity in Ballrooms and Meeting Rooms (assume non-simultaneous exiting of Pre-function Area).

E. Space Planning: Organize function areas around an architectural feature or distinctive interior design theme.

1. Separate function areas from Guestrooms, Guestroom Corridors, Public Areas and from primary guest entry and lobby space to minimize the impact on guest check-in. Generally, this arrangement provides more efficient circulation and building design.
2. Provide dedicated shuttle elevators **<12>** when elevators are required to access function space from public areas.

Avoid using the guestroom tower elevators for function floor access because of delays, guest floor controlled access and circulation conflicts between guest and public.

3. Provide function rooms with access to Back-of-House (BOH) service **<8> <9>**. Overall plan concept requires separate function Service Corridor access and avoiding BOH corridors designed for heavy traffic or service access to other non-function rooms.
4. In addition to providing a series of functional spaces, the design integrates a distinctive design organization that focus on elements such as a prominent view, major architectural or water feature, such as garden, grand stair, fountain or market responsive theme.

F. Spaces, Rooms & Areas: Accommodate the following function and support spaces:

- Pre-function Spaces
- Ballrooms
- Meeting Rooms
- Boardrooms
- Business Center
- Catering Showroom
- Public Support Spaces
- BOH Function Service Spaces
- Banquet Storage
- Sound Equipment
- A / V Equipment Storage

In larger properties and where required by the project Facilities Program, the function spaces may include an Exhibit Hall, Flex Hall and additional Ballrooms to support a larger scale conference center program for trade shows and exhibits. Contact MI for design criteria for these spaces.

G. Exterior Function Spaces: See criteria at the end of the section for *Function Spaces* in this Module and coordinate with requirements of Module **<1>** - Site & Building Exterior.

H. Resource: See *Event Space Design* document for supplemental information and design guidelines.

6.2 Design Features

A. General: Provide high quality finishes consistent with the project's programmed spaces. Consult the MGS *Web Based Design Tool* for design guidance.

1. Floors: Carpet (80% wool, 20% nylon *Axminster,* 9 row) or combination of carpeting with hard surface accents.
2. Walls: Architectural finishes such as stone, wood, glass and mirror complemented with decorative wall lighting to be used to convey an upscale level of quality.
3. Doors: Incorporate millwork details, wood panels, with similar materials to complement the wall design.
4. Windows:
   a. Meeting Space: Drapery treatment with blackout capabilities or motorized blackout shades.
   b. Function Space: Drapery treatment and motorized solar shade if required.
5. Ceilings: Integrate grills, diffusers, access panels, sprinkler heads, hang points, cove lighting with appropriate finishes and trim.
   a. Provide a combination of slim line frame tegular edge drop-in or interlocking smooth surface acoustic ceiling tile, that conveys an upscale appearance with multi-level coffer or dome ceilings.
   b. The ratio of drop-in to hard, smooth surface finish ceiling area is based on the acoustic consultant's analysis for the function spaces (Pre-function, Ballrooms, Meeting Rooms and Board Rooms).
   c. Typically, limit the maximum quantity of drop-in ceiling areas as follows:
      - Ballrooms and Pre-function: 30%
      - Meeting Rooms: 40%
      - Boardrooms: None permitted
6. Open Ceiling: An open ceiling system is an acceptable option for the Ballroom.
   Provide with decorative gypsum board articulations suspended beneath an open (black field) ceiling for grills, diffusers, sprinkler heads, hang points (decorative or architectural lighting) and appropriate acoustic treatment to create a unique design statement.
7. Decorative Chandeliers & Pendant Light Fixtures: Locate on smooth ceilings (gypsum board, plaster, etc.). Do not install fixture directly on ceiling tile system.

B. Structural: Design and coordinate loading requirements with the project's structural engineer.

1. Floor Live Loads: Design floor live load for a minimum of the following:
   a. Hotel Ballroom & Prefunction: 485 kg/m² (100 lbs./sq. ft.); in Hotel Ballroom provide structural system responsive to dance floor vibration loading with accelerations less than 2% of g, (the industry recommended limit).
   b. Meeting Rooms: 485 kg/m² (100 lbs./sq. ft.)
   c. Boardrooms: 244 kg/m² (50 lbs./sq. ft.)
2. Hang Points: At a minimum, provide six hang points per Ballroom Salon, subdivisions and at primary Ballroom head table positions. Based on the facility size, configuration and market being served, utilize the following as a guide and coordinate quantities with MI:
   - Large Ballrooms: 1 per 18.5 m² (200 sq. ft.)
   - Small Ballrooms: 1 per 37.2 m² (400 sq. ft.)
3. Elevated Work Platforms: If horizontal features can be accessed by personnel, provide reinforced, flat platform surfaces to support persons, equipment, tools, installation items to facilitate workers mounting and installing decorations, signage, etc

C. Natural Light: Where possible, locate and orient the function space program (Ballroom, Meeting Room, Boardroom) to provide exterior windows for natural light as an amenity into function spaces. Coordinate the following:

1. HVAC: Verify that heating and cooling capacities account for window loads.
2. Blackout Drapery: provide motorized window blackout curtains that effectively block daylight and are easy to operate when required for A/V presentations.
3. Skylights: Daylight from skylights is difficult to control and exclude, and typically not recommended.

D. Windows & Safety Glass: See Modules **<GR3>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

E. Steps, Stairs, Ramps & Slip Resistance: See Module **<16>** - Loss Prevention.

F. Acoustic Controls: Coordinate with Interior Design as applicable.

1. Acoustical Materials: 50 mm (2 inch) minimum thickness with NRC 0.70 minimum rating. Provide acoustically absorptive treatment on walls, ceiling and deck as required for speech intelligibility, including audibility of the audio / visual system.
2. Wall Treatments: Provide acoustical wall treatment and materials to reduce the impact of sound echoes from multimedia events in large function spaces.
3. Reverberation Time (RT): 60 maximum = 1.2 seconds.
4. Operable Partitions: STC 54 minimum; see "Operable Partitions" section in this Module for operable partitions, flanking walls and bulkhead acoustic requirements.
5. Acoustic Ratings: To obtain the required acoustic STC design ratings, coordinate and construct assemblies to form a continuous airtight sound barrier around operable partitions, at the floor, wall above partition and at partition storage pocket details.
6. Wall Above Operable Partitions: STC not less than operable partition. Coordinate wall detail with operable partition track to provide continuous acoustic rating with joints and penetrations sealed. See "Operable Partition" section.
7. Flanking & Permanent Walls: STC 55 minimum; sound isolate the function spaces from surrounding and adjoining spaces so events are not adversely affected by adjacent functions.
   Construct walls continuous from floor to deck structure above and fully seal voids and allowable penetrations.
8. Service Access Panels: Integrate utility service panels into wall designs without compromising required wall sound transmission class.
9. Building Envelope: Select products to provide appropriate sound isolation characteristics. See Module **<1>** "Acoustic Control" section for building envelope requirements. Provide exterior construction, including doors and windows, so that environmental noise (including aircraft, road traffic, etc.) does not adversely affect the interior functions and events.
10. Building Mechanical Systems: See Module **<15>** for maximum allowed noise level from mechanical equipment.

G. **Property Technology:** See Modules **<13A> <13B>**. Provide Wi-Fi, cell phone coverage, sound and teleconferencing equipment in Function spaces for guest access. Consult the CTR for wired PI criteria.

H. **Audio / Visual (A/V) Equipment:** **<13C>** Provide state-of-the-art technology in keeping with current Brand Standards.
1. Speakers: Provide concealed ceiling speakers in rooms 185 m^2 (2,000 sq. ft.) and larger. Verify requirements with the project design team.
2. Projection Screens: Verify if ceiling recessed projection screens are required in designated function spaces.
3. Assisted Listening: Provide portable (not built-in) listening equipment for the hearing impaired in compliance with governing accessibility regulations.

I. **Fire Protection & Life Safety Devices & Equipment:**
1. Reference: Coordinate with requirements in Module **<14>**.
2. Fire Extinguisher Cabinets: If required, solid front, paint to match background color, if permitted by governing code.
3. Exit Signs: Recess in walls, if permitted by governing code.

J. **Mechanical / Electrical Accessories:** Conceal electric outlets **<15C>**, telephone, audio, cable TV jacks, etc. **<13>** in walls or baseboards or in access panels. Integrate access panels into walls and applicable millwork of high quality spaces and rooms. For mechanical and electrical grilles, plates, doors, accessories, etc., where applicable, match or conceal devices within surrounding wall and ceiling finish.

6.3 Interior Design - General

A. Application: Ballrooms; Meeting Rooms; Boardrooms and Pre-function spaces. See applicable sections in this Module.

B. Level of Quality: Select high quality finishes and materials similar in quality and design theme of public spaces **<2A>**.

1. Coordinate selection of decorative furnishings, millwork, lighting, artwork and interior landscaping.
2. In order to maintain guest comfort, verify that heating and cooling variations caused by natural light, artificial light, heat and humidity from users are considered in the environmental control design. **<15>**

C. Acoustics: See "Acoustic Controls" in this Module. Coordinate with interior design and acoustic materials.

D. Graphics & Signage: See Modules **<GR2> <16>**.

1. Occupancy Loads: Posted according to governing code.
2. Ballroom Salons & Breakout Rooms: Non-illuminated signs or LCD screens.
3. Locations: Coordinate signs, electronic reader boards and graphic locations with lighting, wall millwork and detailing; allow for door swing and door clearance.

E. Interior Landscaping: Emphasize use of live botanicals.

F. Lighting: **<15C>** Feature decorative fixtures such as, decorative ceiling fixtures and wall sconces mixed with architectural lighting to provide adequate light levels.

1. Locations: Light fixture locations have priority over location of speakers, grilles, fire protection devices, and similar exposed items. Coordinate fixture placement to create aesthetically pleasing patterns.
2. Decorative Ceiling Fixtures: Generally, these fixtures, such as chandeliers, weigh 400 kg (900 lbs) and are 2.5 m (8 ft.) diameter. Review load and structural support details with structural engineer and MI.
   a. Determine details required for seismic loads and acoustic control such as spring mounting details.
   b. Secure fixtures to structure above with stainless steel safety cable.
   c. Consider electric winch control equipment to lower / raise fixtures for service and maintenance.
3. Wall Sconces: Mount to walls with maximum 10 cm (4 inch) projection when less than 2.03 m (6'-8") above finish floor.

6.4 Furniture, Fixtures & Equipment (FF&E) - General

A. Design Concept: Design and select FF&E products and materials appropriate for commercial application while projecting a warm comfortable environment with clear and distinct coloration.

B. FF&E Criteria: See Module **<GR4>** for Public Area FF&E products criteria.

C. Carpet:

1. Minimum Quality: 80% wool; 20% nylon, 9 row *Axminster* carpet. See Module **<GR4>** for specifications.
2. Scale of Carpet Pattern: Appropriate to grandeur of the space.
3. Carpet Padding: Synthetic rubber or rubber compound, *Tredmor* 80 oz./sq. yd. by *Sponge Cushion*.
   - Anti-microbial / 98% moisture resistant
   - Flame Retardant: DOC-FF-1-70 Pill Test
   - Installation: Double glue down

D. Window Treatment: Provide decorative window treatment; sheers, stationary side panels, valances or wood valance.

1. Black out capability in Ballrooms, Meeting Rooms and Boardroom.
2. Provide appropriate design style for location with emphasis on grand scale of the space.

E. Seating: Provided under FF&E package.

1. Upholstery Materials: Leather and fabrics suitable for heavy commercial use.
2. Fabric Pattern: Select patterns with good coverage; avoid fragile weaves and materials.
3. Provide small seating groups in Pre-function spaces and directly outside Meeting Rooms and Board Room.
4. Banquet Chairs: Provide chair ganging (interlocking) device. **<14>** Designer specifies fabric intended for heavy duty commercial use.

F. Softgoods: Treat material with required and appropriate fire retardant treatment and soil protection treatments.

G. Casegoods: Select furniture pieces that are scaled and of a high quality adequate for public space use.

1. Cabinets: Built-in millwork cabinets and counters with polished and sealed stone tops
2. Top Protection: Include natural stone, quartz or tempered glass top protection with pencil polished edge for credenzas, console & cocktail tables, and end & side tables.

H. Art & Artifacts:

1. Artwork: Place artwork in featured locations with appropriate lighting.
2. Custom Packages: A unique collection of varying media to tie into Brand pull-through.

6.5 Public Restrooms

A. Program: Provide accessible restrooms and family facilities within the Pre-function Spaces in sufficient quantity to support each hall and function space division, and not clustered in one location.

B. Location: Position restrooms convenient to function area division entrances accessible from Pre-function Spaces.

C. Fixture Quantity: Typically, provide 1 fixture (toilet or urinal) per 930 m^2 (1,000 sq. ft.).
Coordinate design and quantities with market demands and governing codes.

D. Drinking Fountains: Provide adjacent to restrooms.

Function Spaces

6.6 Pre-function Spaces - General

A. Program: Provide dedicated pre-function spaces for the function spaces such as Ballrooms and Meeting Rooms.

B. Size / Area: See the project Facilities Program.

C. Location:

1. Position the pre-function spaces, so the circulation path to other facilities, such as to Meeting Rooms or other Ballrooms is not through a Ballroom Pre-function area.
2. Provide convenient access to Public Support Spaces and restrooms.
3. Provide access to Banquet Service Corridors, Public Toilets (Restrooms) **<2>**, Coat Rooms, Elevators, Lobby, Public Support Spaces, Property Internet (PI) and Wi-Fi **<13A>**.
4. Direct access to exterior space is desirable if possible.

D. Space Planning: Avoid use as circulation path to other facilities, such as Meeting Rooms.

1. Provide service access from BOH Service Area to Pre-function and to exterior function terraces. Direct access to exterior is desirable.
2. Natural Light: Provide natural light and views at windows and skylights.
3. At large function spaces, provide an exterior Pre-function Porte Cochere, Entrance and Foyer similar, but secondary to main hotel entrance (to avoid confusing guests) since function traffic (cars and guests) will congest the main hotel entrance **<2>**.

E. Registration Rooms & Meeting Planners Office: See "Public Support Spaces" under the *Function Support* section in this Module.

F. Hang Points: If required, design and coordinate loading requirements with the project's design team and structural engineer.

1. Provide a series of hang points to support 23 kg (50 lb.) load for temporary signage, banners, etc.
2. Provide structural hang points at designated locations to support event banners, signs and seasonal decorations, etc.
3. Provide hang point locations with unique requirements for each property.
4. Review and verify design loads, locations and unique hang point locations and requirements with the project design team.

5. Typically, locate hang points adjacent to function space entrances, above registration areas and along the length of the Pre-function area.

G. **Acoustics:** See "Acoustic Controls" section above. Select acoustic treatments to minimize noise in pre-function spaces and so noise in Public Spaces does not negatively impact adjoining function spaces.
   1. Walls: Provide sound rated walls to isolate function spaces from the Pre-function and BOH spaces.
   2. Vestibules: Provide vestibules for sound isolation at BOH spaces that adjoin function spaces and Meeting Rooms.

H. **Doors:**
   1. Interior Doors: See "Hotel Ballroom" doors. At Meeting Room, Salon entrances and public spaces, provide wood doors and frames with heavy articulated wood or stone casings, appropriately scaled to the ceiling heights of the room.
   2. Exterior Doors: Verify requirements with the project design team.

I. **Service Access:** Provide from BOH Service Area to the Pre-function and exterior function terraces.

J. **Windows:** Provide natural light and views to outdoors through large scale windows wherever possible.
   1. Windows provide a connection to the project's location and assist in way-finding.
   2. Provide sun shading at pre-function area windows and blackout capability with 200% fullness, full length draperies if provided. Verify configuration with project design team.

K. **Seating Areas:** Scale and size seating and furniture based on Pre-function space size.
   1. Avoid obstruction of emergency egress.
   2. Size seating groups for ease of repositioning by employees.
   3. Provide seating groups for conversation activities of guests.

L. **Graphics & Signage:** See Module **<GR2>**.
   1. Prominently identify each function space such as Ballroom and Salon names in the Pre-function area via graphic signage and electronic function boards at each primary room entrance.
   2. Identify function space names at each function space entrance, subdivision and salon entrance with easy to read graphics by most persons from approximately 18 m (60 ft).
   3. Provide attractively detailed overhead way-finding signs designed to fit the project's theme and location.
   4. See Module **<13C>** for electronic way finding signs.

M. Artwork: Place artwork in featured locations with appropriate lighting. Include custom packages; a unique collection of varying media to tie into Brand pull-through.

N. Services Access Panels: **<13> <15C>** Provide concealed power, microphone, A / V system and controls, display power and telephone voice / data connections in wall access panels (interior and exterior) of the Pre-function area At glazed walls, provide floor boxes flush with floor.

6.7 Ballroom Pre-function

A. General: Follow the above Pre-function Space general criteria and provide Pre-function space for the following Ballroom activities:

- Assembly
- Buffet
- Circulation to Ballroom events
- Intermission activities
- Registration
- Reception

B. Location: Easily accessible from primary hotel Entrance and Lobby.

Extend pre-function along front and sides of Ballroom to serve Salons.

C. Size / Area: Typically, the Ballroom Pre-function area is 40% of the net Ballroom area with adequate space for each Ballroom division.

Accommodate space for temporary set-up of food and beverage.

1. Corridor Width: 4.6 m (15 ft.) minimum clear to accommodate emergency exiting, ballroom partition pockets, food service set-up and socializing area.
2. Ceiling: 3 m (10 ft.) minimum above floor. Higher ceilings are required for large facilities.

D. Credenza: Provide a focal point casepiece with artwork and side chairs, and designs that discourage relocation. Design to support beverage service.

E. Mobile Furniture: For large-scale events, design as needed, supplemental, movable food and beverage service bar to complement the Ballroom Pre-function interior design.

F. Finishes:

1. Floor & Base: *Axminster* carpeting with pattern scale appropriate to the space or a combination of carpet with stone accents. Provide large scale wood or stone base.

2. Walls: Provide elegant and beautifully detailed with stained or painted wood trim walls consisting of, chair rail, stone panels, wall coverings and crown moldings.
   a. Provide corner guards at locations subject to impact from moving and portable equipment.
   b. Integrate moldings with decorative elements such as mirrors and wall sconces.
3. Ceiling: Provide multi-level coffer or dome ceilings. Accent with millwork trim and integrate with recessed lighting and grand chandeliers or lighting elements.

6.8 Meeting Room Pre-function

A. **General:** Follow the above Pre-function Space general criteria. When Meeting Rooms are not connected to a Ballroom Pre-function area, provide a dedicated Meeting Room Pre-function area for the following activities:
- Buffet for meeting attendees
- Box lunch setup
- Circulation
- Intermission activities

B. **Location:**
1. Extend the Pre-function area along the full front of Meeting Room clusters.
2. Position the Meeting Room Pre-function so the circulation path to other facilities, such as to Ballrooms or other Meeting Rooms is not through a Meeting Room Pre-function area.
3. Provide convenient access to Public Support Spaces.
4. Direct access to exterior space is desirable.

C. **Hang Points:** If required, provide as determined by the project design team for Ballroom and Pre-function Spaces.

D. **Acoustics:** See “Acoustic Controls” above.

E. **Doors:** See “Ballroom” doors.

F. **Food & Beverage:** Provide temporary food and beverage setup and include adjacent niches for coffee setup and service stands.

G. **Service Access:** Provide from BOH Service Area to the Pre-function and exterior function terraces.

H. **Finishes:** Provide similar to Ballroom Pre-function finishes.

6.9 Function Spaces - General

A. Program: Design and provide function space facilities with applicable subdivisions, operable partitions, pocket doors, pre-function, service and exhibit entrances. See below for general and specific function space criteria and design requirements.

B. Location: Position the function spaces with the following spatial connections:

- Access to major public circulation routes and lobby
- Public Support Spaces
- Pre-function Spaces
- Registration Desk
- Banquet service corridor, catering, BOH services
- Receiving Area and Dock Facilities **<9>**
- Storage **<9>**

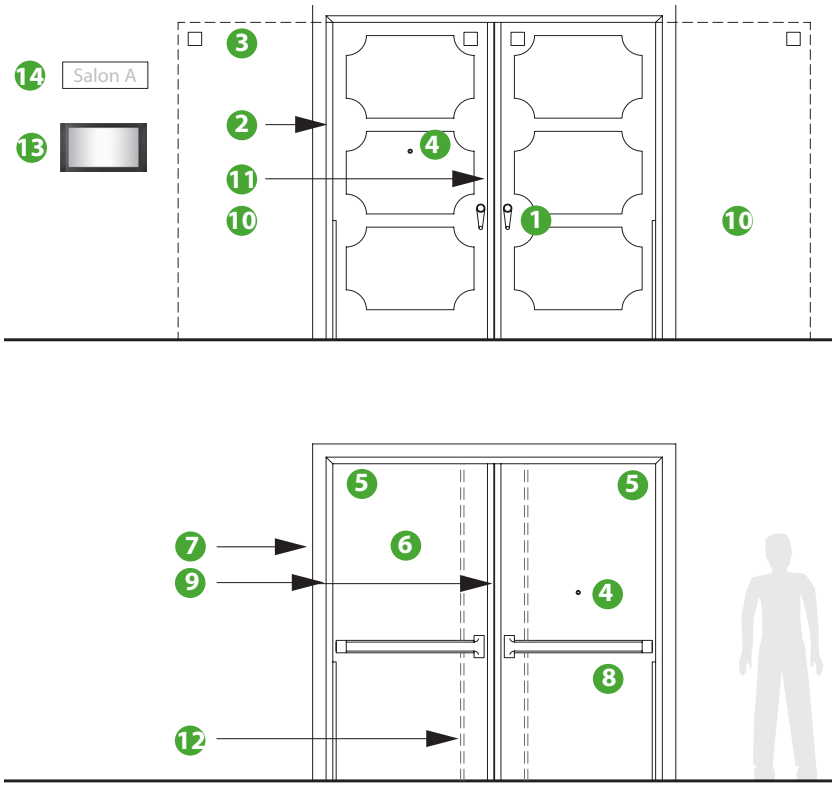
C. Acoustics: See "Acoustic Controls" above. Provide acoustic separation of the function spaces and divided areas such as Ballroom Salons and Meeting Rooms for a serviceable facility.

D. Natural Light: See "Design Features" above in this Module.

E. Doors: Provide fire and acoustic rated doors, frames and hardware for the function spaces and as required by related Modules. Provide hollow steel (for durability and hardware coordination) or solid wood (do not provide gypsum core doors).

1. Door Swing: 180 degrees lay flat against wall in open position.
2. Door Finish: Match door materials with the interior design theme. Include applied finish or decorative laminate, or painted finish and raised moldings at public and service entrance doors selected by Interior Designer.
3. Door Hardware: See *Figure 2* and Module **<GR>** for typical hardware requirements and recommended installation locations.
4. Egress: See Module **<14>**. Provide panic hardware, closers and electromagnetic door holders, regardless of the doors' fire or smoke rating.
5. Locks: Electronic lock system (same as guestroom) preferred. Key operated locks are acceptable if provided with removable cylinders for convenient security cylinder replacements.
6. Viewport (peep-hole): Looking into function space from Pre-function and Service Corridor side.

Figure 2 - Example: **Ballroom Doors**



Door Hardware & Accessories

1. Lock (electronic or key)
2. Continuous Architectural Hinge
3. Magnetic Hold Open (connect to FACP)
4. Viewport
5. Closer (concealed)
6. Door (wood or metal)
7. Door Frame (metal with wood trim)
8. Panic Hardware
9. Acoustic Seals (door perimeter)
10. Door in Open Position (verify that graphics, lights, etc. are not obscured)
11. Edge Protector
12. Concealed Vertical Rods
13. Digital Signage
14. Room Identification (static) with ADA

7. Kick Plate: Allow 25 cm (10 inch) minimum below trim molding for kick plate at Ballroom side.
8. Edge Angle: Provide protective meeting stile brass edge angle at Ballroom side of service and Ballroom doors.
9. Door Hardware Finish: Match hardware with the interior design theme.
10. Door Holders: Provide electromagnetic door holder devices with built-in 24 Volt controller.
    a. Fire Alarm System: Connect to FACP **<14>** and to power **<15C>** to automatically release doors by a signal from the FACP.
    b. Release Switch: Provide a wall mounted, momentary release switch, adjacent to each door.
    c. Mounting & Blocking: Mount the door holder to substantial and permanently secured, built-in wood blocking or steel reinforcement in stud wall framing (not just attached to gypsum board) or anchor into masonry walls.
11. Door Frame: Hollow steel, 1.52 mm (U.S. 16 gauge) minimum with fully welded joints.

F. **A / V Cabling:** Provide for cable routing through a raceway built around doorways. Design into the millwork and detail to permit audio and visual cabling for power, sound, communication, etc. to avoid taping cables to floors that may cross door entrances.

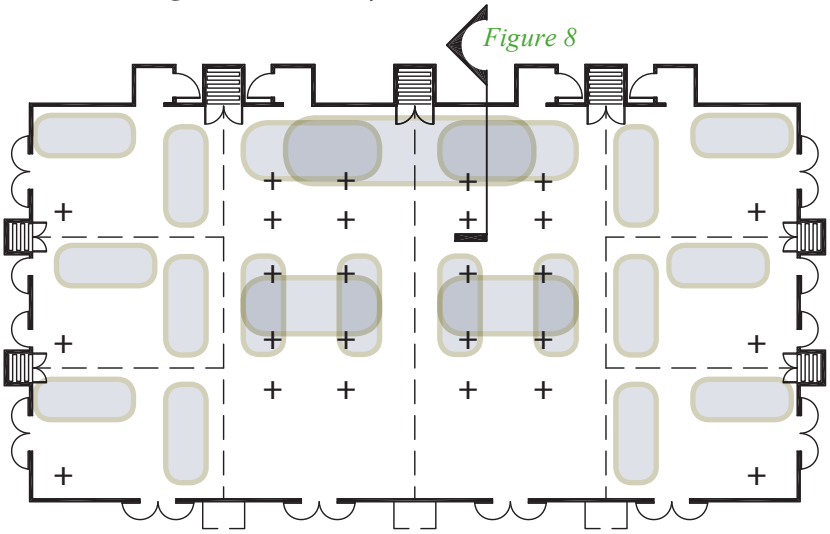
G. **Production Entry:** Large function areas benefit from utilizing a large door opening direct to the service corridor to expedite the movement of event production equipment, tables, chairs, etc. The door is closed when events are in progress.
   1. Location: Between function space direct to service corridor at rear wall or service vestibule.
   2. Door Widths: 1.2 m (4 ft.), single; and 1.8 (6 ft.).

H. **Exhibit Entrance:** When required by the project Facilities Program, provide an exhibit entrance door based on function space size and market.
   1. Location: Coordinate opening location with Ballroom Interior Design and finishes.
      a. Design doors and access inconspicuous as possible and to withstand repeated use.
      b. Typically, place door in back wall connected to service corridor.
   2. Door Size: 3 (w) x 3 m (h) (10 x 10 ft.) minimum
   3. Fire Rating: Maintain fire rating of function space wall.
   4. Acoustics: See "Acoustic Controls" above for exterior building doors and windows.
   5. Pathway: Provide 3 m (10 ft.) wide clear path from exterior to function space.
   6. Vehicle Routing: In applicable function spaces, provide vehicle / equipment routing to clear chandeliers, into and around planned exhibits.

I. **Hang Utilities:** Event participants and their production companies typically customize the function space to suit their needs by temporarily installing lights, speakers, projectors, banners and a variety of other props at the ceiling, walls and on the floor.

   By providing permanent hang points and tracks at the ceiling, the following advantages are created.
   - Damage to ceilings and walls is reduced.
   - Production costs can be reduced.
   - Event turn times can be reduced.
   - Event space flexibility produces higher quality events.
   - Floor mounted equipment and wires are minimized, resulting in fewer tripping opportunities.
   - A wider variety of events can be accommodated.
   - Permanent hang points are more dependable than temporary rigging.

Figure 3 **- Primary Head Table Locations**



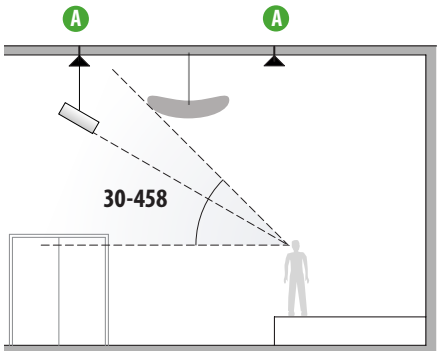
Resource:

See the *Event Space Design Supplement* for additional information.

Fixed & Powered Hang Point Location (Examples) +

Primary Head Table Locations

Figure 4 **- *Example:*** **Ballroom Hang Points Section**



A Hang Point Locations

Hang Facilities Rules-of-Thumb

- As many as 12 to 18 in large salons
- 15′ - 20′ apart
- 4 to 6 per head table location in large salons

Utilizing the above attributes results in an event venue that is more competitive and attractive to event customers. The following hang utilities are typical:

- Fixed exhibit hang points
- Powered hang points
- Light weight hang track
- Light pipes

J. Fixed Rigger Hang Points: At a minimum, provide structural hang points to accommodate electric power, exhibit lighting, displays, and equipment and comply with the following:

1. Load Capacities: Involve a structural engineer (preferably the firm that designed the original structure) to determine maximum hang point load capacities.
   - **a.** Hang points are typically rated at 227, 340 and 454 kg (500, 750 and 1,000 lbs.) live load.
   - **b.** Dead Hang Tamper Proof Supports: Unless directed otherwise, provide 455 kg (1,000 lbs.) hang points at 6 m (20 ft.) on center.
   - **c.** Utilized only by exhibit riggers to hang displays or equipment.
   - **d.** Do not provide hang points to support operable partition track or sound baffle components.

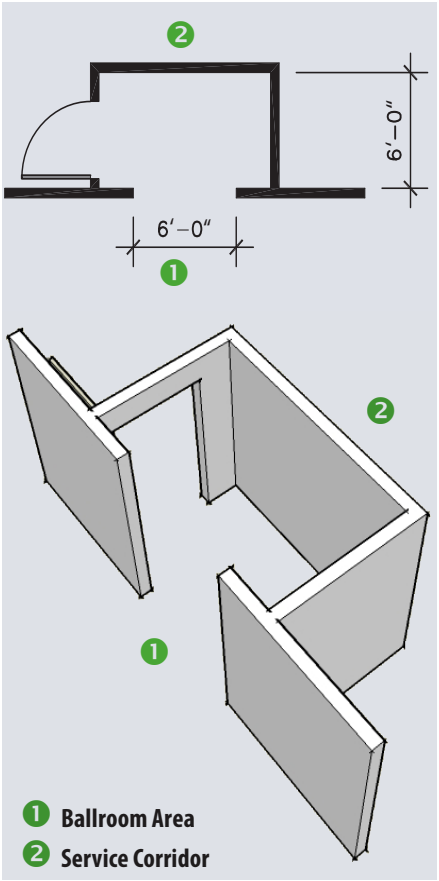
2. Location: Coordinate hang point locations with MI.
   a. Install from structure above ceiling line.
   b. In an accessible open ceiling design, the hang points are integrated with the ceiling design.
   c. Install in rows and on both sides of the operable partition to just above finish ceiling material.
   d. Do not place visible marks on ceiling to locate hang points above ceiling - use a dimensioned ceiling plan.
   e. Determine possible locations for head table or stage setup. Locate approximately 9.1 m (30 ft.) from back of table / stage.
   f. Coordinate locations with ceiling fixture sizes and placement.

K. **Service:** Provide convenient service access to beverage station, pantry, ice station, plating room, storage room, A/V room.

L. **Service Vestibule:** Create service vestibules to control sound and light from migrating from Service Corridor into function space and to manage employees moving in and out of service area to and from guest side of function space.
   1. Configuration: The minimum preferred door configuration in large function spaces is a vestibule with a door opening into the service corridor as shown in *Figure 5*. See the *Event Space Design Supplement* for other vestibule configurations.
   2. Door: Provide minimum of one service door for every 465 m² (5,000 sq. ft.) of function space and divisible room.
      a. Size: 1.2 m (4 ft.) wide door minimum.
      b. Lock: To secure room, provide same lock type required for Pre-function doors.
      c. Hold Open: Not required.
   3. Views: Minimize Guest view into BOH from function spaces.
   4. Finishes: Continue Ballroom wall and ceiling finishes into vestibule space (beyond opening from function space side).
   5. Service Light: Provide "In Service" warning light and switch. Locate light in Service Corridor adjacent to service door.
   6. Lighting: Ensure lighting in vestibule is not directly visible to guests on the function space side.

M. **Service Corridor:** Connected by Service Vestibules behind function space. See "Service Corridor - BOH" section in this Module.

Figure 5 - Example:
Single Door Service Vestibule



N. Wall Mounted Systems Devices: Carefully select locations for wall-mounted outlets (power, data, A/V, etc.), controls, telephones, including fixtures such as drinking fountains, etc.

- Group and integrate devices into finishes and area architectural details in a functional, efficient manner that reduces visual clutter.
- Locate devices and fixtures to protect them from damage during event setup and tear-down operations. See Modules **<13>** and **<15>** for device and fixture types.

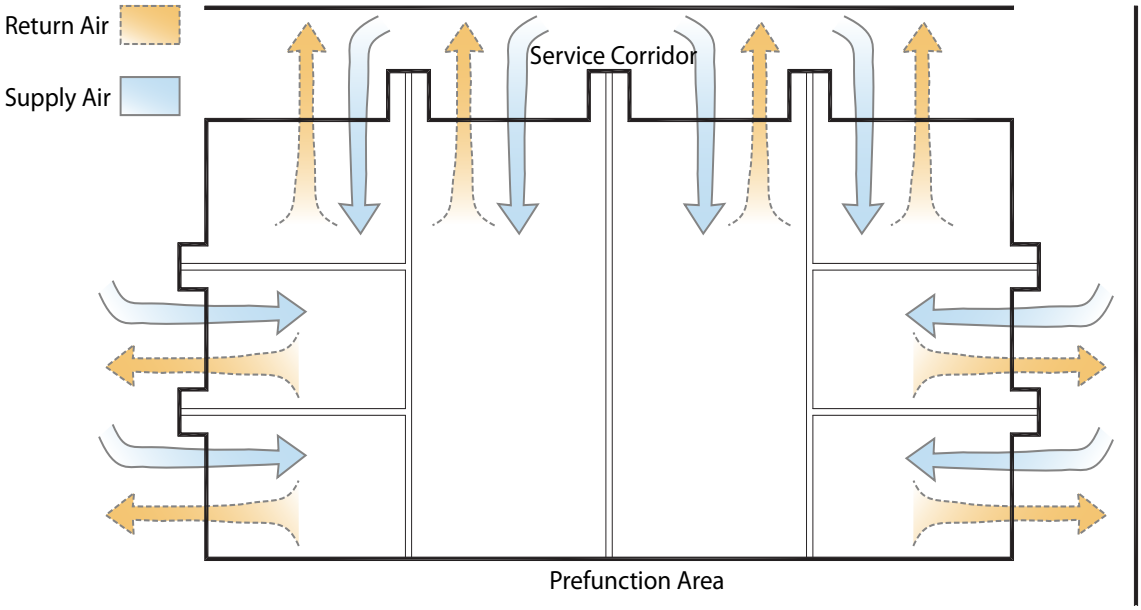
Minimize guest views of the following system devices and coordinate locations with interior design.

1. Communications: Telephone and data port outlets for computer use. **<13B> <13C>**
   a. Telephone service for function space exhibitors, see Module **<13C>**.
   b. Locate telephone, microphone, power, TV, auxiliary power sleeve and other outlets behind hinged, millwork access doors on function space walls.
2. A/V Controls: **<13C>** Coordinate with Module **<15C>**.
3. Electric: **<15C>** Include supplementary electrical service pass-through openings with acoustical protection in banquet Service Corridor walls. Provide required electrical service for function space exhibitors
4. Lighting Controls: Coordinate with Module **<15C>**. Locate slide dimmers for function space lighting at service vestibule with a secondary control at function space entry in concealed hinged panel with touch release hardware.

0. Signage & Graphics: <GR2>

1. Entrance Signs: Coordinate function space and room identification signage and graphic locations to avoid obstruction when function space entrance doors are held in open position.
2. Exit Signs: Attractively integrate egress signage into the wall design, and locate for visibility when the room is setup for a function.

***Figure 6*- Function Space Ductwork Schematic**



P. HVAC / Building Services: **<15>** Design building HVAC system and services to minimize acoustical interference:

1. Layout HVAC system ductwork 1.2 m (4 ft.) minimum from operable partitions.
2. Extend ductwork from above and behind function space Service Corridor, above and into subdivision ceiling spaces.
3. Route ductwork and other building services to avoid penetrating partitions above operable partitions.
4. Locate supply ducts low and return ducts high and do not obstruct millwork.

Q. Electrical: See Module **<15C>** for electrical / data floor boxes.

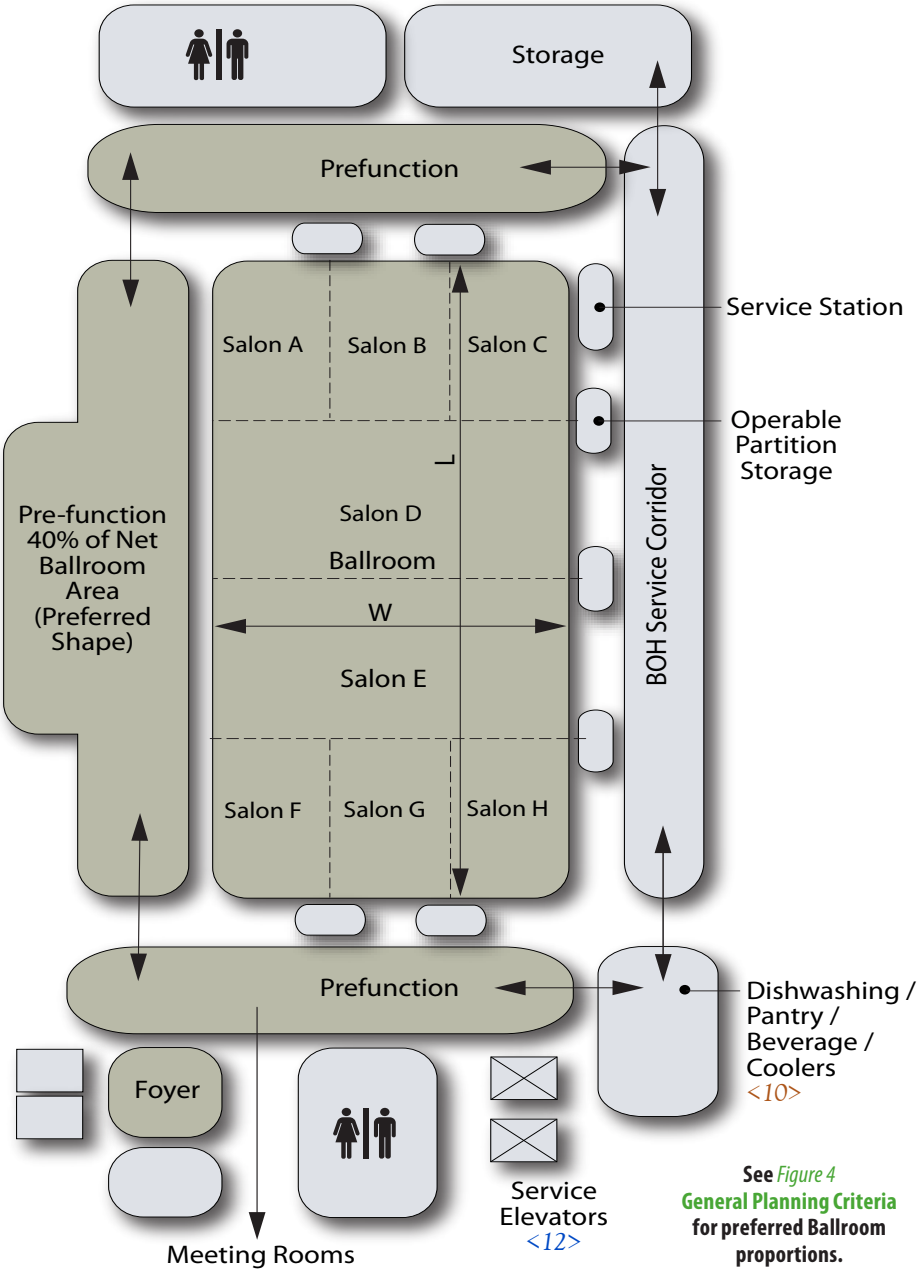
R. Lighting: See Module **<15C>** for lighting requirements. Provide lighting with flexibility to accommodate social gatherings, business meetings and presentations.

1. Sources: Provide combinations of cove, recessed, decorative ceiling pendant fixtures and wall lighting.
2. Controls: Control lighting by dimmers readily accessible to employees with remote control accessible to guests.

6.10 Ballrooms

A. Program: Follow the above function space general criteria. Provide large, column free Ballroom or multiple Ballrooms, dividable with operable partitions. Typically, the Ballroom is the tallest hotel public space accommodating floor to ceiling height and mechanical / HVAC space and access above ceiling.

Figure 7 **- Ballroom Adjacency Diagram**



Provide Ballrooms to accommodate the following multi-functional events:

- Meetings such as Executive & Management Meetings (EMM)
- Banquet and social functions
- Weddings and receptions
- Civic events

B. Location: Typically, locate away from or outside guestroom tower footprint to allow for a column free space. Position the Ballroom with the following spatial connections:

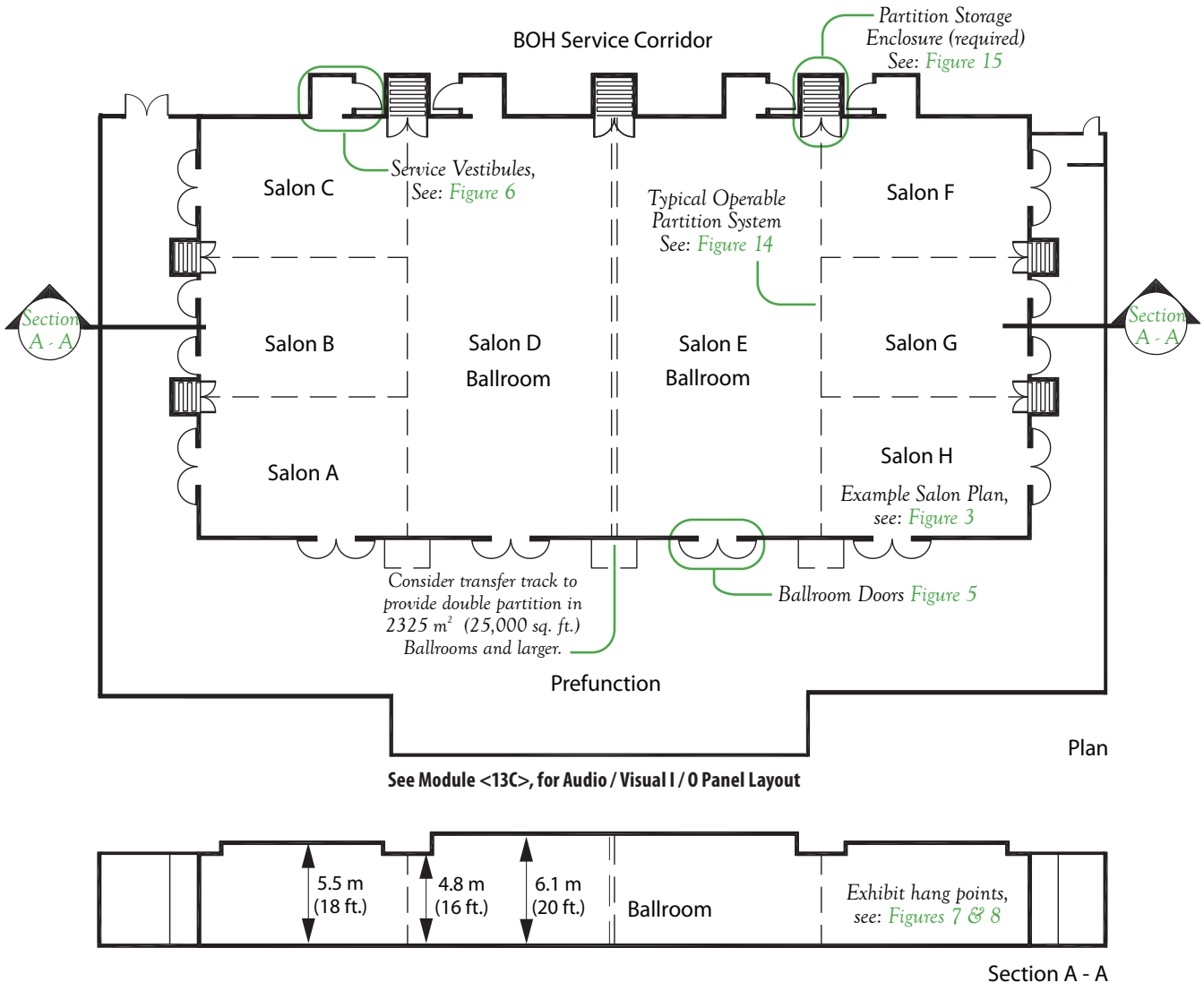
- Access to major public circulation routes and lobby
- Pre-function
- Registration Desk
- Bridal Suite and dressing room (options)
- Banquet service corridor, catering, BOH services
- Receiving Area **<9>**
- Storage **<9>**

C. Size / Area: 465 m² net (5,000 sq. ft.) minimum, column free, high ceiling, rectangular space. Floor area is determined by the project Facilities Program to meet market demands.

1. Generally, Ballrooms are planned to be divided and accommodate 85 to 100 m² (900 to 1,100 sq. ft.) salons.
2. MI reviews and studies Ballroom proportion as divided and undivided rectangular spaces and confirms quantity of operable partitions.
3. See example plan and size / area requirements.

D. Ceiling Height: 6.7 m (22 ft.) minimum center ceiling height measured to bottom of ceiling features and/or chandelier

Figure 8 - Example: Ballroom Plan & Section



General Planning Criteria

Proportions (width to length) 1:1.8 to 1:2.2

Pre-function 40% of meeting net area.

Ballroom area: m²(sq. ft.)

Ceiling heights

*up to 465 m² (5,000)	5.48 m (18 ft.)
465 to 930 m² (5 to 10 k)	6.10 m (20 ft.)
over 930 m² (10,000)	6.70 m (22 ft.)

* Minimum ceiling height at movable partition soffits: 4.3 m (16 ft.)

Preferred Ballroom Area Proportions

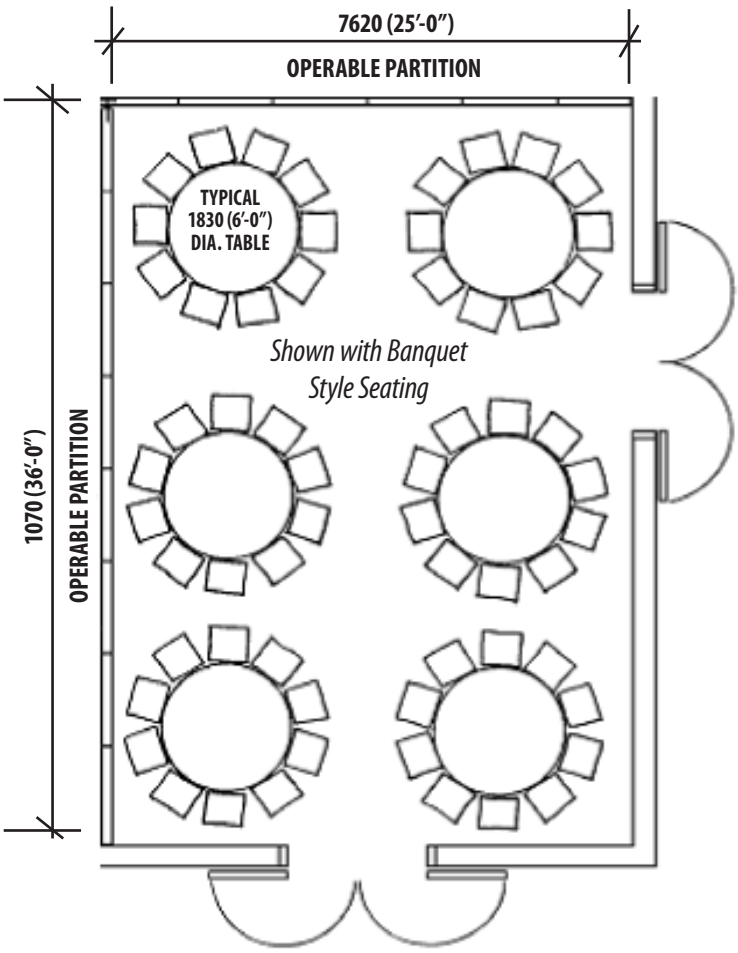
Metric (SI)		English (U.S.)	
Area	**Size (W x L)**	**Area**	**Size (W x L)**
1,500 m²	30.6 x 49.0 m	16,000 sq. ft.	100 x 160 ft
1,400 m²	29 x 48.3 m	15,000 sq. ft.	94 x 160 ft
1,300 m²	27 x 48.0 m	14,000 sq. ft.	88 x 160 ft
1,100 m²	25 x 44.0 m	12,000 sq. ft.	80 x 150 ft
750 m²	21 x 35 m	8,000 sq. ft.	70 x 114 ft

E. Ballroom Breakouts (Salons) - Subdivisions: Plan Ballroom breakout or subdivision rooms (see *Figure 9*) based on the following:

1. Configuration: Rectangular room plan; see example for proportions 1:1.8 to 1:2.2.
2. Capacity: At a minimum, plan rooms to accommodate six, ten person round tables and seating with service circulation (see example meeting room plan).
3. Exits: Provide two exits for rooms 32 m² (350 sq. ft.) and larger. Partition pass-doors are not recommended.

F. Bridal Suite & Dressing Rooms (options): See the project Facilities Program. Adjacent to the Ballroom, provide dedicated and private spaces with support areas for weddings and wedding functions including dressing areas, men and women restrooms, and lounge area.

Figure 9 - Example: **Ballroom Breakout (Salon)**



G. **Doors:** Comply with the above general requirements for "Doors" in Ballrooms and provide the following:
   1. Entry Door: Minimum of 1 pair of 0.9 m (3 ft.) wide doors to each salon (Ballroom subdivision).
   2. Door / Frame Moldings: Provide heavily articulated applied moldings on both sides of frame and as selected by Interior Designer to match décor, appropriately scaled to the ceiling height of the room including full-height frames and solid transoms.

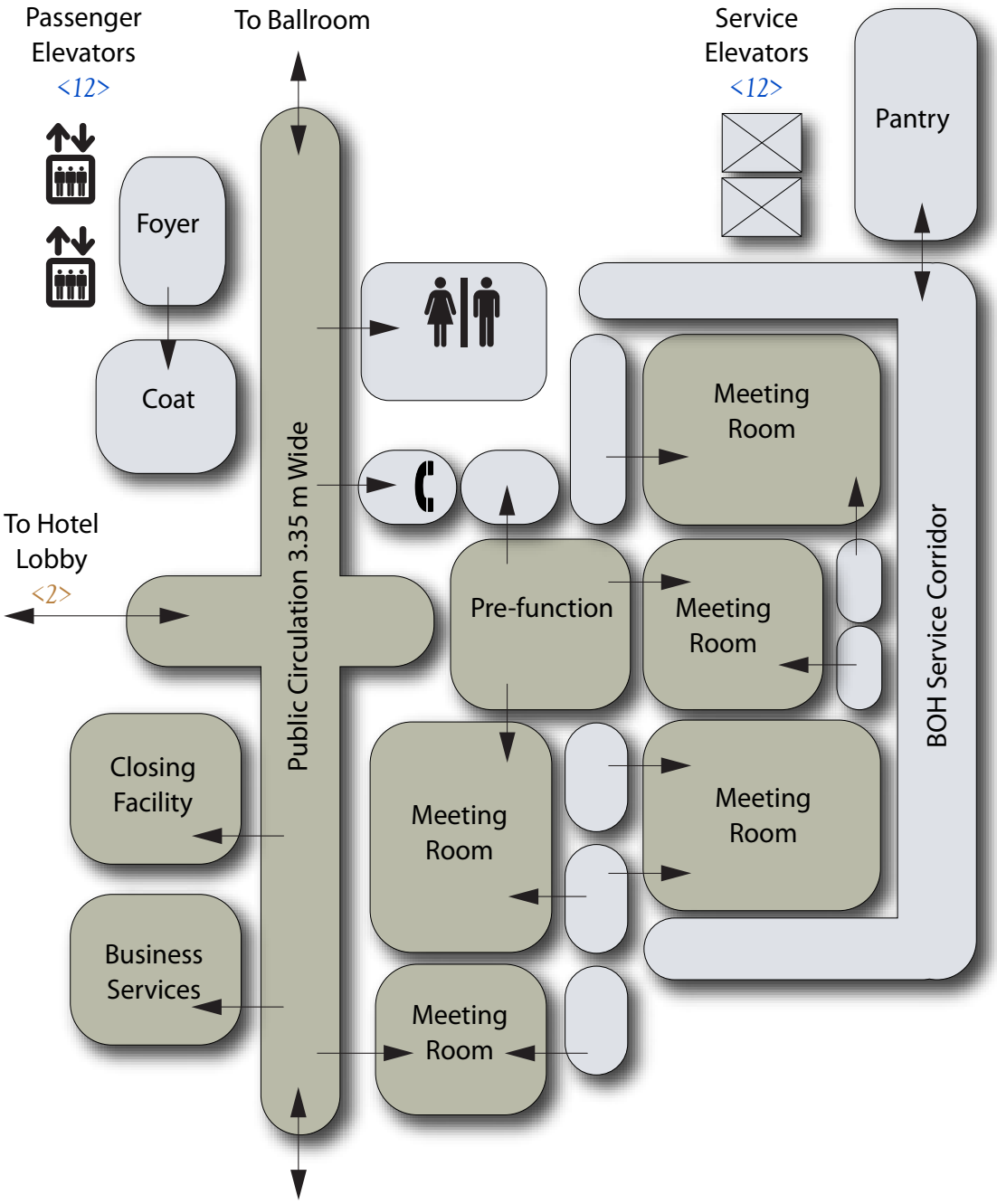
H. **Hang Points:** Provide and verify requirements with the project design team. Typically, 1 per 37.2 m² (400 sq. ft.).

I. **Finishes:**
   1. Floor & Base: Broadloom carpet with scale pattern and border appropriate to Ballroom size. Provide large scale wood base.
   2. Walls: Provide elegant and beautifully detailed walls. Integrate wall coverings with wood chair rail, trim, door casings and molding to complement base.
      a. Utilize decorative elements as room design features.
      b. Provide a wood display rail on at least one wall at chair rail height with a tackable surface above.
      c. Integrate utility service panels into wall design.
   3. Ceilings: Multi-leveled coffered or domed ceilings accented with millwork trim and integrated with recessed lighting and decorative chandeliers where appropriate.
      a. For acoustical tile ceiling areas, see "Design Features" section above for maximum quantity of drop-in ceiling permitted and coordinate with interior design for the intended space.
      b. Integrate grills, diffusers, access panels, sprinkler heads, etc. into the ceiling design.

6.11 Meeting Rooms

A. Program: Provide Meeting Rooms as required by the project Facilities Program.

***Figure 10* - Meeting Room Adjacency Diagram**



B. **Size / Area:** 60 m² (650 sq. ft.) minimum net; size and quantity of Meeting Rooms are dictated by the project Facilities Program.
   1. Ceiling Height: 3.6 m (12 ft.) above floor
   2. Room Layouts: Various; no room narrower than 5.5 m (18 ft.).

C. **Acoustics:** See "Acoustic Controls" above and comply with criteria for acoustics and Operable Partitions.

D. **Features:** Similar to Ballroom. Design Meeting Rooms to open to Pre-function space separate from Ballrooms.
   1. Provide foyers for Meeting Rooms when not adjacent to usable Pre-function space.
   2. Doors - Meeting Rooms: See Ballroom doors.
   3. Door Hardware: See Ballroom and Module **<14>**.
      a. Panic Fire Exit Hardware: Required for occupant loads greater than 100 persons.
      b. Door Hold Open Mechanism: Required for doors from assembly areas greater than 32.5 m² (350 sq. ft.).
   4. Recessed Credenza: Provide recess for built-in credenza style casepiece with granite top and wood cabinetry for food and beverage service and to support mobile bar.

E. **Pre-function Space:** Similar to Boardroom criteria defined below.

F. **Natural Light:** Where possible, introduce natural light at windows; views preferred.

G. **Audio / Visual:** **<13C>** In order to provide flexibility in placement, the type, and size of projection screen, marker and tack board, A/V equipment is typically not "built-in".

H. **Communications:** **<13B>** Provide telephones. Include a minimum of two computer data ports **<13A>** and power outlets **<15C>**.

I. **Lighting Controls:** Conceal dimmers for lighting in paneling at public / guest door.

J. **Finishes:** See "Design Features" and FF&E requirements in this Module.

6.12 Boardroom Receiving Area

A. Program: If required, provide a Boardroom Receiving Area (a pre-function space for Boardrooms) to serve a grouping of Boardrooms for the following activities:

- Arrival, reception and waiting
- Buffet
- Circulation

B. Location: Provide direct access to the Lobby atrium **<2>** when positioned in the hotel public space.

C. Doors: Provide interior wood doors with articulated wood frames following design for Boardrooms.

D. Graphics & Signage: Clearly define room entrances. Verify with project design team requirements for electronic reader boards, room occupied notice and need for a receptionist.

E. FF&E: Create an appropriate interior ambiance.

1. Window Coverings: When rooms have windows, provide blackout capability.
2. Seating: Provide seating groups with end tables for arriving guests. Table surfaces and edges are wood, wood veneer, marble or granite.
3. Artwork: Provide as selected by project design team.

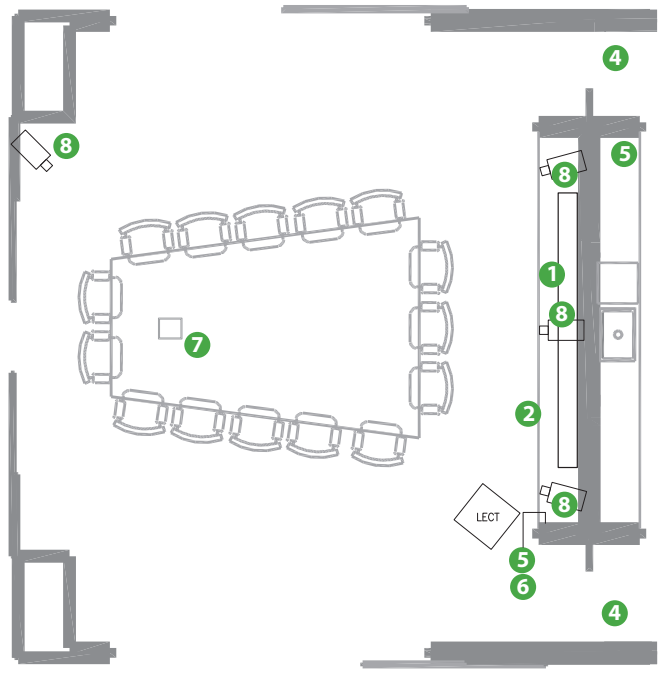
F. Finishes:

1. Floor & Base: Broadloom carpet or 80/20 *Axminster* carpeting with scale pattern and border appropriate to the room area.
2. Walls: Provide elegant and beautifully detailed walls. Integrate wall coverings and wood paneling, with large scale wood base, chair rail, trim, door casings, and molding. Utilize mirror, upholstery, stone and wood panels as design features.
   - Provide a wood display rail on at least one wall at chair rail height with a tackable surface above.
   - Provide wood wainscot paneling and trim.
   - Integrate utility outlets into the wall design.
3. Ceiling: Multi-level coffer or dome ceilings. Accent with millwork trim and integrate with recessed lighting and decorative lighting fixtures.
   - Limit acoustical tile ceilings to approximately 30% of ceiling area and provide only at the highest ceiling level.
   - Integrate grills, diffusers, access panels, sprinkler heads, etc. into the ceiling design.

6.13 Boardrooms

A. Program: Provide executive style meeting rooms defined as Boardrooms for individual or associated business meetings with fixed furniture, high quality features and dining service area.

Figure 11 - Example: **Boardroom Plan**



1. Object Wall
2. Credenza
3. Executive Conference Table with Seating for 12 to15
4. Service Entrance
5. CONTROL PANEL LOCATION
6. A/V INPUT/OUTPUT PLATE WITH TIE LINES. PROVIDE CONVENIENCE POWER OUTLET.
7. FLOOR BOX WITH CONVENIENCE POWER OUTLETS AND A/V TIE LINES
8. REMOTE CONTROLLED VIDEO CAMERA

B. Location: In proximity to Meeting Rooms, public circulation routes, Pre-function space and Banquet Service corridor.

1. Boardroom receiving areas may have direct access to Lobby atrium when located in upgraded guestroom tower.
2. Boardroom may open to an exterior terrace for additional food-service and as Pre-function space.

C. Size / Area: 56 m² (600 sq. ft.) minimum is a typical size.

1. Area is dictated by the project Facilities Program based on local market needs for size and quantity.
2. Seating: Fixed conference table seating for 10 to 20 persons.

D. Acoustics: See “Acoustic Controls” above. Provide STC 55 airtight perimeter walls, floor to structure above.

E. **Natural Light:** Where possible, introduce natural light at windows; views preferred.

F. **Features:** Provide the following:
1. Conference Table: Permanent executive quality conference table with centrally located concealed power and computer connection access.
2. Executive Chairs: Leather finished executive chairs on casters with adjustable seating height.
3. Credenza: Built-in credenza style casepiece with granite top and wood cabinetry.
4. Artwork: Distinctive prints and original artwork, matted and framed. Artifacts lit in feature locations.
5. Electric: See Module **<15C>** for built-in power / data floor boxes.

G. **Doors:** Provide interior wood doors with decorative, articulated wood frames. See "Ballroom" door and hardware criteria.

H. **Service Area:** Provide a built-in service area with top of 60 cm (24 inch) deep by 120 cm (48 inch) wide minimum surface to serve food and beverages. Verify if a bar sink is required.

I. **Communications - Audio / Visual & Power:** **<13C>** **<15C>** Boardroom technology is "HD video teleconference ready".
1. Flat Panel TV Screen & DVD: Consult with MI to determine equipment type. Provide as built-in millwork A/V unit with inputs at the front of the room and table. **<13C>**
2. Projector & Projection Screen: Provide built-in, retractable projector and screen concealed at ceiling. Hard wire remote control is wall mounted and labeled near room light controls.
3. Power Outlets: Provide power outlets to serve the following:
   a. Counter space at credenza
   b. Throughout the room for maintenance and guest use.
   c. Boardroom Table: Outlets in center of table.
4. Voice & Data Ports Provide voice and data ports for guest computer use in the room and at the table.
5. Digital Signage: Provide at entrance.
6. Sound System: Built-in
7. PI Access: Provide wired to network and wireless.

J. **Lighting:** **<15C>** Provide a combination of the following:
   1. Cove: Fluorescent area lighting integrated into ceiling coffers.
   2. Recessed: Focus recessed lights on table and credenza.
   3. Feature: Decorative ceiling fixture centered on table. Coordinate ceiling height, fixture size and ceiling detail to avoid having fixture interfere with visual presentations.
   4. Controls: Lighting controlled by concealed dimmers readily accessible to guests.

K. **Graphics & Signage:** Prominently display Boardroom names from the corridor side at each room. Verify if electronic boards are not required at rooms.

L. **FF&E:** Provide furnishings and décor to create an appropriate Boardroom ambiance.

M. **Finishes:** Generally, provide higher quality finish materials in Boardrooms than Meeting Rooms.
   1. Floor & Base: Broadloom carpet or 80/20 *Axminster* carpeting with scale pattern and border appropriate to the room size. Provide large scale wood base.
   2. Walls: Wood or stone wainscot paneling to complement door casings and trim with matching chair rail, architectural features, niches for accented pieces; accessories and artwork, lighted from above. Utilize mirrors and upholstery for room design features.
      a. Place a wood display rail on at least one wall at chair rail height with a tackable surface above.
      b. Integrate utility outlets into wall designs.
   3. Windows: Provide decorative window treatment with blackout capabilities.
   4. Ceilings: Gypsum board with coffers, appropriate trim, details and complementary finishes.
      - Multi-level coffer or dome with recessed lights and light coves.
      - Integrate grills, HVAC diffusers, sprinkler heads into ceiling design.
      - No acoustical tile ceilings (ACT).

6.14 Business Center (option)

A. Program: Coordinate criteria with Module **<2A>**, the project's size and the project Facilities Program when a Function Space Business Center is included with the Function Space program and not located in the Public Spaces - Lobby. Provide guests with an array of service amenities to support business activities of meeting and conference, such as reading, writing, computing and telecommunicating.

- Large properties and conference travelers have high demands from guests and typically require a full range of business services in a staffed Business Center.
- Internationally (outside of USA), large full service Business Centers are generally referred to as the "Executive Business Center" (EBC).
- At a minimum, provide a Business Center required by the project Facilities Program.

B. Location: Adjacent to hotel's Pre-function and Meeting areas to promote efficient utilization by function area guests. Consider locating the Business Center near the hotel front desk administrative area to share support services.

C. Size / Area: See the project Facilities Program. Accommodate the following spaces as required (Business Centers (EBCs) in Middle East and Asia typically require larger spaces).

- Entrance and Foyer
- Reception Station
- Guest Lounge
- Attendant Work Area
- Library and Reference Wall
- Guest Lounge Area and Circulation
- Computer Work Stations

D. Entrance & Foyer: Identify and visually announce location with formal business like entrance.

1. Generally, provide elegant glass doors or millwork doors and glass / millwork storefront to introduce the Business Center or EBC from public circulation.
2. Include direct views from meeting area pre-function utilizing large framed glass areas.
3. Design a securable and business like entrance with a contemporary sophisticated appearance and simple, graphic identification.
4. As appropriate to the location, provide an entrance that allows privacy and acoustically separates the Business Center from adjoining activities that may disrupt patrons.

E. **Reception Station:** Provide a professional and handsomely appointed reception area with a distinctive reception station.
   1. Location: Position and locate to assure passive surveillance of the Business Center and provide easy and convenient guest reception and greeting area.
   2. Reception Desk or Counter: Dependent on the size of the Business Center, provide receptionist desks or a multi-station counter.
      a. An additional single executive reception desk may be needed to accommodate private and sensitive guest requests. Semi-private desk may also function as the Business Center Manager's desk.
      b. Desk Construction: Millwork or stone or a combination of materials; stone top.
      c. Back Wall: Behind desk, keep clear and simple. Use wall space for property logo or identification, focal art or artifacts. Provide finish wall materials to complement Lobby.
      d. Lighting: Provide recessed ceiling fixtures for accent on wall art and to highlight back wall. Provide sufficient light for desk attendants to work.
      e. Equipment: Conceal or position out of view from guests.
   3. Features: Include the following features and devices at Reception Station:
      a. Duress alarm **<16>**
      b. PBS (computer) **<13A>** work stations; may share single common printer at other stations
      c. Printers, dedicated or conveniently shared
      d. Digital phone(s); fax machines (2); Call Accounting **<13B>** printer for billing
      e. Remote control for Lounge TV **<13C>**

F. **Guest Lounge:** Adjacent to reception station. Provide comfortable lounge seating and waiting area.
   1. Size / Area: Accommodate a minimum of 8 persons.
   2. Seating Area:
      a. May be shared with hotel administrative area; include multiple seating groupings; relate seating directly to different guest categories.
      b. Complement furniture design and furnishing styles with lobby and public spaces.
   3. Guest Reference (Library): Provide built-in shelves to house local business reference materials and books.
      a. Displays: Provide standing and hanging display for regional and international periodicals and newspapers.

b. Open Shelving: Accommodate broad selection of business journals; directories and listings; government and regional codes; regulations and ordinances; local and immediate telephone directories; airline schedules; geographic atlas guides; dictionaries.
   - A portion of the display area is securable to manage valuable reference display material.
   - Where possible, include one library table and chairs for convenient use of reference materials.

4. Equipment & Devices: Provide the following:
   a. Television: 37 inch minimum, flat screen for quiet viewing of international news and information broadcasts, such as CNN, BBC, etc. **<13C>**
   b. TV Control: Controlled from reception station.

G. **Attendant Work Area:** Provide BOH work area with direct access by attendant (may be shared by front desk **<8A>** BOH administrative area) with fax machine, copy machine and other necessary business equipment.
1. Location: Place out of direct view from entrance and lounge and reception area.
2. Features: Include the following features and devices:
   a. Fax Machines: Full feature, minimum of two.
   b. Copier: Commercial, mid-size with collating, assembly and binding; color and black and white.
   c. Printer: Dedicated or conveniently shared laser printer; color and black and white
   d. Postal and courier scales and equipment
   e. Document and parcel packaging
   f. Storage cabinets for securing office equipment and supplies.
   g. Access to employee toilets if remote from public toilet, and access to a small beverage pantry if possible; typically, associated with the Lobby Lounge.

H. **Computer Work Stations:** Provide semi-private guest work stations. Provide the following features:
1. Computer Work Stations: Polished stone countertops, millwork and wood finishes. Provide digital phone; fax **<13B>**; PC work station (at least one station with dedicated printer; one with desktop publishing options).
2. Data port for PCs; allow for Property Internet (PI) and wireless connection.
3. Printers: Dedicated or conveniently shared; may share single common printer at attendant workstation.

I. **Property Systems:** See Modules **<13A> <13B>**. Provide Wi-Fi, wired Property Internet (PI) and cell phone coverage throughout the facility.

J. **Lighting:** **<15C>** Provide durable quality decorative light fixtures.

6.15 Exterior Function Spaces

A. Program: Coordinate criteria with Module **<1>**. Generally, spaces such as terraces, lawns, pools or other exterior areas are utilized for uncovered outdoor functions or may incorporate multipurpose pavilions (see below).

B. Space Planning: Provide the following:

1. Level areas for tables and chairs, service equipment, entertainment platform or portable stage.
2. Comply with governing accessibility requirements.
3. Area drainage to direct water away from function areas.
4. Provide service areas, utilities and electrical power **<15>** to support Function Space services.
5. Food & Beverage: **<10>** Provide areas and access to food and beverage facilities to support outdoor banquet functions.

C. Outdoor Multipurpose Terraces: Provide as required by the project Facilities Program to accommodate outdoor areas for terraces and pavilions (such as portable enclosures with side awnings or tents) or semi-external function areas in proximity to Ballrooms, Restaurants and Atriums if applicable to the project.

1. Functions may occur at secondary swimming pools, terraces and level areas.
2. Provide level areas for tables and chairs, service equipment, entertainment platforms or portable stages.
3. Provide area drainage to direct water away from Function areas.

Function Service & Support

6.16 Overview - Function Service & Support Facilities

A. Program: Design and provide for the following back-of-house (BOH) facilities that service and support Function Spaces:

- Management Offices
- Banquet Service Offices
- Catering Showroom
- Function Room Coffee & Water Service Stations
- Service Corridors - BOH
- Coffee Break & Beverage Storage
- Banquet Storage
- Public Support Spaces
- Florist & Floral Preparation
- Sound Equipment
- Audio / Visual Equipment Storage Rooms
- Operable Partitions

In larger properties and where required by the project Facilities Program, the Function Service & Support spaces typically include Conference Management Offices, and Convention Set Up (CSU) & Exhibit Managers Offices to support a larger scale conference and exhibit center program. Contact MI for design criteria for these spaces.

B. Coordination with Other Criteria: Coordinate function space planning and design requirements with the following:

1. Sound Equipment
2. Audio / Visual Equipment Storage Room

6.17 Management Offices

A. Program: Provide office space for catering and function area management **<8A>** on the same floor as Meeting Rooms.

B. Location: Locate offices so escorted guests do not travel through BOH areas.

C. Furnishings: Provide offices with desk, task chair and filing cabinet.

D. Graphics & Signage: See Module **<GR2>** for general BOH signage criteria.

E. Finishes:

1. Floor: Vinyl composition tile (VCT) or carpet tile
2. Base: 10 cm (4 inch) high vinyl base
3. Walls: Paint
4. Ceiling: Washable ACT in suspended aluminum grid

6.18 Banquet Service Offices

A. Program: Provide Banquet Service Offices. See Module **<8A>**.

B. Location: Locate the offices off a foyer, near the Ballrooms.

6.19 Closing Facility

A. Program: When the local market can support a Closing Facility Design to display various table settings and banqueting options for key social functions such as weddings and Bar Mitzvahs.

1. Design is by the project's Interior Designer.
2. See the project Facilities Program for size requirements.

B. Location: When required, locate off the circulation between the Pre-function and hotel lobby.

6.20 Function Room Coffee & Water Service Stations

A. Program: See Module **<10>**. Provide a minimum of two service stations for (8,000 to 10,000 sq. ft.) of function spaces and one additional station for each additional (10,000 sq. ft.).

B. Location: Provide in alcoves along or directly adjacent to function space service corridors with good accessibility to service door. Position Service Stations away from defined egress paths and as required by governing regulations.

C. Size / Area: Approximately 16 to 20 ft. long for each station to include coffee making and holding equipment, ice maker and bin, refrigerator, water filling station, beverage table and hand sink.

D. Finishes:

1. Floor: Vinyl composition tile (VCT)
2. Base: 10 cm (4 inch) high vinyl base
3. Walls: Reinforced fiberglass wall panels
4. Ceiling: Washable ACT in suspended aluminum grid

6.21 Service Corridors - BOH

A. Program: Provide continuous Service Corridors in BOH areas, between Function Spaces that connect Food and Beverage Production, Receiving Area, various storage spaces, other employee areas and uninterrupted by public circulation.

1. Connect BOH Service Corridors with Service Vestibules behind large Function Spaces such as Ballrooms.
2. Extend BOH Service Corridor for the length of the space. Provide on two room sides if possible. Connect corridor to kitchen or remote warming kitchens and pantries.
3. Generally, do not utilize the BOH Service Corridor for other BOH loading dock circulation, where avoidable, because there is a potential for conflicting traffic and congestion.
4. Provide dedicated spaces for Pod Storage, Coolers, Plating, Banquet Support and Beverage Service, connected to BOH Service Corridors.

B. Location: Behind Function Spaces connecting directly to Service Corridors and not crossing Public Spaces.

C. Size / Area:

1. Clear Width: 3 m (10 ft.) minimum between operable partition storage enclosure, food service equipment space and service vestibules walls. Design widths to accommodate exiting, service vestibules, warming stations and IDF rooms.
2. Large Function Spaces: Provide service corridors with a clear width equal to 15% of the depth of the serviced function space.
3. Meeting Rooms Less than 780 m^2 (3,000 sq. ft.): Provide Service Corridors clear width at 2 m (6′-6″) minimum.
4. Clear Heights: 3 m (10 ft.) minimum clear ceiling height. Coordinate overhead heights with equipment movement, access and service. Verify ice machine height.
5. Forklift Movement: Accommodate forklift mast height of 3 m (10 ft.) without accounting for goods carried through BOH Service Corridors. Design for clear height in corridors and at doorways to allow equipment passage.
6. Corners & Turning Radii: Accommodate turning radius of tugs pulling laundry bins, that extend up to 9 m (30 ft.) long.

D. **Acoustics:** See "Acoustic Controls" above. Provide STC 55 airtight perimeter walls, floor to structure above separating BOH Service Corridors from Function Spaces.

E. **Audio / Visual:** Provide a system of "J" hooks behind each function space to accommodate power and A / V cables from remote facilities at the loading area.

F. **Graphics & Signs:** From corridor side, provide and prominently display function space names.

G. **Finishes:** Coordinate with Module **<8>** for wall protection, corner guards and finish materials
   1. Floor: Polished concrete, sealed. In areas not subject to vehicle and service traffic, provide vinyl composite tile.
   2. Walls & Base: Provide 120 cm (48 inch) high, 3 mm (1/8 inch) thick aluminum checker plate wall protection with 10 cm (4 inch) high checker plate base. Paint walls above checker plate. Reinforce and protect wall corners with checker plate.
   3. Ceiling: Acoustical tile in suspended aluminum grid at employee areas.

6.22 Coffee Break & Beverage Storage

A. **Program:** See Module **<10>**. Provide a secure space to store beverage service equipment and beverages to service various function spaces.
Include large refrigerated units for holding bottled wine and dairy products.

B. **Location:** Locate in a central area of function spaces, typically near main Exhibit Hall, Ballroom or central kitchen. Typically, on same floor as serviced function space and close to service pantries **<3> <10>**

C. **Liquor Storage:** If liquor storage is accommodated in Beverage Storage, provide internal and lockable room.

D. **Size / Area:** Determine required space areas based on project program. Verify with project design team.

E. **Graphics & Signage:** See Module **<GR2>** for general BOH signage criteria.

F. **Finishes:**
   1. Floor: Vinyl composition tile (VCT)
   2. Base: 10 cm (4 inch) high vinyl base
   3. Walls: Reinforced fiberglass wall panels
   4. Ceiling: Washable ACT in suspended aluminum grid

6.23 Banquet Storage

A. Program: Provide alcoves and rooms open to BOH Service Corridor and "Zoned" to store chairs, tables, podiums, decorations, and equipment associated with function activities. See Modules **<9> <13>** for other storage and utility areas.
Verify exterior pod storage requirements, if utilized, with the project design team.

B. Location: Locate in BOH Service Corridor directly adjacent to function space serviced.

C. Size / Area:

1. 15% minimum, net area of Ballrooms and Meeting Rooms (not Exhibit Hall) required or sufficient space to store 40% of FF&E inventory for the associated function. Exclude the Service Corridor storage in this area total.
2. Include multiple storage areas in close proximity to respective rooms being served.
3. Ceiling: 6 m (20 ft.) minimum height

D. Steward's Room: Within the Banquet Storage Area, provide a separate, secure room to store banquet food service equipment and silver.

1. Size: 1% minimum net area of Ballrooms and Meeting Rooms.
2. Provide minimum of 1.07 m (3'-6") wide door with lockable hardware.

E. Doors: See Module **<GR3>** for additional general requirements for BOH doors, frames and hardware.

F. Shelving: Provide metal shelving system.

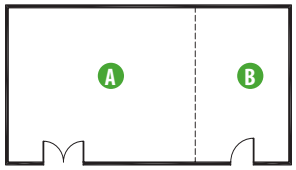
G. Graphics & Signage: See Module **<GR2>** for general BOH signage criteria.

H. Telephone: **<13B>** Provide one wall phone.

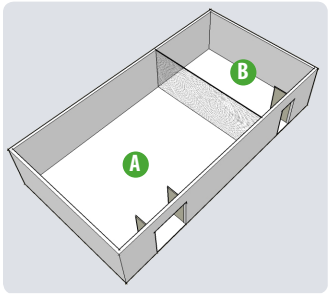
I. Finishes: Provide the following:

1. Floor: Stain, polish and seal concrete with heavy duty sealer.
2. Base: 10 cm (4 inch) high vinyl base
3. Walls: Painted
4. Ceiling: Exposed structure (not painted)

Figure 12 - Example: **Banquet Storage**



A Event Services
B Banquet Services



6.24 Public Support Spaces

A. Program: Comply with the project Facilities Program for requirements of Public Toilets, house phones, public phones, Property Internet (PI) / cell phone access, Registration Room and Coat Rooms. Provide in compliance with the following:

B. Location: Locate Support Facilities off a foyer leading to the Pre-function areas.

C. Registration Rooms & Meeting Planners Office: Provide an enclosed meeting planner's office and separate registration room with counter.

1. Location: Provide facilities at large Function Spaces such as Ballrooms, situated for access immediately upon arrival to the Pre-function area.
2. Doors: Solid wood entry doors secured with the property's electronic key access system.
3. Counter: Provide power / data / telephone each end of the counter. Provide millwork doors to close area above counter when space is not utilized.
4. Desk & Shelves: Provide counters and shelving to accommodate registration activities.
5. Lighting Control: Provide occupancy sensors for lighting override. Connect sensors to electronic key lock system with interface to master control software.

D. Coat Rooms: Position rooms within a securable area, adjacent to Pre-function, entry circulation, but within sight of guest circulation. Coat Rooms may not be required in warm climate locations.

1. Size / Area: Size the area based on regional requirements, but normally not less than 0.027 m^2 (0.3 sq. ft.) per anticipated occupancy or not more than 50% of combined Function Space occupants.
2. Garment Equipment: Provide sufficient coat / garment hanging racks with equipment based on market analysis and the Facilities Program.
   - Conceal coat racks and shelves from guest view in a room with door behind attendant's space.
   - Provide coat hanging racks either permanent or moveable and coat hangers.
3. Counter: Provide minimum of 1.5 m (5 ft.) long by 0.6 m (2 ft.) deep counter space for an attendant adjacent to Coat Room entry door. Provide power / data / telephone at one end of the counter.

4. Doors: Provide solid wood doors and secure entry door with the property's electronic key access system. Overhead metal coiling door is not acceptable.
5. Lighting Control: Provide occupancy sensors for lighting override. Connect sensors to electronic key lock system with interface to master control software.

E. Public Toilets: See criteria above in this Module.

F. Telephones: **<2> <13B>** Provide one house phone, accessible to guests, for each Function Space in an alcove adjacent to Pre-function areas.

G. Cell Phones: **<13B>** Verify that area location and hotel construction permits cell phone reception and use throughout.

H. Computer Connectivity: Provide wireless PI connection throughout the areas. **<13A>**

I. Finishes: Provide materials similar to the building area location or the adjacent Function Space.

1. Floor: Generally, provide *Axminster* carpet. Scale pattern appropriate to the space, and provide continuous pattern or coordinated with adjacent public area.
2. Wall & Base: Generally, provide wood wall paneling or 20 oz., Type III vinyl with a Class "A" flame spread rating or equal and integrate wall coverings with trim.
   a. Provide wood chair rail, crown moldings, ceiling coffers and wood or stone casings at door frames.
   b. Natural stone or other materials may be provided as a decorative feature.
   c. Provide acoustical wall panels as required by acoustic criteria.
   d. Provide wood or stone base.
3. Doors: Provide interior wood doors with articulated wood frames.

6.25 Florist & Floral Preparation

A. Program: When required, provide a Floral Preparation Room to support and supplement the property's marketing programs for catering, reception and banqueting activities. Verify requirements to provide a property retail and display outlet nor to support guests' request for floral and specialty gift items.

B. Location: See Module **<9>**. Locate in the Maintenance Shops area or if provided, in the Horticulture Shop of the Exterior Grounds Facilities.

6.26 Sound Equipment

A. Program: Provide an enclosed, secure room for audio / visual, **<13C>** electronic equipment racks and distribution associated with Function Space activities.

B. Location: Centrally locate rooms adjacent to applicable function space. If function spaces are remotely divided, provide multiple sound rooms.

1. Locate entrance door at Service Corridor of function area to permit direct access for convenient adjustment of audio / visual equipment.
2. Avoid locations subject to water damage.
3. Avoid sources of electronic interference.

C. Size / Area: See the project Facilities Program and coordinate with Module **<13C>**

D. Ceiling Height: High ceilings are preferred. Minimum ceiling height is 2.7 m (9 ft.).

E. Equipment Racks:

1. Provide gangable equipment enclosures to properly house the AV components with 20% spare capacity for future growth.
2. Locate enclosures on a minimum of 5 cm (2 inch) high housekeeping pad.
3. Arrange room to permit ease of access to equipment operational portions and maintain a minimum of 1.2 m (4 ft.) around enclosures.
4. Maintain a minimum of 3 m (10 ft.) separation between electrical devices such as transformers, dimmer cabinets, switch gear and the A/V enclosures.

F. Door: See Module **<GR3>** for additional general requirements for back-of-house doors, frames and hardware.

1. Seal: Perimeter seal to limit dust
2. Size: 1.2 x 2 m (4'-0" by 6'-8") minimum opening

G. Air Conditioning / HVAC: **<15A>** Provide continuous air conditioning and verify project heat loads.

H. Finishes: Provide the following:

1. Floor: Vinyl composition tile
2. Base: 10 cm (4 inch) resilient base
3. Walls: Paint
4. Ceiling: Accessible acoustical tile

6.27 Audio / Visual Equipment Storage Rooms

A. Program: **<13C>** Provide enclosed, secure rooms for storage and control of audio / visual equipment associated with function spaces.

- Provide storage for equipment such as TVs, projectors, microphones, flip charts and computer equipment.
- Provide open plan office space for the A/V Services staff. Verify staff quantities for design team.

B. Location: Centrally locate in function spaces with door access from Service Corridor.

C. Size / Area: See the project Facilities Program and coordinate with Module **<13C>**. Typically, provide 2% of net area of Ballrooms and Meeting Rooms for A / V equipment storage rooms.

D. Ceiling Height: High ceilings for rack storage is preferred. Minimum ceiling height is 2.7 m (9 ft.).

E. A / V Services Office: Locate in central locations within Function Space areas and near the A/V Storage areas.

F. Door: See Module **<GR>** for additional general requirements for BOH doors, frames and hardware.

1. Size: 1.2 x 2 m (4'-0" x 6'-8") minimum opening
2. Lock: Electronic operated lock **<16>**

G. Furnishings:

1. Desk and task chair
2. Telephone / computer **<13B>** **<13A>**
3. Storage racks

H. Finishes: Provide the following:

1. Floor: Vinyl composition tile (VCT) or carpet tile
2. Base: 10 cm (4 inch) resilient base
3. Walls: Paint
4. Ceiling: Washable accessible acoustical tile (ACT) in suspended aluminum grid

6.28 Operable Partitions

A. Program: Provide operable partitions to divide large function spaces into smaller areas, and to acoustically and visually isolate spaces.

B. Design Requirements:

- Operable Partition: STC 54
- Field Test: NIC 46
- Floor: Dead Level
- Track: Programmable
- Adjacent Walls: STC 55
- Wall Above Operable Partition: STC not less than operable partition
- Storage Enclosures: STC 55

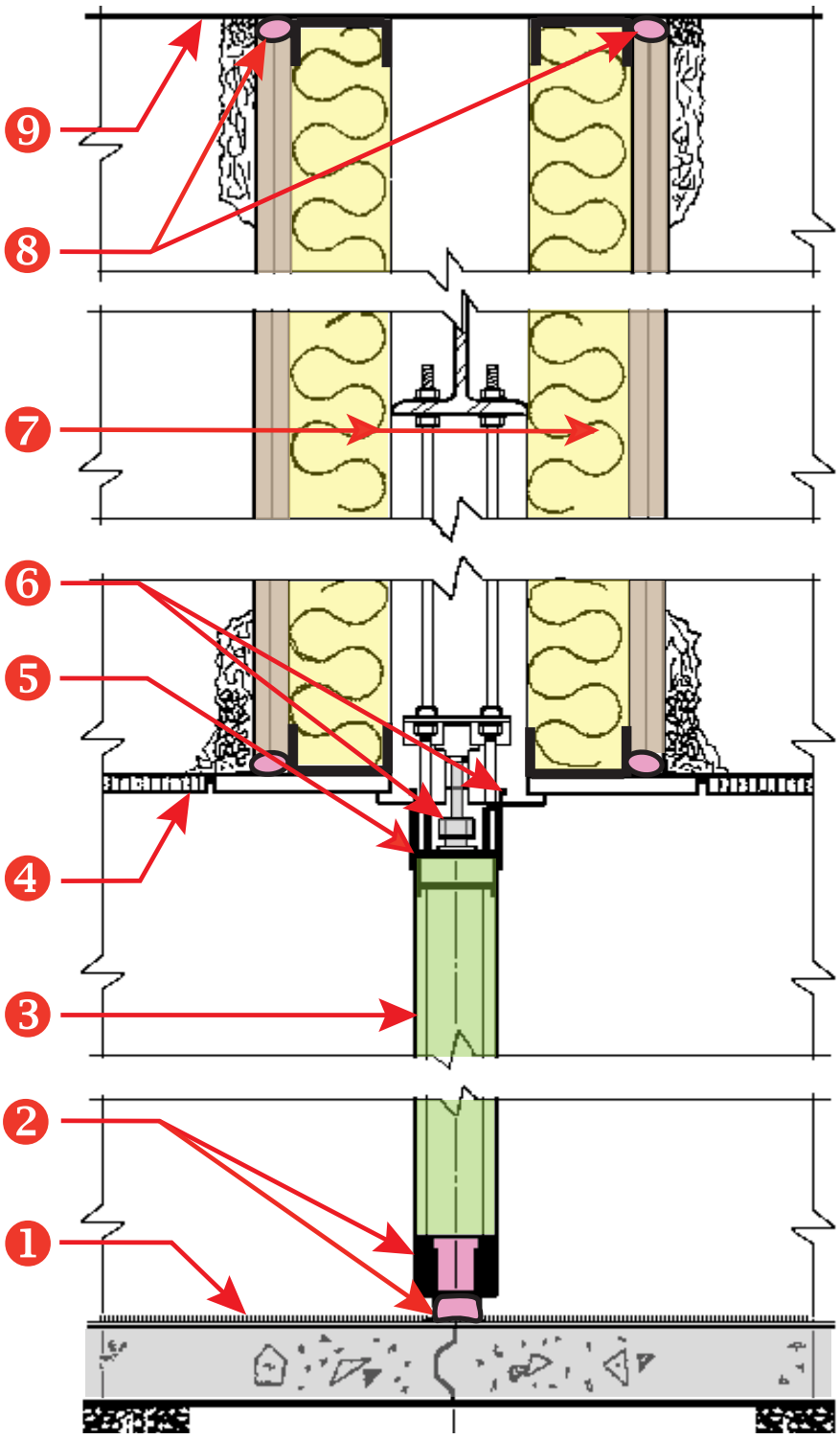
C. Acceptable Operable Partition Manufacturers & Models:

- *Advanced Equipment Co.*, Alpha Series 5MR8, Fullerton, CA; 714-635-5350
- *Hufcor Inc.*, Model #641, Janesville, WI; 800 356-6968 or 542-2371
- *Modernfold by Dorma*, Acousti-Seal Encore, Greenfield, IN; 800-869-9685

D. Acoustics: Design adjoining wall construction for required acoustical sealing of operable partitions to walls.

1. Wall above Operable Partition: Acoustically rated, no less than operable partition system. Seal joints, around penetrations and wall perimeter.
2. Enclosures for Operable Partitions: Acoustically rated walls and ceiling, no less than operable partition system.
3. Spaces Above & Below: Provide acoustic control of ceiling and floor system if occupied spaces are planned above or below Ballroom.
4. Mechanical Systems: See "HVAC / Building Services" section in this Module and Module **<15A>** for Ballroom and Salon supply and return air systems and ductwork arrangements to avoid penetrating acoustic rated wall above operable partition.

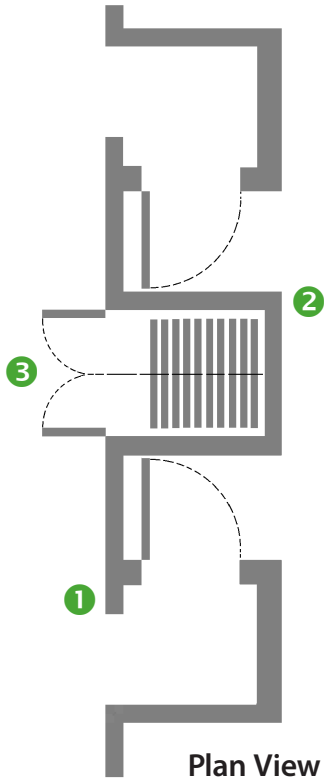
Figure 13 - Example: Section at Typical Operable Partition System, Floor to Wall Above



Failure to seal operable partition and wall penetrations as noted will negate the system's acoustic performance.

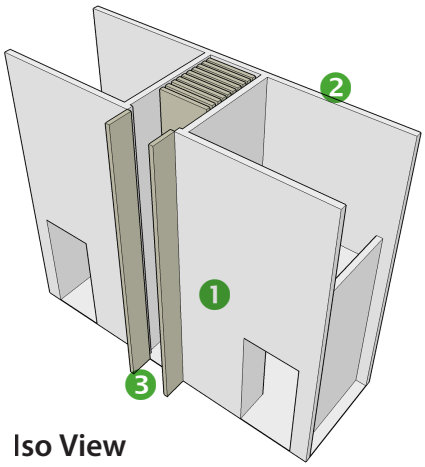
1. Floor Finish Material
2. Drop Seal & Bottom Sound Seal
3. Operable Partition Panels
4. Finish Ceiling System
5. Partition Top Seal
6. Trolly Wheel & Partition Track
7. Full Thickness Sound Rated Insulation Blankets in Continuous Sound Rated Wall Above
8. Continuous Acoustic Sealant Between Partition Track Assembly; Seal all Joints. No Penetrations Permitted Through Sound Rated Wall
9. Underside of Solid Structure Above (Floor or Roof Deck)

***Figure 14 - Example*:**
Operable Partition in Storage Enclosure



Plan View

1. Ballroom Interior Wall
2. Service Corridor Wall
3. Enclosure Access Pocket Doors

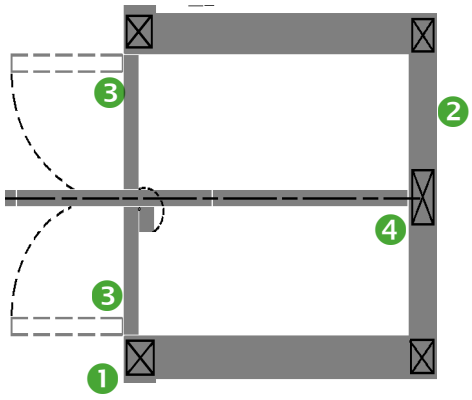


Iso View

E. Operable Partition System: Provide and detail operable partitions to complement and complete the fixed wall design and finish.

1. Panels:
   - a. Acoustics: STC 54 (lab test) minimum
   - b. Fabrication: Fully welded steel frame with lock formed welded steel faces (no mechanical fasteners and rivets) and sound backing. Prepare faces for finish selected by Interior Designer.
2. Type: Provide manually operated partitions with top hung, full height, single panel system.
   Motor Operated: Verify with MI if motorized operation is acceptable when Ballrooms are over 1000 m^2 (10,800 sq. ft.) or partitions are taller than 5 m (16 ft.). (Motorized partitions involve a higher initial cost, higher maintenance, and operational controls. Verify that dependable, immediate service is available to repair motorized partitions to avoid disruptions to function schedules).
3. Deflection Loads: Review partition system loading with structural engineer to verify that allowable deflection of supporting structure will not restrict partition operation nor effect partition acoustics.
   - a. Allow for overhead deflection loads.
   - b. At floor, provide dead level surface along path of partition operation.
   - c. Maximum Deflection: L / 360 for any component
4. Trolley & Track: Heavy duty steel or aluminum track system with two sets of hardened ball bearing steel tire wheeled trolleys at each panel for smooth and easy operation.
   - a. Provide metal track with programmable (curve and diverter) design to accommodate ease of partition movement. Right angle track is not permitted.
   - b. Extend overhead structure and track into partition storage enclosure for designated ballroom and salon dividing partitions.
   - c. Acceptable Manufacturer's track system:
     - *Advanced Equipment*: #8
     - *Hufcor*: #11
     - *Modernfold*: #14

Figure 15 - Example: Operable Partition - Detail



5. Panel Seals: Provide mechanically operated top and bottom panel seals.
   a. Automatic top and bottom seals may be considered by MI during project review process.
   b. Provide 827 kp (120 psi) bottom seals for continuous contact to finish floor surface.
   c. Provide continuous side panel seals and at partition storage enclosures.
   d. Coordinate floor seal contact with floor finishing requirements.
6. Pass Doors: Partition pass doors are not permitted because they are an acoustic weak point and do not qualify as exits; see Module **<14>**.

F. **Enclosures for Operable Partition Storage:** Acoustically seal enclosure walls and ceilings. See *Figures 14 and 15*.
1. Enclosure Configuration: Provide recessed (typically, outside of Ballroom and Meeting spaces), operable partition storage enclosures with access doors at perimeter wall.
2. Operable Partitions Inside Enclosures:
   a. Seal partition panel edge to rear of enclosure at continuous solid blocking to avoid sound transmission through wall cavity.
      When partition is extended to full position to divide spaces, partition fits tight to rear wall of storage enclosure.
   b. Provide dedicated stacking for partitions that further subdivide function area segments. Panel mixing is avoided by utilizing continuous overhead track provided only for the designated partition and its storage enclosure.
   c. Position operable partition tracks flush in ceiling or visually minimize by millwork trim consistent with interior design.

3. Walls: Provide acoustic rated wall assemblies. Reinforce stud framed wall cavities with continuous wood blocking where operable partition seals press against stationary walls to provide a tight seal.
   a. Avoid wall chair rails, base, moldings or other interior trim that will not allow a tight seal.
   b. Review flanking construction for proper seal around partitions and especially the wall assembly above ceiling.
4. Doors: Provide type 4 (single panel) or type 3 (paired panel) pocket door systems of sufficient width, in no less than 91 cm (3 ft.) wide opening, to allow ease of panel movement into enclosure and to reduce the chance of damaging jambs and partitions. Conceal access door hardware from view in public areas.
   a. Reinforce access door to form a tight fit with partition gasket when door is in closed position.
   b. Do not rely on storage enclosure access doors for acoustic separation.
   c. Provide door drop and perimeter door seals for tight top, side, jamb and bottom seal.
   d. Extend Ballroom carpet under access door.
   e. If recommended by operable partition manufacturer, provide a staff service, personnel door to enter operable partition storage enclosure and to guide partitions on track at Service Corridor side, opposite, partition access door.

G. **Finish Surfaces:** Coordinate panel finishes with finish details and interior architectural design requirements of permanent walls.

H. **Operable Partition Installation:** See ASTM E557 Standard Guide for the Installation of Operable Partitions and references for recommended installation practices.

I. **Testing of Operable Partition System (Required by MI):** Following complete installation, field test the operable partition system for acoustic compliance in closed, sealed position including adjoining walls (sides and above).
   1. Color code each panel and number by location for test documentation.
   2. Visually review for proper panel fit, to abutting construction, and complete required adjustments.
   3. Check for light leaks between each panel contact segment. Inspect partitions for gaps between seals and adjoining surfaces. One square inch of gap (6.5 cm^2) equals a sound loss of 20 db.

4. Test each partition assembly for Noise Isolation Class (NIC) with noise reduction of NIC 46 or greater. Calculate NIC rating in compliance with ASTM E413-10.
5. Test assembly for Noise Reduction in compliance with ASTM E336-11 applicable to measurement of isolation between rooms.
6. Modify, adjust and retest assemblies that do not meet field tests until accepted without additional cost to Owner or Marriott.
7. Submit completed test results to Marriott for review in compliance with the Design Standards.

6.29 Systems Coordination

A. Reference: Coordinate with requirements of other Modules including:

- GR General Requirements
- 2 Public Spaces
- 9 Engineering
- 10 Food & Beverage Production Facilities
- 13A Information Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical - Plumbing - Electrical
- 16 Loss Prevention

AUTOGRAPH COLLECTION®

AUTOGRAPH COLLECTION®

STANDARDS

MODULE

GUEST ACCOMMODATIONS

A - Guestrooms & Suites

B - Guestroom Corridors / Support

C - Guest Floor Lounge

May 2014

AUTOGRAPH COLLECTION®

STANDARDS

GUESTROOMS & SUITES

A

MODULE

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Guestrooms & Suites

7A.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Concept: The Autograph Collection is a diverse group of Independent Lifestyle Hotels and Resorts that embody an upscale level of design and service. Each property is unique and represents its Brand position through its design. The purpose of this guide is to assist in the integration of the functions outlined in this Module together with the project's Facilities Program and its unique character to create a memorable design and guest experience.

B. Program: Design Guestrooms and Suites to complement the Brand concept and theme with appropriate touch-point appointments and amenities. Provide excellent sound attenuation to ensure guest privacy.

C. Space Planning: Locate Guestrooms and Suites based on a plan to facilitate the efficient delivery of guest services.

1. Location: Separate from public function spaces.
2. Size / Area: Consult the project Facilities Program. Actual guestroom size, width and net room area vary by project, depending on the market and other influences. The following are guestroom design minimums:
   - **a.** Bay Configuration (standard guestroom width): 3.96 m (13 ft.) clear and wider for Asia and the Middle East.

Region	Room Type	Net m2	net sq. ft.
Americas	Double / Double	32	344
	King	30	322
Asia / Pacific	Double / Double	42	452
	King	40	430
Europe	Double / Double	30	322
	King	28	301
Middle East	Double / Double	42	452
	King	40	430

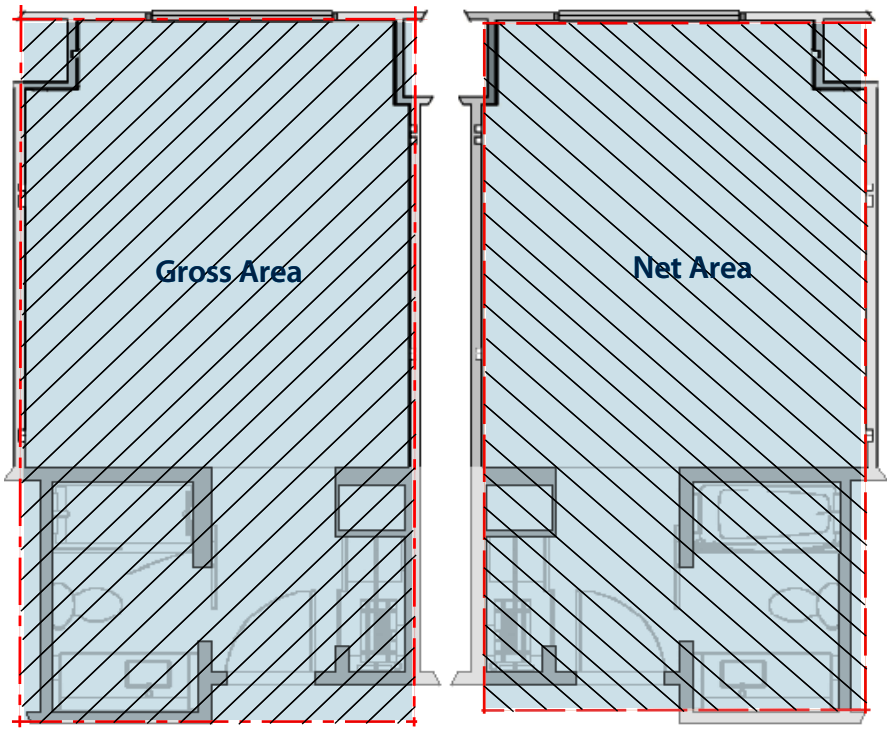
   - **b.** Ceiling Heights: Dimensions measured from finish floor:
     - Sleeping Area: 2.44 m (8 ft.)
     - Guest Entry, Bath & Closet: 2.30 m (7'-6")

D. Market Variables: Guestroom sizes may vary from the above criteria due to the property's location (urban, suburban, retreat, etc.) and Brand concepts. At a minimum, guestroom sizes and amenities are equal to the upper upscale and luxury competitive set where the property is located.

E. Convention for Calculating Guestroom Area: The gross and net area criteria are useful factors to evaluate guestroom performance. Guestroom standards are also based on critical guestroom dimensions that define the functional adequacy of the room design.

Gross & Net Areas: In order to provide a common vocabulary for guestroom space planning, the following gross and net area designations are defined:

Figure 1 - Guestroom Area Calculation Diagram



Gross Area: A simple, rectangular area defined by the following width and length (includes the guestroom corridor alcove).

Width: Center of guestroom common wall to center of opposite wall. **Length:** Corridor side of the corridor wall to exterior face of stud at exterior wall (or to the interior face of glass at curtain walls).

Net Area: A simple, rectangular area defined by the following width and length (includes a portion of the corridor alcove).

Width: Face of guestroom common wall to face of opposite wall (wall to wall dimension). **Length:** Inside face of bathroom/corridor wall to inside face of exterior wall.

7A.2 Guestroom & Suite Types

A. Program: Provide guestroom types and plans to accommodate the furniture and functions described in this Module and to comply with the project Facilities Program.

1. Guestroom plans may be modified to competitively position the property in the marketplace. Obtain MI acceptance.
2. It is desirable to vertically stack guestroom types.

B. Standard Guestrooms: Provide Double / Double and King room configurations. Double guestrooms may include an alternate bed size based on market and culture requirements.

C. Example Guestroom Plans: See the project Facilities Program for area and dimensions required for each project and market.

D. Queen / Queen Guestrooms: Properties may benefit by including queen / queen beds in their room inventory to provide a competitive advantage or address a market opportunity.

1. Facilities Program: Provide queen / queen guestrooms as required by the project Facilities Program.
2. Floor Plan: Provide an additional 46 cm (18 inch) minimum to the typical guestroom headboard wall length to accommodate the queen bed size width.

E. Accessible Guestrooms: Design room layout for use by guests with disabilities. Comply with the most stringent accessibility requirements.

1. Standard: In North America, comply with the requirements of the ADA (Americans with Disabilities Act) / ADAAG (Americans with Disabilities Act Administrative Guide). and the governing code.
   Outside North America, comply with the governing code and guest's accessibility expectations represented by the ADA. **<GR1>**
2. Quantity, Room Mix & Location: Comply with the accessibility standards noted above.
   Outside North America, provide a minimum of 1% of rooms with wheelchair accessibility. Increase quantity based on guest expectation and use.
3. Hearing Impaired: Accommodate persons with hearing impairments in rooms designed to meet the standard noted above.

F. Guest Floor Lounge Guestrooms: **<7C>** If included in the project, provide similar to standard guestrooms with access to Guest Lounge Level and its service amenities. Percentage of Guest Floor Lounge Guestrooms is typically 10% of guestroom keys or as dictated by the project Facilities Program and market.

G. Connected Rooms: Provide selected guestroom types with connector doors in fire / sound rated partition; see connector door requirements below.

1. Quantities: MI may adjust the percentage of connected guestrooms, room mix and location based on market conditions
   - **a.** Typically, connect a minimum of 30% of guestrooms.
   - **b.** Connect King rooms to Double / Double.
   - **c.** Connect standard suites to one or two guestrooms, depending on suite type and floor layout.
   - **d.** Connect accessible (or ADA) to a standard guestroom.
   - **e.** Connect V.P. and Presidential Suites to King, Double / Double guestrooms, to meet market conditions.
2. Connector Door / Frame: Two door arrangement (pair of doors back to back) in single frame; see general door, frame and hardware criteria in this Module.
   - **a.** Type: Solid core, flush faced wood construction; fully bonded.
   - **b.** Size: 91 cm (3'-0") with 81 cm (2'-8") minimum clear opening.
   - **c.** Rating: Not less than rating requirements for doors / frames in rated partition.
   - **d.** Face: Panel design; selected by Interior Designer.
   - **e.** Frame: Hollow steel; paint exposed perimeter frame.
   - **f.** Hardware: Provide with 25.4 mm (1 inch) door deadbolt (thumbturn only); exit latchset; floor stop; door and bottom smoke / sound seal; resilient or stone threshold; hinges; door closers not required

H. Suites: See the project Facilities Program for quantity, type and size. Typically, suites comprise 2 to 5% of key count dependent on the market and Brand concept.

- Locate suites on upper floors with prominent locations given to V.P. and Presidential Suites.
- Suite types for International properties are determined by location and market conditions.
- Coordinate suite type requirements with MI.

I. General Manager's Apartment: Typically, not required for North America properties. Verify with MI if required at international locations.

J. Resort (Retreat) Properties: To accommodate longer average guest stays, resort properties require additional features and guestroom requirements such as:

- Balconies
- Larger closets
- Larger bathroom
- Connected rooms
- Natural light / views
- Upgraded amenities

7A.3 Features - Common to Guestrooms & Suites

A. Acoustic Control:

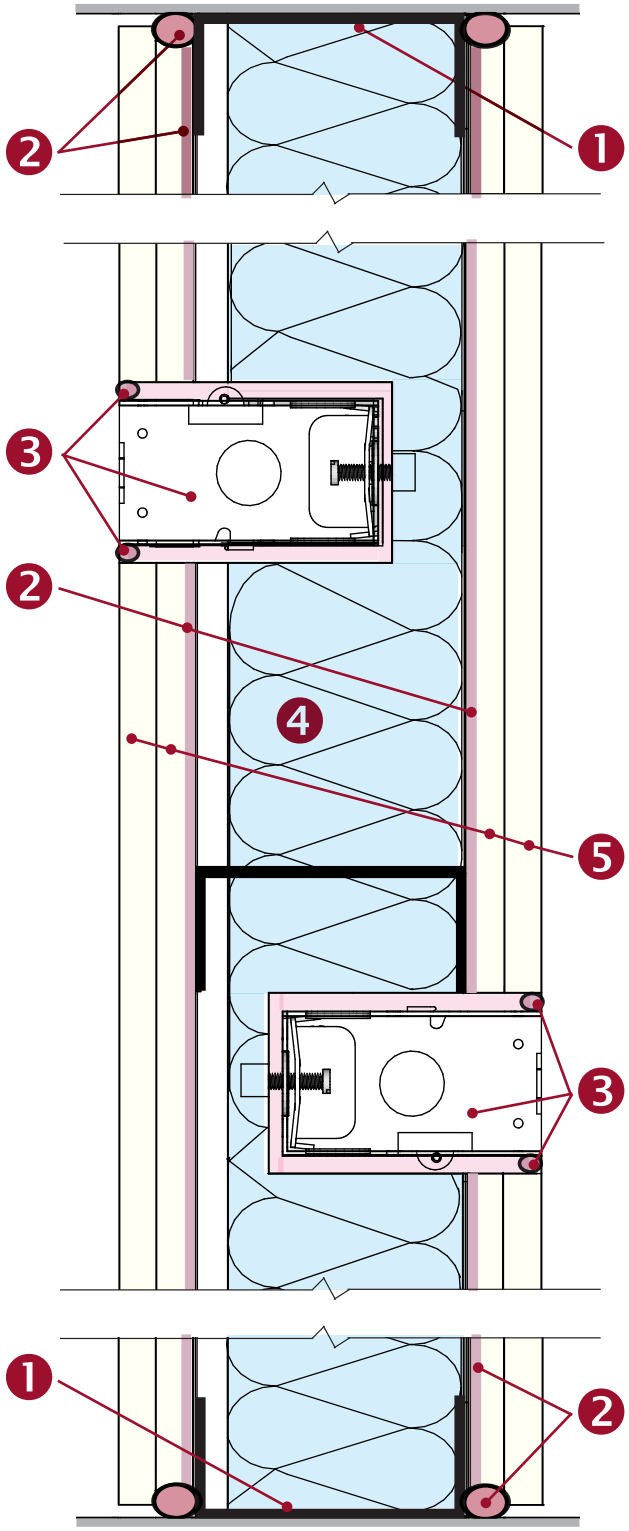
1. Design Coordination: Coordinate acoustic criteria with the following:
   a. Exterior Environmental Noise Intrusion: See Module **<1>** for Exterior Design, Acoustic requirements.
   b. Mechanical Equipment: See **<15A>** for Noise Criteria.
   c. HVAC Return Air: Provide sheet metal, ducted return air.
2. Acoustic Consultant: Acoustic performance of walls, floors and equipment is subject to many variables, Therefore, retaining a qualified acoustic consultant, a member of the National Council of Acoustical Consultants, is highly recommended.
3. Construction Criteria: Provide interior wall, floor and ceiling construction to achieve the following minimum Sound Transmission Classification (STC) and Impact Insulation Class (IIC):

Space / Area - Assembly	Min. STC	Min. IIC
Guestroom party walls in gypsum on stud system	55+	
Guestroom party walls in masonry	50+	
Guestroom shaft and chase walls at bath	50+	
Guestroom elevator shaft walls (double stud)	60+	
Guestroom corridor walls	50+	
Floor / ceiling construction - concrete; carpet floor or sound isolation mat under hard surface finishes such as tile or wood flooring	50+	55
Floor / ceiling construction - frame system	60+	55

4. Elevators: Locate guestrooms away from and not adjacent to elevators and elevator machine rooms. If guestrooms are adjacent to elevator shafts and machine rooms, provide double wall construction (STC 60) to minimize and isolate vibration noise.
5. Construction Details: Provide acoustic rated installations and comply with acoustic construction details in this Module. These details, typically include the following:
   a. Follow the manufacturer's recommended products for acoustic wall assemblies. See Figure 2.
   b. Design to mitigate plumbing and mechanical generated noise above ceilings and in chases.
   c. Locate HVAC **<15A>** supply, transfer, return grills and exhaust, and provide sound and acoustic baffles in ductwork to prevent noise migration between guestrooms.
   d. See http://www.stcratings.com/assemblies.html
6. Acoustic Sealants: Provide non-hardening, flexible sealants designed for acoustic applications to close perimeter joints and openings in acoustic rated walls such as outlet box penetrations.
7. Door / Frame Details: Provide door and frame construction in compliance with the following:
   a. Entry Door: STC 32 minimum for wood or composite solid door fabrication.
   b. Connector Doors: STC 32 minimum (each door) for pair of back-to-back solid doors in double rabbeted metal frames.
   c. Metal Frames: Provide welded corners.
   d. Seals: Provide door perimeter seals and door bottom seals.
   e. Thresholds: Provide thresholds with positive door seal contact at entry and connector doors to comply with door STC rating above.

B. **Entrance Door, Frame & Hardware:** **<GR3>** 20 minute fire rating minimum in rated fire walls of 1 hour; closer required.
1. Door Type: Solid core, stile and rail, wood construction.
   a. Width: 91 cm (3 ft.) with minimum 81 cm (2′-8″) clear opening to meet accessibility requirements for "standard" and "accessible" Guestrooms and Suites unless other sizes are required.
   b. Height: 2.1 m (7 ft.) with 2.0 m (6′-8″) minimum acceptable at interior doors.
   c. Thickness: 45 mm (1¾ inch)
   d. Details: Paint or stain grade wood veneer, style and finish selected by Interior Designer.

Figure 2 - Example: Acoustic Wall - Plan / Section



Failure to seal wall penetrations as noted below will negate the wall's acoustic performance.

1. **Studs:** Perimeter and wall framing members
2. **Sealant:** Apply continuous acoustic sealant on both sides of base, head and wall framing members that adjoin floor, structure above and adjoining walls.
   At masonry walls, seal wall perimeter at floor, structure above and adjoining walls.
3. **Outlet Boxes:** <15C> Offset and stagger outlet boxes between studs (not back-to-back). Fully seal boxes in putty packs (or pads), close off wiring conduits and cable openings with putty, and seal around boxes.
4. **Acoustic Insulation:** Batt insulation; fit tightly between framing members.
5. **Wall Type:** Materials vary (gypsum board panels, acoustic panels, plaster, etc.)

2. Frame: Hollow steel, 1.52 mm (U.S. 16 gauge); fully welded joints with painted finish.
   a. Fastening: Provide anchors and fasteners to secure frame to perimeter construction.
   b. Reinforcement: Provide steel reinforcement within frame at latch strike to deter forced entry with a pry bar type hand tool.
   c. Details: On both sides, provide stained or painted millwork frame surrounds over steel frames.
3. Hardware Materials & Finishes: See Module **<GR3>** Commercial Grade 2 hardware; security latch with striker plate; viewer; floor stop; acoustical / smoke door seal at perimeter and door bottom; hinges; surface mounted door closer.
   a. Entrance Lock: See Module **<16>** - Loss Prevention. Electronic key lock with automatic 25.4 mm (1 inch) dead bolt.
   b. Door Viewer: 160 degree minimum; provide with interior swing privacy cover at 1.5 m (5 ft.) above finish floor. Furnish two at accessible rooms; install second at 1.07 m (3′-6″) above finish floor.
   c. Safety Latch: Bar type or concealed. Coordinate with hardware finish; provide strike plate for finish protection.
   d. At standard guestrooms, provide same door hardware as required for "accessible" guestrooms.
   e. Generally, provide non-corrosive metal / metal finishes, non-painted door hinges, locksets and related exposed hardware.
4. Threshold: Durable, solid material such as granite or engineered stone, color by Interior Designer.

C. **Steps, Stairs, Ramps & Slip Resistance:** See Module **<16>** - Loss Prevention.

D. **Windows:** Provide exterior windows and glazing in compliance with governing code and the following.
1. General Requirements: See Module **<GR3>** for requirements for construction, glass types and safety glazing.
2. Window Area: Approximately 45% of guestroom exterior wall. Maximize window area at resorts.
   a. Large windows are desirable when other design requirements are considered, such as, wind loads, earthquake, energy efficiency, building design, etc.
   b. Use impact resistant window assemblies in regions that experience high velocity wind events and as required by code.

3. Window Operation: **<16>** Operable windows are preferred.
   a. Provide 10 cm (4 inches) maximum operable window opening with manufacturer's restrictive safety stop integrated with the window construction (unless prohibited by code).
   b. Provide with manufacturer's "key" for maintenance operation.
4. Glass / Glazing: **<GR3>** Provide insulated (double glazed), clear glass. If energy or solar control is required, provide tinted or reflective glass that maintains natural looking exterior views and colors, and provides natural ambient light and color to the interior.
5. Acoustic Glass / Glazing: See "Acoustic Control" above for special conditions.
6. Interior / Finish Details: Provide window frame trim materials and finishes coordinated with interior room doors and frames. Provide finished millwork valance as required by Interior Design.

E. Safety Glass & Glazing: See Module **<GR3>** for reference standards. Provide at locations subject to human impact and where required by code. Provide tempered, laminated or safety backing as appropriate. Example locations include:

- Balcony and patio doors and windows
- Shower enclosure and glass doors
- Bathtub surround and screens
- Mirrors (safety backing)
- Skylights
- Full height windows
- Room dividers and doors

F. Guestroom Numbering / Signage: Select guestroom and suite room numbering system early in the project's development.

1. Numbering System: Provide numbering consistent with the hotel's keyed guestroom / suite numbering system.
2. Characters: Do not use combination of characters such as alphanumeric or numbering schemes that may conflict with the building systems such as:
   a. Telecommunications **<13B>** (telephones / Internet access)
   b. PMS (Property Management System) **<13A>**
   c. Electronic key operated entry door locks **<16>**
   d. Avoid use of 13th floor numbering series or other numbers / characters in conflict with regional practice.

3. Numbering Sequence: On each floor level, start guestroom (or unit) numbers (left or right) from the passenger elevator lobby / foyer and increase the number value away from the elevator. Depending on the elevator lobby floor position, do the same in the opposite direction.
   a. Start with 101, 201 etc. (not 100, 200, etc.); first two numbers (right to left) designate rooms "01" to "99"; next number set indicates the floor level "1" to "99" (possibly higher). In rare cases, are there more than 99 hotel rooms per floor.
   b. Provide odd numbers on the left side of the corridor and even on the right (or "street" side).
   c. Because doors are not always aligned along the corridor or from side to side (when larger and smaller rooms are combined), sequential numbers may be skipped to maintain the number sequence from one side of the corridor to the other.
   d. Number only guestroom and suite doors; other doors are labeled, such as "Storage", "Stair 1", etc.
4. MI Acceptance: Obtain MI acceptance for room and floor numbering system.
5. Signage / Graphics: **<GR2>** Provide the following signage and confirm sign locations with MI.
   a. Code: Comply with governing codes.
   b. Accessibility: Include Braille and ADA compliant font type and size.
   c. Evacuation Plan: Provide in frame and glass or acrylic plaque; mount to comply with governing authority.
   d. Guestroom Rate / Checkout: Provide only as required by governing authority and as directed by MI.
   e. Coordination: **<GR2>** Signage types and mounting locations

7A.4 Interior Design, Finishes & Materials

A. Design Concepts - General: Design guestrooms and suites with warm, comfortable ambiance and with upscale to luxury design finishes and features that complements the Brand concept.
Materials - General: **<GR>** Provide aesthetically pleasing, durable and easy to maintain upscale products designed for commercial, hospitality applications.

B. Finishes - Entry Foyer & Primary Living / Sleeping Areas:

1. Floor: Carpet, wall to wall or area rugs over hard surface finish.
   a. Provide hard surface slip resistant flooring **<16>** in Entry Foyer. Carpet is acceptable in secondary markets.
   b. In suites, provide wood floor. Hard surface slip resistant floor finish with area rugs is an acceptable option for international projects based on market conditions; coordinate material requirements with Interior Design.
   c. For hard surface floor finishes (with or without area rugs), provide horizontal acoustic control below hard surface finish construction; see "Acoustic Control" above.
2. Base or Skirting: Painted or stained wood base is preferred. No carpet base.
   a. Match base height in foyer.
   b. Provide wood base in suites.
3. Walls: Wallcovering or painted. Avoid wallcovering on exterior walls in humid areas.
4. Millwork – Moldings & Trim: Decorative, painted or stained millwork throughout; coordinate with interior design. Provide wood casing around entry, bath and closet doors frames consistent with millwork design.
5. Ceiling: Smooth painted, flat (gypsum board substrate or skim coat plaster over ground substrate). Lay-in, concealed grid acoustical tiles, suspended grid and tile systems are not acceptable.

C. FF&E (Furniture, Fixtures & Equipment): See Module **<GR4>** - FF&E criteria applicable to the Brand concept.

D. Lighting: See System Features section at end of this Module.

E. Other Area Finishes: See below for design and finish requirements that include the following:

- Guestroom Closet and Guest Bathroom
- Pantry in Suite
- Balconies, Patios & Terraces

7A.5 Guestroom Closet / Wardrobe

A. Program: Provide closet space with doors and include hanger rod and shelf.

1. Location: May vary according to room type.
2. Size/Area: 1.2 m (4 ft.) long minimum and 0.64 m (2'-1") deep, clear inside.
3. Equipment: Include space for iron and ironing board with wall support storage bracket, and safe (if provided but not located in guestroom area).

B. Doors:

1. Door Finish: Coordinate with interior design.
2. Mirror: Attach full length mirror, integrated on inside of one hinged door leaf nearest entry door or on wall opposite closet (not on sliding doors). Decorative wall mounted mirror in guestroom is acceptable.

C. Features: Provide the following:

1. Shelf: Above clothes rod, provide continuous, solid wood shelf, painted or optional stain finish to match casegoods.
2. Clothes Rod: 32 mm (1¼ inch) diameter, seamless chrome plated steel, below shelf.
3. Drawer Storage: Provide market driven and property determined storage space.
   a. See MI Interior Design Manager for requirements.
   b. Three drawer minimum for storage in console unit or built-in millwork unless directed otherwise.
4. Garment Wall Hooks: Single prong, chrome plated at shelf framing on end wall.

D. Lighting (option): If required, provide closet light with built-in switch control in each door hinge stile; preferred in suites for international projects.

E. Finishes: Coordinate the following with interior design:

1. Floor / Base: Same materials extended from Entry Foyer (no threshold at doors to closet)
2. Walls: Same as Entry Foyer
3. Ceiling: Painted, flat
4. Millwork / Trim: Complementary to closet door finish

7A.6 Refreshment Station (Dry Bar)

A. Program: Design an alcove or casegood element to contain a guest refreshment area or Dry Bar for hot beverages and self serve cold drinks and snack items.

1. Countertop: Provide polished granite or engineered stone top with back and side splash (for alcove).
2. Shelving: Above countertop, provide one, 23 cm (9 inch) deep tempered glass shelf with recessed architectural lighting above (for alcove).
3. Space Below Counter: Provide a millwork cabinet with solid wood door and hardware.

B. Cooling Unit / Refrigerator: Confirm equipment types and requirements with MI.

1. Equipment: If provided, include space below countertop. Conceal equipment behind a hinged millwork cabinet door with latch (no lock). Coordinate with FF&E, OS&E (Operating Supplies & Equipment) and MI regional operations.
   a. Cooling Unit & Refrigerator: Under counter cooling or refrigerator unit stores guest acquired cold drinks and snacks; no ice making or ice trays provided. Provide quiet compressor unit with custom controls; 50 liter capacity.
   b. Mini Bar: **<10>** 60 liter (2.1 cu. ft.) capacity, self-service, half size cooler for liquor, beer, wine, soda and snacks. In markets with high labor rates, provide mini bar units with automated service accounting for connection to computer system / PMS **<13A>**.
2. Ventilation: Provide required space per equipment manufacturer for ventilation of unit.

C. Electrical: **<15C>** For alcove, provide power outlets on side wall above backsplash for coffee service, plus a service outlet on rear wall below counter for cooling unit, refrigerator or mini bar.

7A.7 Guest Bathroom

A. Program: Provide 3 to 4 fixture (toilet, bath / shower or shower only, lavatory with stone vanity top) minimum. Opening up the space with glass walls etc. preferred for a more spacious ambience.

North America:

1. Shower Only: Provide guestroom baths with an enclosed shower (no tub) in compliance with the following minimums:
   a. Standard: 75% of total guestrooms
   b. Resorts: 60% of total guestrooms
   c. King: 100% of king guestrooms
   d. Doubles: 50% of double / double or queen / queen
2. Presidential & V.P. Suites: Provide four fixtures (includes tub and separate shower enclosure).
3. Resort Properties: Market demands may require additional fixtures such as tub, shower enclosure and secondary lavatory in standard guest bathrooms.

International:

1. Shower Only: Provide guestroom baths with an enclosed shower (no tub) in compliance with the following:
   a. Europe & CALA: 50% of total guestrooms
   b. King Guestrooms: The first priority for shower only rooms
2. Middle East & Asia: 4 fixture bath (with tub and separate shower is the norm). At 3 fixture bath, provide tub / shower combination.
3. Presidential & V.P. Suites: 4 to 5 fixtures with tub and separate shower enclosure; in 5 fixture baths, provide fixtures and quantity required by the Region.
4. Resort (Retreat) Properties: Market demands may require other fixtures such as shower enclosure in standard guest bathrooms.

Shower Only Enclosure - Exceptions: Where bathrooms require an enclosed shower (no tub), consult with the Regional MI representative and the project Facilities Program to establish the appropriate proportion of "shower only" and shower / tub bathing fixtures if different than the above percentages.

B. Bathroom Entry Door: Solid wood construction. Sliding ('barn door') design preferred.

1. Size: 91 cm (3'-0") with minimum 81 cm (2'-8") full clear opening.
2. Finish: Coordinate with guestroom interior design.

3. Undercut: 9.5 mm (⅜ inch); no door threshold if continuous floor finish from entry foyer into bath area.
4. Frame: Hollow steel with painted or stained millwork framing.
5. Hardware: Privacy latchset (optional); hinges; floor stop; silencers as appropriate.

C. Bathroom Fixtures, Fittings & Trim: Provide commercial quality products and styles that reflect the Brand concept and theme design.

1. Provide same color fixtures (such as white toilet, tub & vanity bowl) and fitting finishes consistent with bathroom accessories (see below), generally from the same manufacturing source.
2. See plumbing requirements in Module **<15B>** for bathroom fixture models; coordinate with product descriptions below.

D. Bathtub with Shower: Provide dependable facilities to limit hot water temperature to avoid scalding with single, wall mounted, water control mixing / pressure valve and shower control, tub filler, overflow and water outlet control device.

1. Type: Porcelain enameled cast iron or *Americast*, full size tub, flat bottom with slip resistant surface **<16>**. Provide waste / trap designed for below slab installation so the tub well and floor are at approximately the same level.
2. Tub Size: 1.5 x 0.81 x 0.3 m (5 ft. long x 2'-8" wide x 1'-4" high) minimum. Provide per market demand, provide alternate such as longer tubs at 1.7 m (5'-6") minimum, wider and deeper. Include a spacious, built-in amenity ledge at tub walls.
3. Bathtub Ledge: Continuous ledge (suites and resorts only), 15 cm (6 inch) wide at back or along side of tub recommended for placement and display of bath toiletries.
4. Shower Head: Fixed, standard head required at tub / shower. Not required at tub when separate shower enclosure is provided in bathroom.
5. Grab Bar: See criteria under "Bath Accessories" below.
6. Shower Wand Device: Provide hand held adjustable shower wand for international projects.

E. Shower Enclosure: Provide the following:

1. Glazed Enclosure: Frameless, smooth finished - clear safety glass to create sense of a clean, large bathroom area. Provide tempered frameless glass door and quality hardware with compatible finishes.
2. Shower Floors / Walls: Porcelain tile or stone with slip resistant **<16>** floor finish.
3. Shower Head: High quality; position on wet wall, so water stream is not directed at enclosure entry.
4. Water Control Valve. Locate reachable from open entry.
5. Shower Shelf: Provide to hold soap, shampoo and bath amenities.

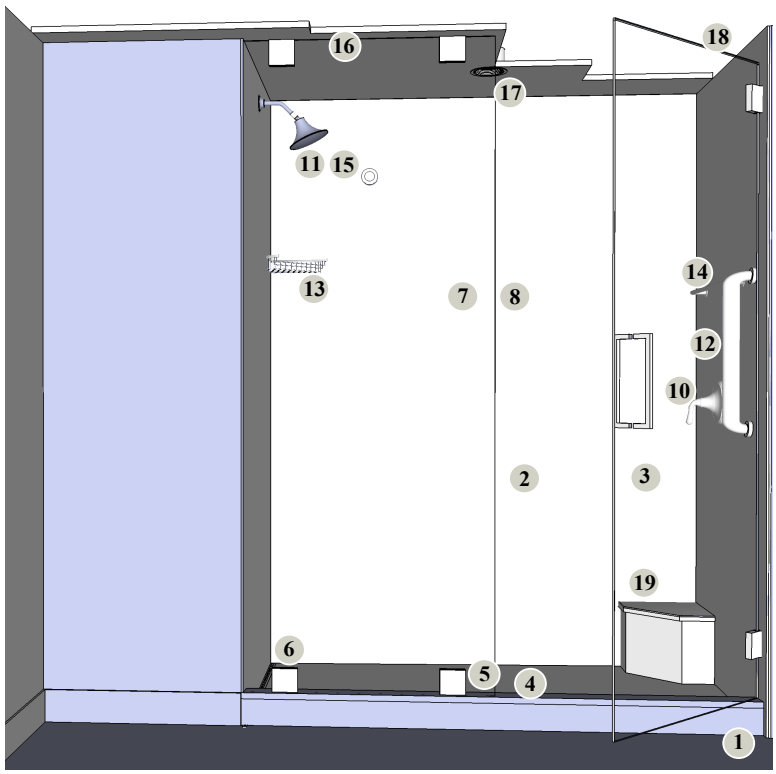


Figure 11

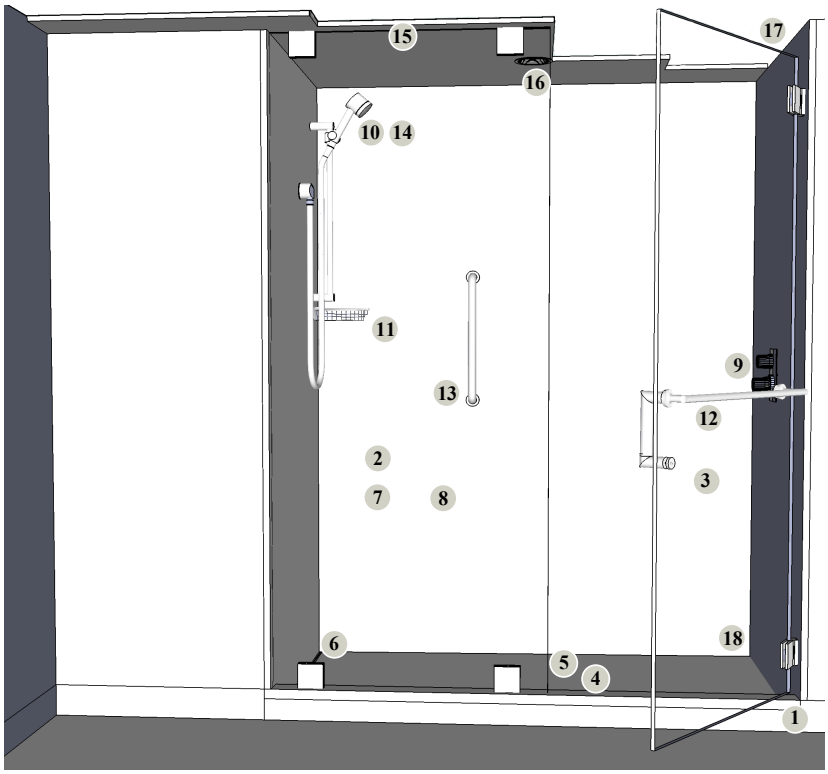
Example:
Shower Enclosure
North America

Provide the following shower features:

1. **Area:** 1.11 m^2 (12 sq. ft.) minimum; 81 cm (32 inch) minimum width.
2. **Enclosure:** Frameless, 9.5 mm (⅜ inch) thick tempered, clear glass, clip mounted.
3. **Enclosure Entry:** 69 cm (27 inch) wide minimum swing door, back to back mounted door pulls. If space is limited for swing door, provide 9.5 mm (⅜ inch) thick tempered, clear glass, sliding frameless door, trackless bottom (no track on curb or wall) with overhead track or outswing pivot door designed with 12.7 mm (½ inch) minimum clearance between closed door edge and wall, not to entrap guest and having overall appearance same as glass swing door system; doorless designs may be considered.
4. **Floor:** Porcelain tile, through body color, slip resistant (no glazed tile; see Module **<16>**); select tile size 5 x 5 cm (2 x 2 inch), smaller tile is not acceptable to accommodate floor slope and reduce grout joints.
5. **Shower Tray / Receptor & Curb:** Waterproof per industry standard; pan or basin with integral drain. Coordinate curb height with integral tray / receptor; slope curb top 10% to direct water to shower floor drain. Obtain MI approval for shower tray / receptor.
6. **Floor Drain:** Provide drain slot at plumbing wall to minimize tile cutting; shallow linear wall drain with cover.
7. **Walls:** Porcelain tile, through body color or glass tile (no 10 cm (4 x 4 inch) glazed tile); material style and size varies, influenced by current design trends.
8. **Tile Grout Joint Size / Color:** 3 mm (⅛ inch) butt joint; blend grout color with tile.
9. (Not Used)
10. **Shower Controls:** At plumbing wall rough-in wall plumbing connection at 122 cm (48 inch) above shower floor finish.
11. **Shower Head:** Comply with MI Standards **<15>** and obtain MI approval for shower product; rough-in wall plumbing connection at 208 cm (82 inch) above shower floor finish with shower head face minimum of 198 cm (78 inch) above floor. Locate to avoid shower spray at entry and on bathroom floor. Other configurations may include hand held type and multiple heads in properties per market demand.
12. **Grab Bar:** Vertical grab bar conveniently placed on shower enclosure entry area wall.
13. **Soap / Amenity Display:** Provide area to display amenities at a shallow wire basket, bench or recessed drainable wall niche.
14. **Towel Bar:** 46 to 61 cm (18 to 24 inch) long, metal; mount on wall opposite wet wall.
15. **Accessory Finishes:** Premium white metal finish on brass (polished, satin, nickel, brushed) or stainless steel substrate.
16. **Ceiling:** 2.13 m (7 ft.) minimum; gypsum board, eggshell paint.
17. **Lighting:** See Module **<15>**; energy efficient, 2700° Kelvin minimum, moisture resistant, center recessed fixture in ceiling.
18. **Ventilation:** Provide 4 inch minimum opening above glass shower door to vent to bathroom.
19. **Bench (option):** Porcelain tile, through body color, large size with 19 mm (¾ inch) stone top and eased front edge.

Figure 12

Example:
Shower Enclosure
International



Provide the following shower features:

1. **Area:** 1.11 m^2 (12 sq. ft.) minimum; 81 cm (32 inch) minimum width.
2. **Enclosure:** Frameless, 9.5 mm (3/8 inch) thick tempered, clear glass, minimize visible mounting hardware.
3. **Enclosure Entry:** 76 cm (30 inch) wide minimum swing door or opening, mount towel bar / door pull on door exterior with vertical door pull on shower side, if utilizing a door.
4. **Floor:** Stone or porcelain tile, through body color, slip resistant (no glazed tile; see Module 16); select material size 5 x 5 cm (2 x 2 inch), smaller tile is not acceptable, to accommodate floor slope and reduce grout joints.
5. **Shower Tray / Receptor & Curb:** Waterproof; alternate pan or basin, finish and type may be considered. Slope curb top 10% to direct water to shower floor drain. Obtain MI approval for shower tray / receptor.
6. **Floor Drain:** Configurations that minimize tile cutting; position away from direct water spray; shallow linear wall drain with cover.
7. **Walls:** Natural stone or porcelain tile with through body color or glass tile (no 10 cm (4 x 4 inch) glazed tile); material style and size varies, influenced by current design trends.
8. **Tile Grout Joint Size / Color:** 3 mm (⅛ inch) butt joint; blend grout color with tile.
9. **Shower Controls:** Dual controls (for volume and temperature) at wall across from enclosure entry. Rough-in wall plumbing connection at 122 cm (48 inch) above shower floor finish.
10. **Shower Head:** Rough-in wall plumbing connection at 208 cm (82 inch) above shower floor finish with shower head face minimum of 198 cm (78 inch) above floor. Locate to avoid shower spray at entry and on bathroom floor. Hand held type on height adjustable bar and multiple heads in properties per market demand.
11. **Soap / Amenity Display:** Provide a shallow stainless wire basket or recessed drainable wall niche.
12. **Towel Bar:** 46 to 61 cm (18 to 24 inch) long, metal towel bar / door pull (dual purpose) on glass entry door exterior; not within enclosure. If not using a door, install on opposite wall from shower head.
13. **Grab Bar:** Place a vertical grab bar on wall across from shower enclosure entry (near shower controls).
14. **Accessory Finishes:** Coordinate all metal bright work finishes; white metal finish on brass (polished, satin, nickel, brushed) or stainless steel substrate.
15. **Ceiling:** 2.13 m (7 ft.) minimum; gypsum board, water resistant paint.
16. **Lighting:** See Module **<15>**; energy efficient, 2700° Kelvin minimum, moisture resistant, center recessed fixture in ceiling.
17. **Ventilation:** Provide 4 inch minimum opening above glass shower door to vent to bathroom.
18. **Bench (option):** Material and design is reviewed by MI.

F. **Water Closet / Toilet:** Water saving, non pressurized flush with fully glazed trap.
   1. Bowl / Seat: Elongated bowl with full contoured, closed front seat and lid.
   2. Enclosure: In Presidential and V.P. Suites, locate water closet in separate compartment.

G. **Bidet:** Provide where required by law or project Facilities Program or where it is the cultural norm. Locate immediately adjacent to toilet in the same compartment.

H. **Vanity / Sink:** Provide single, vanity sink (suites may require two sinks) with adequate vanity counter space for amenities and personal toiletries.
   1. Size: 1.5 m x 56 to 60 cm (5 ft. wide x 22 to 24 inch deep) minimum with 10 cm (4 inch) high back and side splash with same top material.
   2. Top and Back / Side Splash: Durable, such as polished granite or engineered stone.
   3. Vanity Front: Provide to conceal sink and piping from view with coordinated vanity front and storage below. Provide high quality finish for sink and plumbing where exposed below vanity.
   4. Vanity Sink: Porcelain enamel, white color.
   5. Vanity Mirror (FF&E): Provide decorative mirror to coordinate with interior design. Integrated illuminated mirrors are acceptable.
      a. Anti fog mirrors are preferred.
      b. Back lighted mirror is preferred.
      c. Set plate mirrors over wall millwork, with concealed blocking and tamper resistant device, without exposed clips or mounting devices.
      d. 23 x 15 cm (9 x 10 inch) mirror option on shower enclosure wall.

I. **Floor Drains:** See "Sanitary System" section in Module **<15B>**.

J. **Bath Accessories:** Provide accessory package with matching metal finish. Plastic components and ceramics are not acceptable.
Do not include built-in "institutional style" accessories, such as tissue dispensers, soap dispensers, bottle openers and razor blade deposit slot.
   1. Grab Bars: **<16>** Provide and install as follows:
      a. Size: 46 to 60 cm (18 to 24 inch)
      b. Locations: Install and position to assist with entering, exiting and maneuvering within the bathtub and shower spaces.
         - Bathtub / Shower: Install vertically, 107 cm (42 inch) AFF to center of grab bar at bathtub "plumbing wall" or alternate position acceptable to MI.

- Shower Enclosure: Position grab bars to facilitate entry and exiting.

c. Strength: Install to withstand minimum of 113 kg (250 lb.) force in any direction.

d. Finish: Coordinate with the accessory package.

2. Hair Dryer: Hand held, portable, plug in model (not wall mounted) stored under vanity or in closet / wardrobe.
3. Robe Hook: Provide single hook style and double hook style for international properties. Mount near bathtub or on shower enclosure.
4. Shower Rod: Provide with 15 cm (6 inch) bow (only at bathtub) for two part shower curtain and liner.
5. Shower Screen: For international properties, at bathtub / shower, provide laminated glass panel screen (no curtain and rod).
6. Soap Dish: Stainless wire basket located in corner of tub surround wall and in shower enclosure, or a recessed wall niche.
7. Toilet Paper Holder: Single roll type with second roll holder where required.
8. Towel Bars: On side wall in tub or on exterior side of shower enclosure or door (see shower diagrams).
9. Towel Storage: Provide in millwork or free standing storage unit.
10. Clothes Line: Provide at resorts and when required to receive the "star" rating **<GR1>** for which the property is designed. If required, provide a retractable wall mounted clothes line above bathtub or shower.

K. Accessible Accessories: In accessible guest bathrooms, in addition to typical bath accessories described above, provide the following in compliance with the ADA and governing codes for persons with disabilities. **<GR1>**.

1. Bathtub Transfer Bench
2. Bathtub Seat
3. Grab Bars: Fasten to withstand 113 kg (250 lbs.) force in any direction.
4. Shower Seat: Folding seat at roll-in shower only
5. Accessory Finishes: Include same or complementary finishes as indicated for bath accessories.

L. Lighting: <15C> Provide quality, energy efficient lamps and fixtures for bathroom lighting in the following locations:

1. Vanity: Provide back or sidelighted mirrors and recessed single downlight fixture over each sink.
2. Tub / Shower & Shower Enclosure: Provide a recessed, enclosed, gasketed and moisture resistant downlight above tub / shower and shower enclosure.

3. Ceiling: Provide recessed architectural lighting. In larger baths decorative fixtures are acceptable.
4. Lighting Controls: Dimmable lighting preferred.
5. Night Light: Include night light.

M. Finishes: Incorporate quality, upscale and luxury interior bathroom finishes, details and surfaces applicable to the Brand concept and theme such as the following examples:

1. Floor: Through body, porcelain tile or stone tiles with 0.6 wet / dry slip resistant finish. Provide 3 mm (1/8 inch) butt joint. Provide stone threshold when tile terminates at carpet or wood.
2. Base: 10 cm (4 inch) high porcelain or stone tile coordinated with flooring.
3. Wall Finish: 69 cm (27 inch) wide, full height, woven scrim backing, 15 oz. minimum weight wallcovering stone, tile.
4. Tub Surround and Shower Enclosure: Porcelain tile or stone, 25 x 41 cm (10 x 16 inch) or larger tile using stacked coursing with 3 mm (1/8 inch) butt joints.
5. Ceiling: Smooth, water resistant paint on gypsum board. No lay-in or grid ceiling tiles.
6. Access Panel: Detail flush with ceiling finish.

7A.8 Pantry in Suites

A. Program: Provide an enclosed, limited foodservice pantry (or residential style kitchen) in Suites, etc. as appropriate to the market served and required by the project Facilities Program.

Locate adjacent to guestroom corridor with controlled door access from corridor using guestroom electronic key card entry system. **<16>**

B. Equipment: Provide hospitality quality appliances with commercial level features.

1. Sink: In countertop with single lever faucet set, built-in spray wand and garbage disposal.
2. Refrigerator: Upright, 0.42 m^3 (15 cu. ft.), refrigerator / freezer.
3. Ice Machine: Low volume, undercounter model.
4. Microwave Oven: For light reheating, 0.05 m^3 (1.8 cu. ft.) capacity (not 1.0 cu. ft.).
5. Coffee Brewer (5SU): Residential style, 10 to 12 cup capacity with cord and plug attached; verify requirement with MI.
6. Toaster (5SU): Verify requirement with MI.

7. Dishwasher: Built-in undercounter, multi cycle dishwasher, roll out racks, features short wash, rinse/hold, heated dry, rinse aid and silverware basket.
   a. Provide energy saving option.
   b. Simple control options are preferred.
8. Water Filter: If potable water **<15B>** supply has more than 7 grains of hardness, consider installing cartridge type water filter for icemaker and at kitchen sink.

C. Kitchen Cabinets / Counter: Provide high quality residential cabinets. Consider lower quality finishes where pantries are concealed.

1. Finishes: Provide custom wood cabinetry with granite or engineered stone top and splashes.
   a. Cabinet Interiors: *Melamine* finish.
   b. Shelving: Adjustable with *Melamine* finish.
   c. Sink: Stainless steel
   d. Backsplash: 10 cm (4 inch) high; same material as countertop.
2. Hardware: Provide concealed hinges and decorative pulls as selected by Interior Designer.

D. Electrical / Lighting: <15C>

1. Power: Include power outlets for equipment, housekeeping and countertop food preparation.
2. Lighting: Recessed, architectural down lights, with under cabinet lighting.

E. Finishes: Provide the following:

1. Floor / Base: Stone or porcelain tile with 0.6 wet / dry slip resistance **<16>**.
2. Walls: 20 oz. wallcovering or painted surfaces.
3. Ceiling: Smooth surface, painted.

7A.9 Balconies, Patios & Terraces

A. Program: If guestrooms or suites require an exterior balcony, patio or terrace, provide the following design features.

B. Balcony Deck Design: Set balcony slab below interior floor slab and slope deck surface away from building to drain or scuppers connected to storm water system **<15B>**.

C. Doors / Frame: Provide glass and glazing, exterior doors and frames to comply with HVAC **<15A>**, air and water infiltration requirements for project environment.

1. Frame / Finishes: Exterior metal, such as anodized aluminum or equal exterior color finish or solid wood fabrication with metal cladding and anodized finish.
2. Interior Wood Finishes: Stain or paint (factory finish) interior face of wood doors to match door trim and millwork.
3. Marine Environments: Provide aluminum exterior with finish such as *Kynar* (polyvinylidene fluoride, PVDF) coating or equal to match color selected for interior jamb and trim finish.
4. Glass & Glazing: **<16>** Same as required for exterior windows. Include safety glass, tempered or laminated.

D. Door Hardware: Provide the following applicable to door operation:

1. Lock: Provide balcony / terrace door with a standard door lock and a secondary lock such as a bar or latch (to deter break-ins and operation by small children).
2. Secondary Lock: Provide type that is easy to operate, visually obvious and secure. Provide hinge door with night-guard bar and sliding doors with a hinged "Charley Bar" or "Engert" device ("U" shaped hasp lock).
3. Threshold: Aluminum.
4. Hardware Finishes: Provide MI acceptable finishes required by the decor package.

E. Balcony Guard Rail: Protect the open sides of balconies with a continuous guard rail or low, solid wall with cap and the following features:

1. Rail or Cap Height: 1.1 m (3'-6") minimum.
2. Openings: Capable of restricting a 10 cm (4 inch) ball with configurations that limit climbing, such as vertical pickets. Horizontal rails are not acceptable.
3. Floor Clearance: 5 cm (2 inch) maximum to minimize objects from falling off edge.
4. Graphics: Include signage to announce balcony loss prevention **<GR2>** **<16>** measures to guests.

F. **Furnishings:** **<GR4>** Provide two chairs and one table, minimum of good commercial outdoor quality aluminum construction designed for outdoor use; teak or outdoor treated wood is an acceptable option. Utilize weather resistant fabric and foam cushions. Larger outdoor spaces require alternate layout; review requirements with MI.

G. **Electrical:** For lighting and power, see Lighting Table in Module **<15C>** for lighting attributes.
   1. Light Fixtures: Select fixtures that conceal the light source. Verify with MI if light fixtures may be omitted.
      a. Avoid exterior light fixtures where insects are attracted and fixture lights create erratic, conflicting and poor exterior lighting.
      b. At beach resorts, comply with environmental laws.
   2. Outlet: Provide GFI electrical outlet. Mount near table location.

H. **Snow Melting:** At ski resort or sites with heavy snow accumulation, provide snow melting system for on grade patios and terraces.

I. **Finishes:** Provide balcony wall finishes same as required for exterior building walls.
   1. Water Protection: Provide membrane waterproofing below selected finish material (such as ceramic tile or stone) on structural slabs above occupied areas.
   2. Finish Deck Surface: May be concrete, large unglazed ceramic tile pavers or stone.
      a. Seal grouted joints with penetrating sealer finish.
      b. Slip resistant **<16>**.

7A.10 FF&E (Furniture, Fixtures & Equipment) - Guestrooms

A. General: For both design and technical direction, see Module **<GR4>** - Furniture, Fixtures & Equipment (FF&E), 5SU / OSE and obtain product requirements from MI, including but not limited to the following:

1. Millwork
2. Bedding and bedding materials
   a. Bed Frame
   b. Headboard
   c. Bed Components
3. Softgoods
4. Furnishings
5. Decorative Lamps & Lighting Fixtures
6. Art, Artifacts & Decorative Accessories
7. Mirror
8. Window Treatment

B. Equipment: Provide the following guestroom and suite equipment.

1. Telephones: Coordinate the following system characteristics with Module **<13B>**:
   a. Guestrooms: Provide one telephone extension line and one phone at bedside nightstand as a minimum.
   b. Suites: Typically, require more than one phone.
   c. Phone Types: One phone is required to function during power failure.
      - Corded Handset: Wired to powered phone connection
      - Cordless (or wireless) Handset: Highly recommended. Provide with a powered base station and battery back-up handset or other method so phone functions during power failure.
      - House Phone: Typically, corded handset wall phone in Suite Pantry
   d. Accessibility: For person with disabilities, provide the following
      - Telephones with volume control handsets and text telephones as required by governing accessibility regulations are available at the front desk.
      - Mount accessible phones at required mounting height and clearance.
   e. Guest Lounge Level Rooms: Typically, locate another phone (cordless handset) at desk (may include speaker phone features, if required by project).

f. Cellular Phone Coverage: **<13A>** Provide in guestrooms and throughout guestroom areas.

2. Property Internet (PI): **<13A>** Provide guests with access to wireless LAN (WiFi) for internet connection in guestrooms and throughout guestroom areas.
3. Connectivity Panel: **<13>** Direct cable from desk to TV is a market option.
4. Televisions: **<13C>** Provide hospitality grade TV units in guestrooms as follows:
   a. Locations: On dresser top or wall mounted.
   b. Type: Flat panel, LED, High Definition (HD) color receiver.
   c. Screen Sizes: 107 cm (42 inch) minimum (measured diagonally) or larger per market demand.
   d. Tuning: Digital
   e. Remote Control: Un-affixed remote control unit
   f. Casing / Finish: Plastic casing design for hospitality use, in black finish only.
   g. Base: Locking (to dresser unit) with 180 degree special security, swivel base plate by *J.G. Edelen* affixed to TV.
   h. Electric Cord: 1.8 m (6 ft.)
   i. PPV Interface: Integrated interface for pay per view provider, either On Command Video or other authorized PPV provider as required in the relevant market.
   j. Network Connectivity: Internet Protocol (IP) Network connectivity, either shipped with the TV, or at a minimum, available as a field upgrade.
   k. General Purpose Computing: Associated with IP network capability, support for running Internet Browser software, either shipped with the TV, or at a minimum, available as a field upgrade.
   l. Guest Connectivity: Minimum of Component Video, Composite Video, Audio In (both RCA and Stereo Mini-jack), and Monitor In (15 pin), connections for guest device connectivity. Capability to dynamically detect and configure the TV to appropriately play content from the source device.
   m. Separation of Audio and Video subsystems: Ability to display video from one source, while simultaneously playing audio from a second source, rather than the audio sound-track from the video program.
5. Cooling Units, Refrigerators & Mini Bars: See the OSE list provided by MI.
6. Safe for Guestrooms & Suites: Provide in-room safe, does not replace safety deposit boxes at Front Desk. See the OSE list provided by MI.

a. Location: Securely anchor safe in a location easily accessible to guest.
   - Safe may be secured to a closet shelf attached to wall.
   - Locate at desk area; attach in casepiece drawer.

b. Manufacturer: *MiniBar, Elsafe* or *Safemark*.

7. Bedside Control Panel: Provide if required to obtain hotel "star" rating or if typically provided in the market. Controls operate lights, drapery and TV.

7A.11 Systems Coordination

A. Mechanical / HVAC: See Module **<15A>**

1. Design and provide system capable of providing guest selectable guestroom heating or cooling.
2. Accommodate mechanical grilles, devices and controls into the interior design.

B. Electrical:

1. Lighting: See Modules **<15C> <GR4>.** Comply with governing regulations.
2. Electrical Coordination: **<15C>**
   a. Position power outlets in compliance with government regulations. Unless noted otherwise or required by regulations, locate centerline of receptacles at 46 cm (18 inches) above floor.
   b. Do not install back-to-back outlet~~s~~ boxes between guestrooms.
   c. Coordinate power outlets, fixture locations, switches and furniture / casegood locations to minimize exposed cords. Provide floor power outlets to service free standing furniture such as a desk.
   d. Outlets: At international properties, provide universal power outlets for guest convenience at bathroom vanity, bed night stand, desk area, and pantry counter.
   e. Electric Power / Service Connections: Provide service outlets in wall at desk for connection of MI accepted, optional connectivity panel with phone, data, A/V ports and universal electric outlets. Include wall receptacles below desk for light fixture and guest convenience.
   f. Coordinate off / on wall switch locations with wall receptacle outlets, if remote wall switching is provided to wall receptacle for light fixtures.
   g. Light / Power Switches: Provide "rocker type".

C. Fire Protection Devices : **<14>** Accommodate fire sprinklers, smoke detectors, alarms and controls into the interior design.

D. Reference: Coordinate with requirements of other Modules including:

- GR General Requirements
- 13A Information Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical - Plumbing - Electrical
- 16 Loss Prevention

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STANDARDS

MODULE B

GUESTROOM CORRIDORS / SUPPORT

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Guestroom Corridors / Support

7B.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Concept: The Autograph Collection is a diverse group of Independent Lifestyle Hotels and Resorts that embody an upscale level of design and service. Each property is unique and represents its Brand position through its design. The purpose of this guide is to assist in the integration of the functions outlined in this Module together with the project's Facilities Program and its unique character to create a memorable design and guest experience.

B. Program: Provide guest circulation and service support spaces that complement the guestroom experience and reflect the interior design and finishes of the public spaces.

C. Relationships: The Guestroom Corridor and Support areas serve three primary functions.

1. Guest Circulation: The corridor provides a transition between the hotel public areas and the guestrooms.
2. Service Circulation: The corridor enables employees to access guest areas to provide services.
3. Emergency Egress: The corridor provides emergency exiting from the guestroom areas to the exterior.

D. Steps, Stairs, Ramps & Slip Resistance: See Module **<16>** - Loss Prevention.

E. Windows & Safety Glass: See Modules **<GR3>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

F. Spaces: Accommodate the following spaces:

- Guestroom Corridors
- Guest Elevator Foyers
- Service Elevator Foyers
- Ice Dispensing & Vending
- Housekeeping / Linen Storage
- Guest Laundry (Resorts only)
- Distribution Rooms
- Exit Stairs

7B.2 Guestroom Corridors

A. Program: Create comfortable and inviting space rather than a zone that must be crossed. Level changes are not permitted.

B. Location: On every guestroom level connecting guestrooms and suites to means of egress, stairs, service circulation and access to guest support spaces.

C. Size / Area: Vary widths and orientations and incorporate guest room entry alcoves to establish a residential character and to "de-institutionalize" the guest experience.

1. Corridor Width: 1.5 m (5 ft.) minimum
2. Corridor Dead-end: 15 m (50 ft.) maximum distance
3. Ceiling Height: 2.4 m (8 ft.) minimum

D. Features: Provide the following:

1. Alcoves: At guestroom entries, enlarge corridor to form recessed wall alcoves (or door drop) a minimum of 30 cm (1 ft.) deep at each side of corridor.
2. Natural Light / Views: Provide natural light into and exterior views from Guest Corridors and Guest Elevator Foyers.
3. House Telephones: Single telephone at elevator vestibule casepiece; locate additional house phones at logical nodes where guest corridors are excessively long or convoluted. **<13B>**

E. Signage & Graphics: See Module **<GR2>** and comply with ADAAG for persons with disabilities.

1. Graphics: Coordinate with surrounding materials and minimize wherever possible to maintain residential, upscale atmosphere.
2. Locations: Typically, provide guestroom numbers, directional signs, emergency evacuations, ice dispensing / vending area and exit signs.
3. Door Signs / Graphics: Do not mount guestroom graphics on doors, but install on wall at latch side of door, 1.5 m (5 ft.) above finish floor.
4. Exit Signs: Green color lighted, if approved by code.

F. Finishes: **<GR4>** Includes foyers and entrance alcoves.

1. Color Palette: Fully coordinated with guestrooms and related areas.
2. Floors: Carpet and padding
3. Base: Painted or stained wood; profiled resilient vinyl base is a property option; coordinate with Interior Design. No carpet base.
4. Walls: **<GR4>** Wallcovering throughout with door drop (alcove) in contrasting wallcovering accented by architectural detailing to provide a residential appearance and to disguise access panels, electrical closets and similar devices.
5. Corner Protection: Provide full height, ultra slim metal edging strips that complement or blend with adjacent wall finishes at exposed corners. No plastic corner guards.
6. Ceilings: Smooth painted, no textured finish; do not use ceiling tiles and exposed suspended systems.

G. Finish Materials: **<GR4>** Coordinate with Interior Design and FF&E requirements.

1. Carpet: 80/20 *Axminster* or Computer Yarn Placement (CYP) solution dyed nylon
2. Carpet Padding: Synthetic rubber or rubber compound, *Tredmor* 68 oz./sq. yd. by *Sponge Cushion*
3. Carpeting Installation: "Double glue-down" carpet and padding with hot-melt carpet seams.
4. Wallcovering: See Module **<GR4>** for public areas.

H. FF&E - General: See Module **<GR4>** for Public Spaces. Provide carpet and padding, wallcovering, furniture, fixtures, window treatments and equipment for Guestroom Corridors, Passenger Elevator Foyers and applicable service spaces.

I. MEP / Fire Devices: Coordinate locations of exposed fire sprinkler heads, standpipes, smoke detectors, alarms, annunciators and other fire and life safety devices **<14>**. Exercise care and coordination in selection and placement of devices.

7B.3 Passenger Elevator Foyers

A. **Program:** Foyers are required as a transition space between elevators and elevators to guest corridors.

B. **Location:** Connection between corridor and elevators at each guest floor.

C. **Size / Area:** Minimum width of 2.4 m (8 ft.) for single-loaded elevator banks and 3.6 m (12 ft.) at double-loaded elevator banks.

D. **Features:** Accommodate and include furnishings such as credenza or casepiece and guest seating; framed decorative mirror or artwork and artifacts (for Brand pull through). Include house telephone **<13B>**.
   1. Doors: Design and treat doors with intriguing concept-relevant detail.
   2. Call Signals: **<12>** Design thoughtfully within the concept for a unique element of surprise.
   3. Floor Numbers: Where floors are identified, number them based on the design concept (not just a number applied to the door frame).

E. **Sound:** **<13C>** Provide an integrated sound system.

F. **Lighting:**
   1. Accent Lighting: Provide concealed accent lighting mixed with unique (decorative) fixtures.
   2. Dimmable System: Provide a dimmable and programmable lighting system for "day" to "night" transition.

G. **Finishes:** Generally, same as guest corridors, but spaces may be upgraded with finishes and millwork details.

7B.4 Service Elevator Foyers

A. **Program:** Provide foyers to screen from public / guest view and armor service elevator foyers and service doors.
   1. Do not permit service elevators to open directly into guest corridor.
   2. Provide service foyer size similar to guest elevator foyer.

B. **Finishes:**
   1. Floor: Steel troweled concrete with hardener. Extend corridor flooring and base into these areas if space is visible from Guestroom Corridor.
   2. Base: Resilient or rubber base. If walls are concrete or concrete block, paint to intersection of floor line.
   3. Walls: Painted: Architecturally finish where visible from guestroom corridor.

7B.5 Ice Dispensing & Vending

A. Program: Verify if self-service ice dispensing is required by region. Otherwise, provide ice dispensing and beverage vending in a dedicated room on each floor adjacent to guest corridor.

B. Size / Area: 2.3 m^2 (25 sq. ft.) minimum

C. Door: 90 cm (3 ft.) wide entry minimum and provide with large clear glass area for viewing into room. Sensitively plan and locate room with door to minimize exposure (noise and views) from guestroom corridors.

D. ice Machine: **<10>** Water cooled, self serve ice dispenser type (not bin type) per 36 guestrooms on each guestroom floor; coordinate with Module **<15>** for HVAC and drain.

E. Beverage Vending: Coin / currency operated; locate adjacent to ice machine.

F. Lighting: Decorative ceiling fixture or recessed down light fixture; no fluorescent tube lighting.

G. Finishes:

1. Floors: Porcelain tile, 406 x 406 mm (16 x 16 inch) minimum or larger, running bond pattern
2. Base: Tile base, 10 cm (4 inch) high minimum
3. Walls: Wallcovering or painted
4. Ceilings: Smooth painted surface

7B.6 Housekeeping / Linen Storage

A. Program: Housekeeping **<11>** storage is centralized in one area. Housekeeping staff typically service rooms from housekeeping carts to transport linens, cleaning supplies, and soiled linen / laundry.

B. Location: Provide a housekeeping / linen storage room near Service Elevator Foyer and Guestroom Corridor.

C. Size / Area: Accommodate floor sink; storage for housekeeping cart (see "Linen Storage" below), folding beds; storage linen shelves; cleaning supplies and materials; fold-up work counter; access to linen chute.

D. Features: Provide the following:

1. Floor Sink: 76 x 76 cm (30 x 30 inch) **<15B>**; back and side-splash protected with ceramic wall tile.
2. Work Shelf: 64 x 122 cm (25 deep x 48 inch wide) at 91 cm (36 inch) above floor.
3. Linen Storage: 2.4 m (8 ft.) of 3 tier shelving for every 36 guestrooms and storage space for one housekeeper cart for every 15 guestrooms. One cart measures 152 x 56 x 107 to 163 cm (60 L x 22 W x 42 to 64 inch H).
4. Doors: Provide the following:
   a. Single Doors: 3′-6″ wide.
   b. Double Doors: 3′-0″ wide, each leaf.
   c. Controlled Access: **<16>** Electronic key card.

E. Linen Chute: Provide metal, prefabricated chute assembly, accessible only to employees at housekeeping space on each floor.

1. Standards: Comply with current NFPA regulations. See Module **<14>** for chute fire protection system requirements for sprinklers and smoke venting through roof.
2. Vestibule: Provide a 1.2 x 1.2 m (4 x 4 ft.) accessible vestibule through fire rated door from Housekeeping or large enough to permit the cart in the room to empty.
3. Chute: 0.76 m (30 inch) diameter; metal with smooth interior to avoid damage to linens.
4. Hopper / Chute Discharge: Stainless steel door with a fusible link at laundry facility on lower BOH floor area; see Module **<11A>**.

F. Finishes:

1. Floors: Resilient composition tile.
2. Base: Resilient or rubber base, 10 cm (4 inch) high minimum; ceramic base tile at wet areas.
3. Walls: Painted; ceramic tile at wet areas.
4. Ceilings: Painted exposed structure (no suspended ceiling system).

7B.7 Guest Laundry for Resorts (option)

A. Program: When required by the project Facilities Program, provide a room for self service, coin / currency operated washers and dryers with deep sink and sorting table.

B. Location: Adjacent to housekeeping area and public circulation corridor with visual access from corridor for passive surveillance.

C. Features: Provide the following:

1. Door: With large vision lite
2. Drain: Area floor drain

D. Equipment: One each, washer and dryer (top loading), up to 300 guestrooms.

E. Finishes:

1. Floors: Porcelain tile, 406 x 406 mm (16 x 16 inch) minimum or larger, running bond pattern.
2. Base: Tile base, 10 cm (4 inch) high minimum.
3. Walls: Wallcovering or painted.
4. Ceilings: Smooth painted surface.

7B.8 Distribution Rooms

A. Program: Accommodate the distribution of the following systems in secure, enclosed closets on guestroom floors:

1. Telecommunications: **<9> <13B>** Provide wall space for mounting IDF (Intermediate Distribution Frame) telephone cable distribution to plywood.
2. TV / Video: **<9> <13C>** Provide space for TV / video cable and panels.
3. Electrical: **<9> <15C>** Provide room for electrical panels, conduits and branch circuit distribution.

B. Finishes:

1. Floor: Steel trowel concrete smooth and seal
2. Walls: Painted. Plywood panels for mounting equipment.
3. Ceiling: Paint exposed overhead structure.

7B.9 Exit Stairs

A. Program: Minimum of 2 remote stairs serving guestroom floors above and below grade.

B. Operational Control: In multi-use facilities, in order to maintain operational and security control as determined by the Loss Prevention Review **<GR1> <16>** process, hotel exit stairs may be restricted and may not be shared or connected to office, retail, residential, or other non hotel uses. Confirm roof access through locked enclosure above top guest floor.

C. Size / Area: Comply with Marriott Fire and Life Safety Standards **<14>** for size, location, and stair pressurization (if required).

D. Steps & Stairs: See Module **<16>** - Loss Prevention.

E. Signage & Graphics: <GR2>

1. Provide floor numbering and emergency information in 20 cm (8 inch) high characters at each landing.
2. Comply with governing code and bilingual designations.

F. Features: Provide the following:

1. Fire Protection / Life Safety: See Module **<14>**.
2. HVAC: **<15A>** Provide conditioned air.

G. Finishes:

1. Floor: Steel troweled concrete with hardener or painted landings and treads. Extend corridor flooring and base into these areas if visible from Guest Corridor.
2. Base: Resilient base; if walls are concrete or concrete block, paint to intersection of floor line.
3. Walls: Paint and architecturally finish where visible from guest corridor.
4. Stair Handrails & Stringers: Paint
5. Other Surfaces: Paint fire hose cabinets and similar surfaces.
6. Ceiling: Paint exposed overhead structure.

7B.10 Systems Coordination - Corridors

A. Fire Protection & Life Safety: See Module **<14>**; include fire sprinklers, standpipes, smoke detectors, alarms, annunciators and other Life Safety devices. Exercise care and coordination in selection and placement of devices.

1. Fire Sprinklers:
   a. Corridor: Wall mount, semi recessed
   b. Elevator Foyers: Semi recessed
2. Other Equipment: If fire extinguishers, hose cabinets and standpipe cabinets are required, enclose in fully recessed cabinets. Maintain wall acoustic and fire rating at recessed cabinet locations.

B. MEP Systems: See Module **<15>**

1. Mechanical: Include ventilation, cooling, heating, and smoke control (if required).
2. Ventilation Registers: Exercise care and coordinate design placement and selection of wall and ceiling ventilation registers.
3. Power Outlets: Provide housekeeping power outlets at 15 m (50 ft.) on center for corridors and one outlet at each elevator foyer, service and housekeeping space. **<15C>**
4. Lighting: **<15C>** Include architectural and decorative fixtures with compact fluorescent in corridors and foyers.
   a. Vary general corridor lighting levels and sources. Coordinate combinations of ceiling mounted fixtures, wall sconces.
   b. Highlight and standardize light levels and methods at typical guestroom entry alcoves, and artwork locations; provide special or feature lighting at suite alcove entries.
   c. Provide general ambient lighting in service areas.

C. Reference: Coordinate with requirements of other Modules including:

- GR General Requirements
- 12 Elevators & Escalators
- 13A Information Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical - Plumbing - Electrical
- 16 Loss Prevention

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STANDARDS

GUEST FLOOR LOUNGE

MODULE C

May 2014

Contents

Module Organization

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Guest Floor Lounge

7C.1 Overview

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B. Program: A guest floor lounge is not a Brand essential but, if provided, it shall be consistent with the overall property Brand and designed to provide the accommodations outlined in this Module.

The Guest Floor Lounge (GFL), typically referred to as the Concierge Lounge or the Executive Guest Lounge (EGL), is an upscale to luxury residential style amenity.

The GFL offers buffet food and beverage service in a relaxing, residential environment. Seating and tables are flexible to maximize utilization for guests residing on the Guest Lounge Level or Executive Room floors, the Specialty Suites or guests attending an invitational function.

The lounge provides the following amenities and services:

1. Relaxation: A relaxing environment for guests to unwind, away from their guestroom and public circulation.
2. Business / Work: A place to conduct informal business activities.
3. Concierge: Access to personalized services.
4. Food & Beverage: Convenient access to excellent select light food and beverage buffet throughout the day.
5. Privacy: A place to meet, away from public spaces and lobby.
6. Socializing: Opportunity to meet other guests in a quality private environment and a place to host private receptions.
7. Television / News: View focal, news and sports material, especially in the morning.

C. Space Planning: Locate the GFL in a centralized area with easy access for Guest Floor Lounge level guests, a premier view, and convenient access to service circulation. In order of priority, position the GFL based on the following:

1. Elevator: Adjacent to and with direct visibility and access to Passenger Elevator Vestibule.
2. View: Premier view is required. Locate at the highest hotel level without compromising the location or importance of special suites.
3. Service Elevator: Ideally, locate the lounge pantry adjacent to or near the Service Elevator to minimize service circulation in the guest corridor.
4. Multi Level: For multiple Guest Floor Lounge level floors, locate the GFL on first and/or middle level of guestrooms. If feasible, provide an architectural interconnecting staircase.
5. Balcony or Terrace: When included in the project Facilities Program, additional seating at exterior balconies or terraces is beneficial based on the climate and location. See Module **<7A>** for balcony design details.
6. Building Architecture: Where premier exterior or facade position is critical to development of an architectural image and building massing.

D. Size / Area: Meet the following GFL area minimums and as dictated by the project Facilities Program (exceeding these area minimums is recommended, especially where the number of elite rewards members using the property is high):

1. 150 Guestrooms: 2 standard guest room bays.
2. 300 Guestrooms: 3 standard guest room bays.
3. For every 150 guest rooms above 300, add 1 standard guestroom bay.
4. Projects in Asia, Middle East and urban / city center locations require a larger GFL as dictated by the project Facilities Program.
5. Comply with NFPA 101 and governing code for increase exiting requirements (2 or more remote exits) if guestroom occupancy calculation exceeds 50 persons based on 1.4 m^2 (15 sq. ft.) per person; see Module **<14>**.

E. Stairs, Steps & Ramps: Make stairs and steps apparent through use of essential design elements per Module **<16>** (including ramps where required) and in compliance with governing codes.

F. Windows & Safety Glass: See Modules **<GR3>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

G. Property Systems: See Modules **<13A> <13B>**. Provide Wi-Fi, wired Internet and cell phone coverage throughout the GFL spaces for guest access.

H. Spaces: Accommodate the following spaces:

- Entrance / Foyer
- Work / Business Areas
- Socializing
- Buffet
- Dining
- Service Pantry

7C.2 Program Spaces & Areas

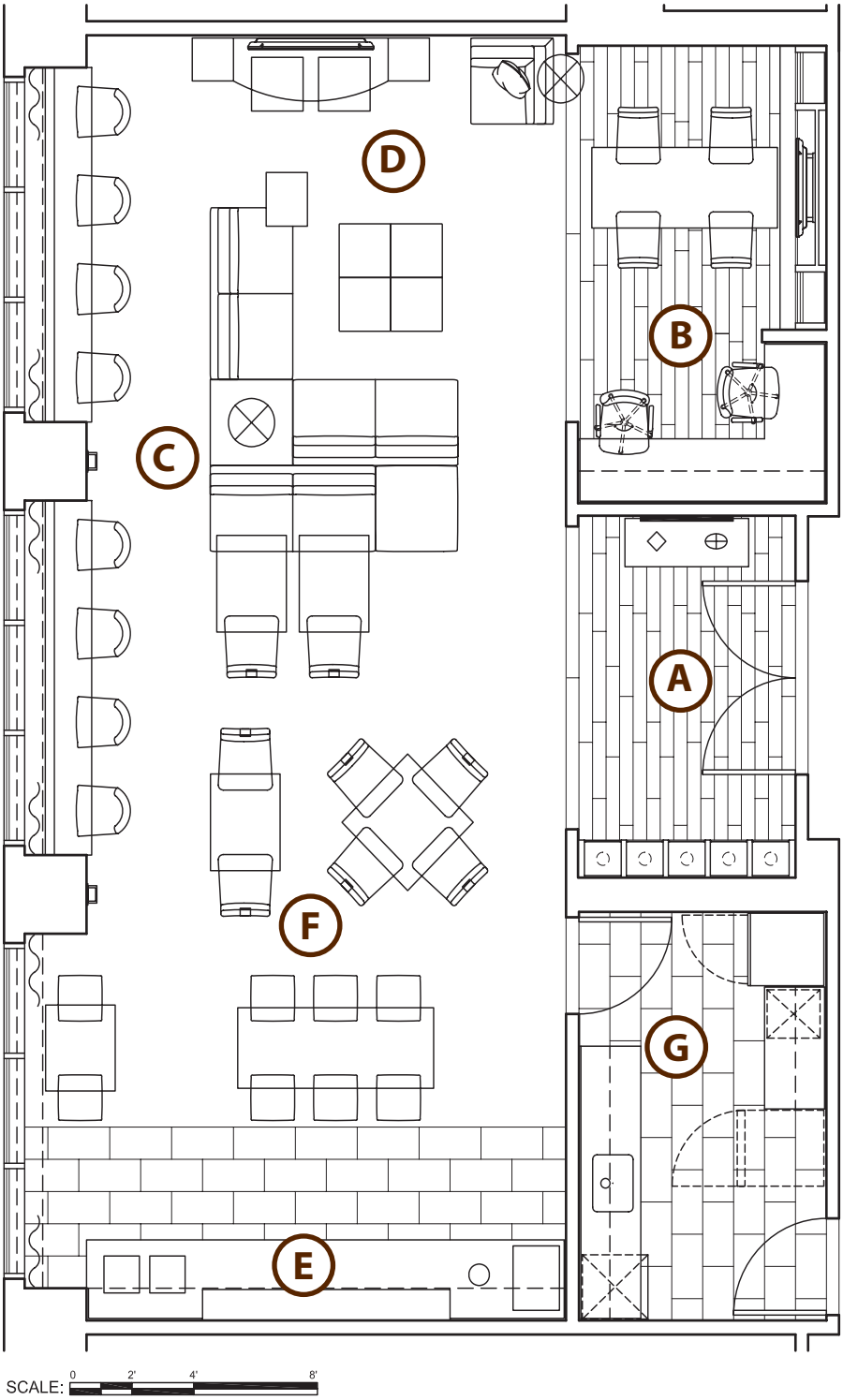
A. Entrance / Foyer: Readily identify foyer / formal entrance to GFL from point of principal guest arrival, such as guest elevator vestibule.

1. Entry Doors: Provide decorative entrance doors such as clear or frosted paneled glass French doors (verify fire rating).
2. Guest Access: At GFL entrance door and from inside elevator cab using electronic key, compatible with guestroom electronic lock system **<16>**.

B. Work Area: Provide a defined work space for attendant to accommodate guest needs and for guest computer access.

1. Desk: In work area, include a minimum of one attendant and one guest computer station (additional stations may be required for larger GFLs).
   a. Locate away from entrance foyer.
   b. Accommodate seated attendant and guest to include cabinet storage and millwork desk.
   c. Provide duress alarm at desk. **<16>**
2. Reception Equipment: Provide in work area.
   a. Locate business equipment to facilitate and assist guest registrations, check-outs and boarding pass access.
   b. Cashiering and currency exchanges are not accommodated at this desk and guests are directed to property registration.
   c. Attendant provides guest services, essentially duplicating those of check-in, main reception, concierge desks, and business center if applicable. **<2A> <13A> <13B>**

Figure 1 - Example - ***: Three Bay GFL (North America)***



LEGEND

A Foyer / Entrance
B Support Work Area
C Main Guest Lounge
D Socializing Area
E Buffet
F Dining
G Service Pantry

C. **Business Area:** GFL includes work area to facilitate business requirements.
   1. Location: Design work area with communications, TV, connectivity panel and display millwork for reading materials.
   2. Equipment: Typical equipment includes the following:
      a. Commercial desk top photocopier
      b. Fax machine **<13B>**
      c. Computer (PC) and ink jet printer **<13A>**
      d. Millwork desk including cabinet storage and ergonomic desk chair
      e. File cabinet
      f. Computer connections, Wi-Fi and wired Internet
      g. Telephone and cell phone coverage **<13A> <13B>**

D. **Socializing:** Plan the GFL area to accommodate guest relaxing, dining and socializing activities.
   1. Seating Areas: Organize seating in zones to accommodate the different activities of GFL guests. Generally, seating includes the following 3 core guest / patron activities:
      a. Relaxation Area: 30%; general relaxation, soft seating and quiet socializing.
      b. Socializing Area: 10%; impromptu small meeting / discussions, light business activities and quiet communal table game / card playing.
      c. Dining & Buffet Area: 60%; complimentary food and beverage service.
   2. Relaxation Area: Position soft seating groups close to large flat screens to provide a buffer to the main dining area and business conversation area.
      - Seating: Casual sofas and chairs; modular style soft seating
      - Tables: End tables, cocktail tables, mobile C-tables at continental height for F&B service, dining tables and chairs
   3. Quiet Area: Accommodate impromptu small meeting / discussions; light business activities; quiet communal table game / card playing.
   4. Buffet & Dining Area: Typically, this area supports two primary activities; complimentary buffet and general socializing.
   5. Features: Provide the following:
      a. Service Outlets: **<13A> <15C>** Electric service for flat screen TVs and connectivity panel. Integrate into millwork at communal table area.
      b. Telephones: **<13B>** Minimum of 3 cordless units per lounge and cell phone coverage.

c. Televisions: **<13C>** 127 cm (50 inch) minimum, large, flat screen TV in main area to view from one soft lounge seating area and 94 to 107 cm (37 to 42 inch) flat screen TV from secondary areas. Include TV connectivity panel in secondary areas.
d. Background Music: **<13C>** Speakers and local radio / CD / audio system.

E. **Buffet:** Main feature and focal point for complimentary buffet and self-service beverage bar. Customize for the property's installation to accommodate food and beverage service:
1. Main Segment: Permanent main segment with built-in features. However, an auxiliary buffet / island counter and bar may be utilized to complement and support the function.
   a. Provide display wall for liquor, glassware, that can be concealed and locked.
   b. Complement with open cubbies above for decorative accessories.
2. Service: Accommodate periods of full and light service. As an example, during off-peak periods, beverage service may be provided, therefore appropriately display unused portions of buffet.
3. Built-In Equipment: Limited built-in service equipment, locked storage, two glass door, display refrigerators. On durable surface, such as granite, provide single service coffee machine (WMF for example), toaster, minimum of two flush mounted induction units, built-in trash opening adjacent to coffee service. If provided, integrate with interior design.
4. Display Shelves / Cabinets: Provide glass display shelves for glassware and liquor bottles above counter in lockable millwork or lockable undercounter cabinets for securing liquor and lounge amenities.
5. Lighting: Provide ceiling lights above buffet counter and tables to highlight food displays.

F. **Dining Area:** Capitalize on window counters for best view.
1. Dining seating proportions:
   a. Table & Counter Seating: 70% (including accessible table seating for persons with disabilities).
   b. Lounge: Soft seating style; 30%
2. Seating: Provide seating with tables suitable for working, eating and relaxing. Dining tops to facilitate groups of 2 to 4.

3. Balconies & Terraces: When required, provide the following:
   a. Furniture layouts to permit attendant service circulation to and from balconies and terraces.
   b. Accommodate overflow guest seating.

G. Service Pantry: Provide for light food and beverage service to guests, including storage, light food prep, cleaning and trash holding, and related equipment: **<10>**

1. Location:
   a. Adjacent to entry area.
   b. Situated behind or adjacent to Buffet.
   c. Directly accessible from service circulation corridor or Service Elevator vestibule.
2. Features: Provide the following:
   a. Sound isolation mat below hard surface floors.
   b. Floor drains.
   c. Base Cabinets: HPL
   d. Telephone: One cordless set.
3. Pantry Equipment: See Module **<10>** for criteria. Verify if size, use and codes require commercial duty equipment.

H. Option Spaces: If required by the project Facilities Program, include the following spaces:

1. Guest Toilet: Within a larger GFL, provide private male and female toilet or multiple occupancy toilets.
2. Telephone Alcoves: May be required in larger GFLs; see project Facilities Program.
   a. Adjacent to GFL foyer or in close proximity to Meeting Area of Main Lounge.
   b. Minimum of one guest telephone alcove.
   c. Provide counter, electric outlet, data port and telephone. **<13C>**
3. Boardroom: If required, see Module **<6>** for Boardroom requirements.

7C.3 Interior Design - Finishes

A. Design Coordination: Coordinate with Passenger Elevator Lobby, connected GFL Corridor, and Brand concept of Public Spaces **<2A>**.

B. Floors: Example finishes include the following:

1. Porcelain Tile, Stone or Wood: Provide at Entry, buffet food service line and Service Pantry.
   a. Granite Tile: At buffet floor, not marble, because of food staining.
   b. Porcelain Tile: Closed Pantry and Storage areas.
2. Area Rugs, Carpet & Wood: **<GR4>** At dining and seating areas, provide high quality hand tufted loop or Computer Yarn Placement (CYP) solution dyed nylon cut pile, semi worsted wool or 80/20 *Axminster*.

C. Walls: Example wallcovering and finishes **<GR4>**.

1. Decorative millwork, stone, stained or painted wood panels or applied wood moldings.
2. Base: Tile or stone in areas of tile or stone floors and wood in areas with carpeting.

D. Ceilings: Painted smooth, non textured finish is preferred in GFL spaces.
Limit acoustical tile to closed areas such as Pantry and Storage.

E. HVAC Grilles: Integrate with layout of ceiling features, but not randomly placed.

F. Light Fixtures: Down lights; decorative ceiling fixtures; connect to dimmer control; cove lighting is acceptable for international properties.

G. Furnishings (Furniture, Fixtures and Equipment):

1. Windows: Consistent with the theme, provide wood or soft valance; stationary drapery panels, decorative sheers and concealed motor operated solar shade.
2. Lounge Chairs: Light weight, wood frame; fully upholstered seat and back.
3. Sofa; Loveseat; Lounge Chair: Fully upholstered seat and back with durable fabrics. Modular seating is acceptable. Seating types and arrangements vary.
4. Small Tables: Continental height, cocktail, side or mobile C-tables for food and beverage service; design for ease of movement.
5. Dining Chairs: Scale / size to fit under table. Upholstered leather seat.
6. Dining Table: Complement 2 and 4 dining chairs
7. Planters: Live plants only - no silks.

H. Furnishing Layout: Flexible; easily moved to accommodate guests.

1. Tables, Dining / Communal: Arrange with seating for food and beverage service.
2. Deuces: 40 %
3. Four Tops: 20 %
4. Window Counter: 10 %
5. Soft Seating: 30 %

7C.4 Systems Coordination

A. Reference: Coordinate with requirements of other Modules including:

- GR General Requirements
- 13A Information Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical - Plumbing - Electrical
- 16 Loss Prevention

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STANDARDS

MODULE

8

ADMINISTRATION & EMPLOYEE

8A - Administration Facilities

8B - Employee Facilities

May 2014

AUTOGRAPH COLLECTION®

STANDARDS

MODULE 8A

ADMINISTRATION FACILITIES

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Administration Facilities

8A.1 Overview

A. Administrative Areas: The criteria included in this Module models a generic administrative area for a MI managed property. However, for a franchised property the criteria is more for guidance and best practice.

1. Staff: Staffing levels and responsibilities vary based on property type, size, and location and the specific staff assignments and organization for a proposed office. Administrative programs are verified by MI.
2. Accessibility: Administrative spaces are also accessed by the public and are required to be accessible to guests, clients and service providers with disabilities.

B. Space Planning: Provide the following or as required by the projects Facilities Program:

1. Location: Adjacent to the front desk. Locating the Administrative Area (Front Office, "Call Center," Executive Offices and Accounting) in one office suite is administratively desirable but contiguous space may not be achievable.
2. Size / Area (Overall): See the project Facilities Program for the Administrative Areas, including Guest Services "Call Center."
   a. Typical administrative suite, including Call Center, requires approximately 435 m² (4,685 sq. ft.) total gross area (includes 20% for circulation and build-out). For larger properties, additional space is required. Verify program requirements with MI.
   b. Consult MI for office requirements for Front and Back of House spaces after the schematic design and project staffing guide has been prepared.

C. Separate Spaces: Space priorities at public areas may require divided administrative spaces. When administrative spaces must be separate, comply with the following guidelines:

1. Front Office: The location of front office functions adjacent to the front desk is essential and the highest priority. Provide separate access from public circulation space to avoid circulation through the front desk area.
2. "Call Center": Locate near Front Office to beneficially share information and resources.
3. Sales, Catering & Events: If separate, these offices are usually positioned near the Ballroom / Meeting Area, the focus of sales, catering and events activities. For larger properties (more than 300 guestrooms), additional space is required.

4. Accounting: Accounting offices generally have the fewest functional relationships, however locate as close as possible to the front office.
5. Separate Levels: Include communicating stairs when programmed administrative spaces are on separate levels.
6. Convention Office: Add convention services office for projects with more than 930 m² (10,000 sq. ft.) net of meeting area.

D. Steps, Stairs, Ramps & Slip Resistance: See Module **<16>** - Loss Prevention.

E. Windows & Safety Glass: See Modules **<GR>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

F. Natural Light / Views:

1. Verify code requirements for daylight / natural light in offices.
2. Exterior Views: Whenever possible, provide exterior views for the well being of Employees.

G. Acoustics: Office partitions, minimum STC 48.

H. Office Doors: Provide 0.9 x 2 m (3'-0" x 6'-8") minimum; provide in sidelite frames with 30 cm (12 inch) wide glass lite. **<GR>**

1. Finishes: Use durable finishes to enhance a stable work environment.
2. Lighting Requirements: See Module **<15C>.**

I. Enclosure / Security Walls: Enclose Cashier's Area, Counting, Safe Deposit Boxes and Guest Safe Deposit. Provide concrete or clay masonry walls extending to underside of building structure above (or provide security expanded metal lath ceiling and wall construction of equal protection).

J. Access Control: At employee entry to administrative area, provide electronic operated lock access. **<16>**

K. Toilet Rooms: Provide toilet facilities at personnel office and at other remote locations when travel to central employee toilets is excessive.

1. Plumbing Fixtures and Accessories: See Module **<15B>** for BOH plumbing fixtures.
2. Toilet Room Accessories: See Module **<GR>** for BOH toilet / bath accessories.

L. Finishes: **<GR>** Use durable finishes to enhance a stable work environment.

M. Lighting Levels: See **<15C>** for minimum requirements.

N. Administrative Spaces: Area shown for spaces is minimum net. Add 20% to net administrative area totals to allow for corridors and internal circulation space. Accommodate the following:

Program Areas	Net Area:	
	m^2	sq. ft.
Front Offices / Support	86.9	936
"Call Center"	46.5	500
Executive Offices	85.4	919
Sales & Catering Offices	96.8	1043
Accounting	44.0	474
Totals	359.6	3872

8A.2 Front Offices / Support Areas

A. Program: Provide offices and areas of support for front desk functions.

B. Size / Areas: Include the following offices and spaces to support front office functions:

Spaces (see example)		Size		Private	Open
		m^2	sq. ft.		
Front Desk - Pods	A	See Module <2>		--	--
Front Desk Work Area	B	16.4	350	X	
Copy / fax	C	7.8	125	X	
PMS Equipment	D	11.1	120	X	
Front Office Manager	E	8.4	150	X	
Reservations (3)	F	16.7	180	X	
Reservations Manager	F1	6.7	72	X	
Counting Room	G	4.2	100	X	
Cashier	H	6.7	72	X	
Deposit Boxes	J	3.3	36	X	
Guest Deposit	K	3.3	36	X	
Storage	L	2.3	100	X	
Totals		86.9	936		

C. Front Desk - Pods (A): See requirements in Module **<2>**.

D. Front Desk Working Area (B): Include a staff work space to support front desk activities.

1. Provide work counter, wall shelving, below counter file cabinets, and horizontal file space not visible from front desk.
2. Provide a time clock in the front office area.

E. Copy - Fax (C): Provide space for large size copy machine and facsimile (fax) equipment accessible as primary copier to Front Desk, adjoining Working Area and Executive Offices receptionist.

F. **Main Computer (PMS) Equipment:** Enclosed room with dedicated air conditioning system. See Module **<13A>** and the CTR for details.

G. **Front Office Manager (E):** Position office in close proximity to Front Desk. Usually, the front office manager works at the front desk and requires a private office.

H. **Reservations (F):** The facility for reservations is typically located in a separate Reservations Center that serves several properties by region or country. Room reservations are typically not conducted at the property. At international locations, verify criteria with MI Operations.

1. Space Planning: The "example" plan and following description is based on locating the Reservation personnel separate from the "Call Center" Department.
2. Reservation Operators prefer a quiet environment and deal solely with guest reservations.
3. MI verifies plan configuration based on the operational plan for the project.
4. Work Space: Design a continuous counter top space for work surfaces (custom millwork or system furniture); minimum 60 cm (2 ft.) in depth; divide work spaces with acoustic partitions.
5. Separate enclosed work area with door to access administrative area. Provide file cabinets and overhead shelves.
6. See Module **<13A>** for the quantity of PC stations.
7. Telephone: See Module **<13B>**
8. Reservations Manager (F1): Adjacent to Reservations Operator space. Provide 2-way window in half height glazed door to monitor work activity.

I. **Counting Room (G):** Receipts and cash for property services are brought to the Counting Room.

1. Provide employee route to this area through Back of House and avoid routes through Public Areas.
2. Location: At entry to accounting offices, adjacent to the General Cashiers. Entry is through door with half-glazed safety glass view panel; with card reader with audit trail.
3. Deposit Safe: Provide between Counting Room and Cashier's Office with through-wall employee rotary deposit connected to a 2 compartment, Class "C" construction rated safe accessible to cashier.
4. Counting Area: Include small counter top space at approximately 90 to 180 cm (3 to 6 ft.) long x 56 to 61 cm (22 to 24 inch) deep to perform counting before depositing food and beverage receipts and money into deposit safe drop. Resort and large properties may require a wider station counter and more cash boxes.

Figure 1 - Administrative Spaces - Example Plan

5. Cash Banks: Locate cash safety deposit boxes below counting countertop; MI to verify quantity. Safe Deposit Box: Model SS-2, 24 box unit by Corporate Security Products 301-251-0960. May require multiple units.
6. Video Surveillance System (V.S.S.) Cameras: Space is monitored by fixed camera with view of counting counter, safe and cashier's room through half-height glazed door. **<16>**

J. **Cashier (H):** Provide deposit safe accessible from cashier's side adjacent to Counting Room.
1. House Safe: UL Class "B", 2 hour rated. Locate separate large floor safe in corner of cashier's room.
2. Entry Door: Design with teller type window and small cash / envelope pass-thru below safety glass view window in door. Provide asylum type lock (keyed both sides; not master keyed).
3. Access Control Devices: Provide duress alarm, motion detector. **<16>**

K. **Safe Deposit Boxes (J):** Locate accessible to Front Desk employees to issue or receive deposit boxes from the adjoining Guest Safe Deposit Room at guest / staff pass thru.
1. Safe Deposit Box Type: Model SS-2 & SS-5 (Corporate Security Products 301-251-0960). Recess in wall construction.
2. Deposit Box Quantity: Provide one, 10 box unit for every increment of 200 guestrooms. Based on the Loss Prevention Review, locations may require a higher quantity. Additional boxes are required for employee Counting Room adjacent to Cashier's Office.
3. Door: Include 12.7 x 50.8 cm (5 x 20 inch) safety glazed sidelite view panel in entry door. Entry by electronic lock with audit trail.
4. Loss Prevention: Provide camera to view safe deposit boxes and counter in guest area. **<16>**

L. **Guest Safe Deposit Room (K):** Locate room adjacent to front desk and visible to guest from Reception area.
1. Door: Accessible to guest when employee depresses electric door lock button at front desk. Guest may exit without waiting for electric door lock to be activated.
2. Pass-thru Window: Include safety glazed pass-thru window to Safe Deposit Boxes for transfer of safe deposit box to guest. Position window to permit guest to continually view safe deposit box from stored position to pass thru window.
3. Counter: Provide counter with chair for guest use.

M. **ATM:** An automated teller machine (ATM) is required.

N. **Storage (L):** Include space for employee coats and storage, first aid items, fire extinguisher and guest packages / letters.

O. **Finishes:** Generally, provide the following:
1. Floors: Nylon tufted cut pile carpet (vinyl composition in closed storage spaces)
2. Base: Resilient base
3. Walls: Vinyl wallcovering or paint (painted smooth walls in closed storage spaces)
4. Ceiling: Accessible acoustical tile

8A.3 "Call Center"

A. **Program:** (CC to HH) The Call Center is the hub of communications providing a single contact for guest services and PBX (telephone) operations.

B. **Area / Spaces:** 46 m² (500 sq. ft.) total typical; consult MI to define the following quantity of program position, See also Module **<13>**:

Spaces (see example)		Size m²	Size sq. ft.	Private	Open
Agents (2)	CC	13.0	140		X
Runner	DD	6.5	70		X
Supervisor	EE	6.5	70		X
Storage	FF	9.3	100	X	
Manager	GG	7.0	75	X	
Commons/Circulation	HH	4.2	45		X
Totals		46.5	500		

C. **Location:**
1. Front Desk: Adjacent to the Front Desk support area.
2. It's a critical area for guest contact and permits opportunities to share staff, information and resources such as fax, copiers and office equipment.
3. Elevator: Provide convenient back-of-house access to service elevator to reduce "runner" travel and increase guest service response times.

D. **Equipment & Systems:** Connect systems and equipment to emergency back-up power and lighting **<15C>** and UPS system. Provide the following:
1. Fire Panel: Fire annunciator panel with acoustical alarm notice. **<14>**
2. Clocks: Wall clock or series of time zone clocks.
3. White Board: 1.2 to 2 m² (12 to 20 sq. ft.) wall mounted, marker board to post daily status of property and guest events.

4. V.S.S. Monitor: with keyboard controller at stations (may be shared). **<16>**
5. Chair, ergonomic
6. File cabinets, undercounter
7. Intercom (if used): Base station at each station (may be shared). **<16>**
8. Overhead, enclosed shelves
9. PBX telephone console **<13B>**
10. Pager base station (may be shared) **<16>**
11. PMS / PC Computer (monitor, processor, keyboard) **<13A> <13B>**
12. Micros
13. Radio Base Station **<16>**
14. Alarm System: Alpha numeric keypad (may be shared) **<16>**
15. Task lighting
16. Work desk
17. Refrigerator: small unit to keep mini bar items cold
18. Storage Cabinets / Shelves: with lockable doors
19. Clipboard Rack: for 7 daily status clipboards
20. Counter: for fax and printer with paper and supply storage below
21. Copier: Small capacity (desktop) or access to copier
22. Fax Machines: 2 minimum
23. Printer: Color laser
24. Status Board: mount on wall

E. Finishes: Generally, provide the following:

1. Floors: Carpet (vinyl composition flooring in commons and closed storage space).
2. Base: Resilient base.
3. Walls: Vinyl wallcovering.
4. Ceiling: Accessible acoustical tile.

F. Mechanical / Electrical: Provide the "Call Center" with heat and cooling for 24 hours a day, 7 days a week from a dedicated heating and cooling system supported by the emergency back-up electrical systems **<15C>**.

8A.4 Executive Offices

A. Program: Provide offices for the General Manager / Director of Operations, other executive office positions, and space for Administrative Assistants as required by the project Facilities Program.

1. Plan Executive Offices accessible to the public. Also, these offices may be at a remote location rather than near Front Desk.
2. Provide direct access where Executive and General Offices occur at levels away from other administrative spaces or the Front Desk.

B. Size / Areas:

Executive Offices / Support Spaces		Size:		Private	Open
		m²	sq. ft.		
Reception Area	**M**	23.8	256		X
Conference / Meeting	**M1**	16.4	176	X	
Galley – Coffee / Tea (2)	**N**	1.9	20		X
Storage - File	**O**	3.3	36	X	
Coat Closet	**P**	1.1	12	X	
General Manager	**Q**	16.7	180	X	
Director of Operations	**R**	13.3	143		
Administrative Support (2)	**Y**	8.9	96		X
Totals		85.4	919		

C. Waiting / Reception Area (M):

1. Provide reception desk / chair and guest waiting space for guests visiting executive staff.
2. Include coat closets and a coffee alcove adjacent to Reception Area for visitors and staff.

D. Conference / Meeting (M1): Provide access to meeting facilities within the Administrative Area (preferred), in conjunction with an adjacent Business Center **<6>**, or in association with Function Areas.

E. Finishes: Generally, provide the following materials:

1. Floors: Carpet
2. Base: Resilient base
3. Walls: Vinyl wallcovering
4. Ceiling: Accessible acoustical tile

8A.5 Sales & Catering

A. Program: Provide offices for Catering and Conference Services, Sales, Marketing, Public Relations, assistant managers and workstations for administrative assistance and support staff.

1. General Offices are secondary to Executive Offices.
2. Provide Reception, Waiting area and other administrative support spaces.

B. Planning Criteria - General:

1. Position Sales, Catering and Event management offices near Reception Area to facilitate easy access from public areas.
2. Layout offices along perimeter of space with administrative / accounting support areas placed in "open" office spaces.
3. Locate storage space adjacent to Sales, Catering and Reception Area.

C. Size / Areas:

Sales & Catering / Support Spaces		Size:		Private	Open
		m^2	sq. ft.		
Food & Beverage Director	S	13.3	143		
Director of Marketing	T	14.5	156	X	
Director of Sales	U	14.5	156	X	
Event Manager	V	11.1	120	X	
Manager of Sales / Events	W	11.1	120	X	
Director of Event Management	X	14.5	156	X	
Administrative Support (4)	Y	17.8	192		X
Totals		96.8	1043		

8A.6 Accounting

A. Program: Offices and spaces for accounting are required. They may be in a separate area from other administrative offices dependent on allowable space.

1. For cabling distances, see Module **<13A>**.
2. Provide high level of acoustic control for work areas.
3. Position away from significant employee and visitor traffic areas.
4. Typically, the primary access for accounting employees is through the Back of House.
5. Accounting offices can be in a separate area from Executive and General Offices, dependent on allowable space and distance to main computer room.

B. Area / Spaces: Refer to the project Facilities Program.

Spaces (see example)		Size		Private	Open
		m^2	sq. ft.		
Controller	**AA**	11.1	120	X	
Asst. Controller	**A1**	8.4	90	X	
Archives Storage - Files	**BB**	11.1	120	X	
Accounts Receivable (2)	**Z**	8.9	96		X
Accounts Payable (1)	**Z**	4.5	48		X
Totals		44.0	474		

C. File Area: Design for 12 legal, lateral active file cabinets; minimum of 4 drawer height. Typically, circulation areas accommodate cabinets.

D. Archives Storage Area: Design to accommodate 175 inactive files that can be boxed and stacked seven boxes high. Typically, 12 m^2 (120 sq. ft.) is required.

E. Finishes: Generally, provide the following:

1. Floors: Carpet (vinyl composition flooring in closed storage space).
2. Base: Resilient base
3. Walls: Painted, smooth or vinyl wallcovering
4. Ceiling: Accessible acoustical tile

8A.7 Systems Coordination

A. Reference: Coordinate with requirements of other Modules including:

- GR General Requirements
- 2 Public Space
- 6 Function Spaces
- 13A Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical, Plumbing & Electrical
- 16 Loss Prevention

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STANDARDS

MODULE 8B

EMPLOYEE FACILITIES

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Employee Facilities

8B.1 Overview

A. Program: The criteria included in this Module models generic staff facilities for a MI managed property. However, for a franchised property the criteria is more for guidance and best practice.

1. Design spaces for Employee use to promote excellent employee relations and guest services.
2. Incorporate management, administrative, training and other ancillary spaces required for the staff.
3. Comply with regional customs, labor laws, social factors and religious customs that may impact employee facilities.

B. Steps, Stairs, Ramps & Slip Resistance: See Module **<16>** - Loss Prevention.

C. Windows & Safety Glass: See Modules **<GR3>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

D. Spaces: As required by the project Facilities Program, accommodate the following employee spaces:

- Employee Entrance
- Human Resource (HR) Offices
- Training Room - multi-media
- Nurse / First Aid Station (regional)
- Locker, Change Rooms and Shower & Toilet Areas
- Employee Cafeteria
- Service Corridors
- Employee Area Service Corridors
- Payroll Office (regional)
- Religious Facilities (regional)

8B.2 Employee Entrance

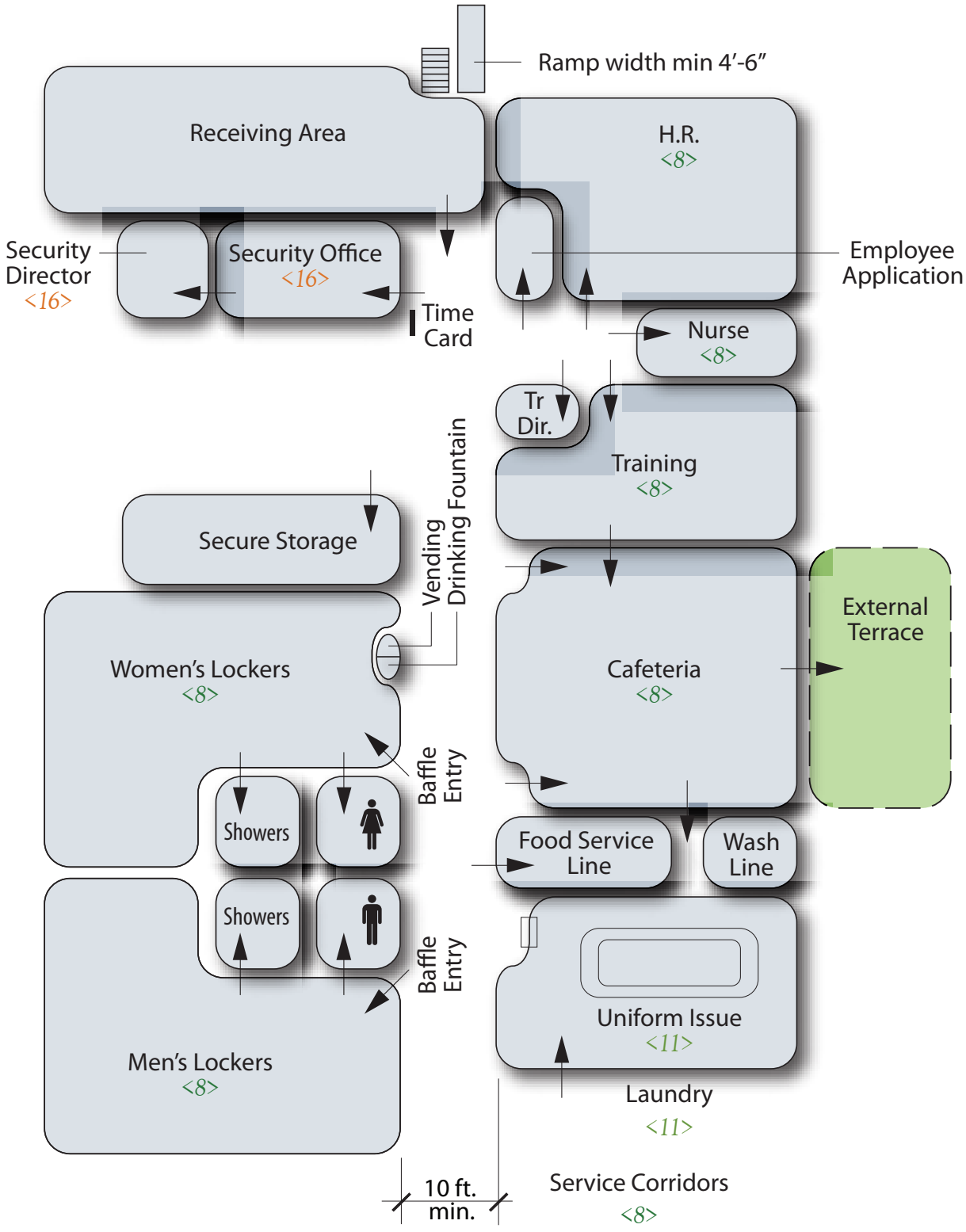
A. Program: Provide point of control to verify entry and welcome employees. Circulation is monitored by Security.

1. Location: Close to Security Dispatcher Office **<16>** that provides controlled access to Service Areas.
   - Where possible design separate building entrance for employees and applicants.
   - Avoid integrating with loading dock and requiring employees to cross the loading dock.
2. Signage: See Module **<GR2>**

B. Space Planning: Provide the following:

1. Entrance: Arrange so that employees do not cross or otherwise interfere with the receiving and loading activities.
   - Immediately adjacent to and in visual contact with the Security Dispatcher Desk.
   - If possible, visually separate Employee entrance from receiving and loading area to provide employees with a positive welcome and applicants with better first impression.
2. Exterior Area: If applicable, provide the following:
   a. Dependent on climate and region requirements, provide a weather protected space for smokers at a minimum of 7.6 m (25 ft.) from any entrance to keep smoke from entering property facility. Provide trash and ash receptacles, tables and benches.
   b. Consider bike storage and ski racks for employees dependent on project location and Facilities Program.
3. Time Clock Station: Locate in Service Corridor alcove near the Employee Entrance (additional locations may be requested by MI.

Figure 1 **- Employee Facilities - Example Plan**



8B.3 Human Resource (HR) Offices

A. Program: Provide HR offices for employee services, employment testing, interviews, employee relations, related management offices and administrative support spaces. Provisions may include a Payroll Office when required by governing regulations. Verify with MI.

1. Location: Near Employee Entrance on accessible route and within visual control of Security Dispatcher.
2. Employee Access: Direct from Service Corridor

B. Size / Area: Provide the following spaces:

Spaces (see example plan)		Size: m^2	Size: sq. ft.	Private	Open
Reception	C	8.0	86		X
Secretary/ Receptionist	D	8.0	86		X
Admin. Assistant (Payroll)	E	8.0	86		X
Interview Room	F	6.0	65	X	
Testing	G	7.0	75		X
HR Director's Office	H	12.5	135	X	
Storage Space	J	9.0	97	X	
Total		58.5	630		

C. Space Planning:

1. Reception: Include a reception desk or counter with area for supporting clerical facilities and space to welcome employees and applicants, and process applications. Arrange office furnishings and computer workstation / desk chair area so that HR managers face and greet applicants on arrival.
2. Testing: Locate 3 semiprivate work stations near reception space for applicants' use in completing applications and computer testing.
3. Storage Space: Accommodate personnel records, benefit materials and related files and securable storage.
4. HR Forms Access: For after hours (when HR office is closed), provide a recessed forms holder with 15 to 20 slots for 8½ x 11 inch size documents, near office entrance, facing corridor.
   - Mount the form holder, flush to wall and design not to interfere with moving carts in corridor.
   - Ensure design does not violate fire wall rating, if any.
5. Offices: Provide private spaces with minimum of 48 STC acoustical rating at Director's Office, Interview rooms and other spaces for confidential meetings. Extend walls to underside of structure above and seal joints.

6. Administrative Assistant / Receptionist: Secretary: Part of Reception Area to support Director and Admin. Assistant; include facilities for copy machine, fax and clerical equipment. **<13A>**

D. Applicant Waiting Area: In a vestibule off corridor, provide minimum of one writing surface space to process employee applications.

1. Consider a separate room with TV / monitor to present corporate videos / presentations such as company philosophy, grooming standard, etc.
2. Include additional seating and table with chairs to complete employment applications.

E. Features:

1. Entrance Door: Provide interior door to HR suite with fire rated view window, sized and configured to comply with rating requirement.
2. View: Provide fixed glass windows to view corridor and administrative assistance area.
3. Bulletin / Notice Boards: Provide sufficient space in area for employee viewing bulletins as required by governing authority.

F. Equipment: Provide the following office and administration equipment:

1. Telephones **<13B>**
2. Copier with sorting features
3. Fax machine
4. Other clerical equipment accepted by MI

G. Finishes for HR Offices:

1. Floor: Nylon tufted cut pile carpet
2. Base: Resilient base
3. Walls: Vinyl wallcovering or paint
4. Ceiling: Accessible acoustical tile

H. FF&E: See **<GR4>** for typical office furnishings.

8B.4 Training Room - Multi-Media

A. Program: Provide conference room space for employee training and learning experience in a conference room setting and with easy access to separate A/V storage and setup space for multi-media equipment.

1. Location: Near Human Resource (HR) Office to permit flexible use for a variety of employee training and related personnel activities. Avoid positioning adjacent to Employee Dining or as an extended partitioned space off dining area.
2. Size / Area: 37 m² (400 sq. ft.)

B. Space Planning: Accommodate the following:

1. Small conference and classroom type arrangements to support 25 to 30 personnel.
2. Rectangular plan
3. Secure, lockable storage area for A/V equipment

C. Acoustics: Protect space acoustically; STC 48; construct partitions for full height between floor slab to underside of structure above.

D. Equipment: <13>

1. TV with DVD and connected to MATV system. **<13>**
2. Computer Work Stations: Provide 3 computer work stations for self learning program.
3. Include A/V facilities for training activities such as projector, retractable screen; power and network connections built into or under tables; laptop PC setups for presentations; flip charts; white boards; scene lighting; sound system.

E. Finishes:

1. Floor: Nylon tufted cut pile carpet
2. Base: Resilient base
3. Walls: Vinyl wallcovering or paint
4. Ceiling: Accessible acoustical tile

F. FF&E:

1. Millwork credenza
2. Classroom style table and chairs

8B.5 Nurse / First Aid Station

A. Program: Verify with MI if these spaces are required for emergency medical care of employees and guests.

1. Location: Near HR Office to allow shared clerical and staffing support.

B. Size / Area: See the project Facilities Program.

Spaces (see example plan)		Size: m^2	Size: sq. ft.	Private	Open
Nurse's Office	L	5.7	64	X	
First Aid / Exam	M	10.9	117	X	
Toilet (accessible unisex)	-	4.0	43	X	
Totals		20.6	224		

C. Space Planning: Barrier free to accommodate people with disabilities.

1. First Aid / Exam Room: Controlled access by nurse; accommodate single bed, chair and secure storage of medical supplies and limited medications.
2. Nurse's Office: Single desk arrangement to allow for 2 seated interviewees.
3. Toilet Room: Locate immediately adjacent to First Aid / Exam. Accessible, single unisex toilet, lavatory and accessories.

D. Finishes for Nurse / First Aid Station: <GR>:

1. Floor Vinyl composition tile
2. Base: Resilient base
3. Walls: Painted, smooth
4. Ceiling: Accessible acoustical tile

8B.6 Locker / Change Area, Shower & Toilet Rooms

A. Program: Provide separate men and women spaces where employees may secure clothing, change into uniforms and street clothes with a place to shower and groom with adjoining toilets and lavatory areas.

1. Adjacency: Uniform Distribution if included; Primary Service Corridor.
2. Location: Connect to primary Service Corridor with baffled entrance (no doors) into Locker and Change spaces.

B. Space Planning: To accommodate separate male and female spaces, verify with MI, the maximum employee work shifts and male / female divisions.

Other program amenities may increase the employee count if additional space is required for employees of spas, salons, residences, club facilities, golf, etc. Typically, employees assigned to these amenity facilities do not share hotel employee spaces because of their distance from the hotel; review project criteria with MI.

C. Shower Areas: 1 shower to 50 staff. Divide between male (50%) and female (50%) unless indicated otherwise.

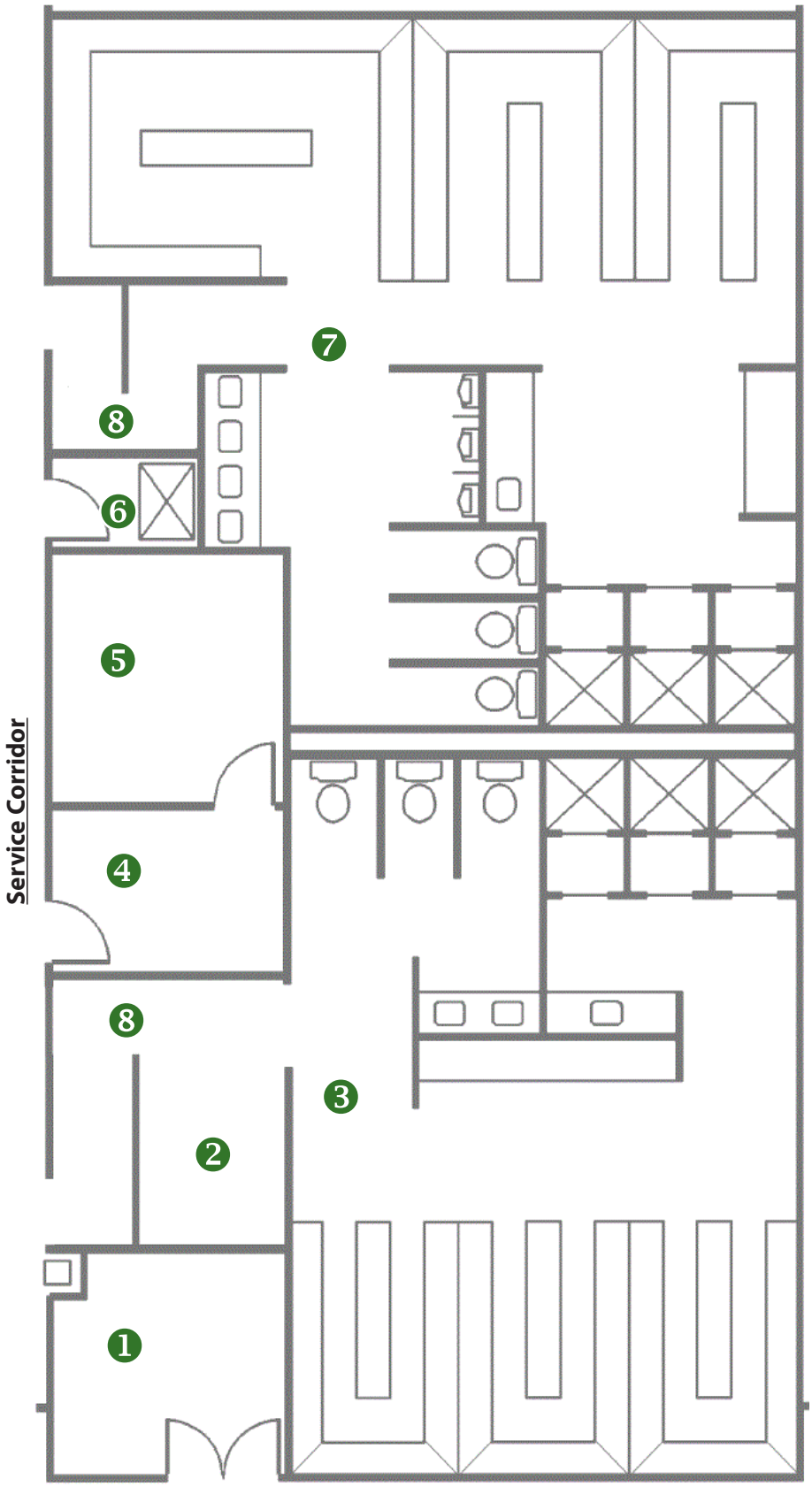
1. Location: Arrange entrance through Locker and Change spaces; not Toilet Area.
2. Shower Enclosure: Provide two compartment shower enclosure with door (frosted or opaque glass for privacy).
3. Fixtures: See Module **<15B>**.

D. Toilet Areas: Include toilets, urinals and lavatories fixtures in compliance with codes.

1. Additional Facilities: Provide additional toilet facilities when travel distance to central toilets is excessive or to meet governing laws and customs.
2. Fixtures: See Module **<15B>** for BOH fixtures and plumbing accessories.
3. Toilet Room / Bath Accessories: See Module **<GR3>** for typical BOH products.
4. Toilet Partitions: Provide with a high priority for durability, sanitation and privacy.
   a. Partition Height: 178 cm (70 inch) minimum
   b. Floor Clearance: 18 cm (7 inch) maximum
   c. Privacy: Provide “no sight line” or “gap less” design at doors, pilasters and side partition.
   d. Urinals: Provide privacy dividers.
5. Manufacturer: *Hadrian*; *Bobrick*; *Bradley*

Figure 2 - Locker Facilities - Example Plan

1. Secure Storage
2. Women's Lounge
3. Women's Locker / Change
4. Footwash (Regional)
5. Religious Facility (Regional)
6. Janitor's Closet
7. Men's Locker / Change
8. Baffled Entrance



E. Lockers & Benches: See general locker requirements in Module **<GR3>** and provide the following:

1. Lockers:
   - **a.** Type: Double tiered
   - **b.** Size: 300 (wide) x 500 mm (deep) (12 x 20 inch) deep
   - **c.** Quantities: Review and confirm quantities with MI.
     - Business Hotels: 1.0 lockers per guestroom
     - Resorts: 1.3 lockers per guestrooms
     - Male & Female: Plan locker areas in back to back layout that allows unequal distribution between men and women where the design assumes equal distribution of lockers. Divide locker quantities between male (50%) and female (50%) unless indicated otherwise.
2. Benches: Wood top change benches
3. Aisles: 1.53 m (5 ft.) wide minimum
4. Accessibility: Comply with applicable accessibility regulations for aisles and reach design by persons with disabilities.

F. Lounge: Consider private space for single cot and chair for employees not feeling well or for mothers that need to pump breast milk. Consider separate male and female spaces or locate as an adjacency to Nurse's Station.

G. Finishes: Provide the following:

1. Shower & Toilet Rooms: Provide HPL and solid surface materials.
   - **a.** Floor: Porcelain tile
   - **b.** Base: Porcelain tile
   - **c.** Walls: Porcelain tile
   - **d.** Ceiling: Accessible acoustical tile
2. Locker / Change Areas:
   - **a.** Floor: Vinyl composition tile
   - **b.** Base: Rubber base
   - **c.** Walls: Semi gloss or gloss painted
   - **d.** Ceiling: Accessible acoustical tile

8B.7 Employee Cafeteria <10>

A. Program: Provide employee dining space and food service area. Employee meal requirements vary from region to region, review scope of required food service and FF&E with MI on a project by project basis. **<10>**

1. Location: Central to employee spaces and adjacent to Primary Service Corridor.
2. Size / Area: (Quantity of guestrooms) ÷ 3 = m² required for gross dining space; for 300 room hotel: 300 ÷ 3 = 100 m² (1,076 sq. ft.)
3. Consider retaining a commercial food service / kitchen consultant for project.

B. Space Planning:

1. Food Preparation: Typically, food is prepared in main kitchen of property.
2. Food Line: 4 m (13 ft.) long; one attendant for self serve; hot meal and grille cooking service; dish drop and wash area.
3. Food Service: Accommodate equipment and food service standards outlined in Module **<10>** Food & Beverage Production Facilities.
4. Service Options: Grille cooking; salad bar; friendly soup station; employee refrigerator for food brought in; toaster; microwave; ice dispenser.
5. Seating: Individual style seating (no booths) with tables to seat minimum of 6 employees.
6. Exits: Second means of egress may be required from dining area.
7. Bussing: Self dish drop and counter to wash area. Provide sufficient stewarding area to manage waste, wash service items and provide sanitary eating environment.
8. Provide electric water cooler accessible to employees. **<15B>**.

C. Features:

1. Audio: Provide speakers for music output.
2. TV: Provide cable and power connections.
3. Natural Light: Provide window wall to exterior, if possible.

D. Finishes:

1. Floor: Vinyl composition tile
2. Base: Resilient base
3. Walls: Vinyl wallcovering or paint
4. Ceiling: Accessible acoustical tile

8B.8 Service Corridors

A. Program: Provide Back of House (BOH) circulation corridors to service various guest function areas, connecting to other service spaces, receiving area and dock.

B. Size / Area:

1. Banquet / Service Corridor: See **<6>**
2. Receiving Area Service Corridor: See **<9>**
3. Commercial Kitchen Corridors: See **<10>**
4. Employee Area Service Corridor (BOH): See "Employee Area Service Corridors" below.
5. Ceiling Height: 2.7 m (9 ft.) minimum
6. Width: Dimensions are net, clear of equipment, columns or obstructions.

C. Service Alcove: Consider an area to place public coin operated telephone, vending and bulletin board for employee use and announcements. Locate central to employee facilities layout.

D. Wall Protection: Provide durable, low maintenance high and low wall bumpers with infill of heavy duty plastic or metal sheets.

Avoid wood and painted surfaces that require frequent maintenance.

1. Wall Bumpers: 5 x 15 cm (2 x 6 inch) synthetic wood or stainless steel clad wood.
2. Infill: Heavy-duty plastic or non-corroding metal sheets.

E. Corner Guards: 10 x 10 cm x 2 m (4 x 4 inch x 6 ft) high, 16 gauge stainless steel guards at outside wall corners.

F. Finishes:

1. Floor: Colored concrete, hardened and sealed (minimum) in Service Corridor rated for vehicle traffic.
2. Provide smooth surface floors adjacent to meeting and function areas to avoid noise from wheeled carts on floor joints.
3. Base: Epoxy painted masonry or vinyl base.
4. Walls: Protect with continuous double (high and low) railing and infill. Provide durable walls and protection to resist cart and material handling traffic. Examples include: epoxy painted masonry; continuous double (high and low) railing, diamond plate wainscot, thermo plastic sheeting.
5. Ceiling: Accessible acoustical tile.

8B.9 Employee Area Service Corridors

A. Program: Provide BOH employee circulation corridors between employee functions and to access other building areas.

- Employee Service corridors primarily serve personnel and light cart traffic (Housekeeping, Laundry, F&B Service, etc.).
- Corridor finishes provide a bright, clean, durable environment to support employee moral and minimize maintenance and damage to floors and walls.

B. Corridor Width: 2 m (6'-6") minimum

C. Finishes:

1. Floor: Vinyl composition tile (VCT) or integrally colored and hardened concrete finish
2. Base: Vinyl
3. Walls: Painted
4. Wall Protection: Provide continuous 2 x 6 inch synthetic wood (recycled PVC / wood composite that will not splinter and does not need painting such as *Trex*) high and low bumpers.
   a. Low Bumper: Locate above base
   b. High Bumper: Locate at 0.9 m (3 ft.) above floor
5. Ceiling: Accessible acoustical lay-in tile (ACT)

8B.10 Systems Coordination

A. Reference: Coordinate with requirements of other Modules including:

- GR General Requirements
- 10 Food & Beverage Production Facilities
- 11 Laundry / Housekeeping
- 13A Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical, Plumbing & Electrical
- 16 Loss Prevention

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STANDARDS

ENGINEERING & MAINTENANCE FACILITIES

MODULE

May 2014

Contents

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Engineering & Maintenance

9.1 Overview

A. Program: The criteria included in this Module model generic plans for Engineering and Maintenance spaces for a MI managed property. However, for a franchised property the criteria is more for guidance and best practice..

1. Employee positions and responsibilities vary based on property type, size, location, the specific employee assignments and organization for the proposed spaces.
2. Regional customs, social factors, labor laws etc. may impact the program. Verify the applicable program requirements with MI.

B. Related Areas & Spaces: Coordinate the following program areas with applicable Modules and the requirements in this Module. Generally, these spaces relate to engineering and maintenance management of the property:

- Laundry Holding **<11A>**
- Computer Room **<13A>**
- Telephone Equipment and Room **<13B>**
- T.V. / Video Equipment and Room **<13C>**
- Lighting Controls / Dimming **<15C>**

C. Steps, Stairs, & Ramps & Slip Resistance: See Module **<16>** - Loss Prevention.

D. Windows & Safety Glass: See Modules **<GR>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

E. Spaces: As required by the project Facilities Program, accommodate the following:

- Engineering / Maintenance Shops and Offices
- Receiving Dock
- Receiving & Service Corridors
- Ancillary Facilities
- Purchasing and Receiving Offices
- Lighting Controls / Dimming
- Mechanical, Electrical and Plumbing (MEP) Equipment
- Exterior Maintenance Facilities

9.2 Engineering & Maintenance Shops & Offices

A. Program: Include office, shop and storage spaces to support engineering / maintenance functions of the property.

Spaces (see example plan)	Size: m^2	Size: sq. ft.	Private	Open
Director of Engineering	10.0	108	X	
Reception	13.4	144		X
Plan / File / Storage	3.3	36		alcove
Carpentry Shop	23.7	256	X	
Workshop - M & E	23.7	256	X	
Tool Storage	9.3	100	X	
Electrical Storage	8.9	96	X	
Electronics Repair	8.6	93	X	
Locked Storage	15.6	168	X	
Landscape Equipment	7.4	80	X	

B. Location: Access to exterior receiving areas and dock for moving materials, supplies and equipment to and from the property.

1. Access to guestroom service elevators to give service employees a convenient route to guestrooms.
2. Adjacent to BOH MEP areas to allow convenient passage to monitor building systems.

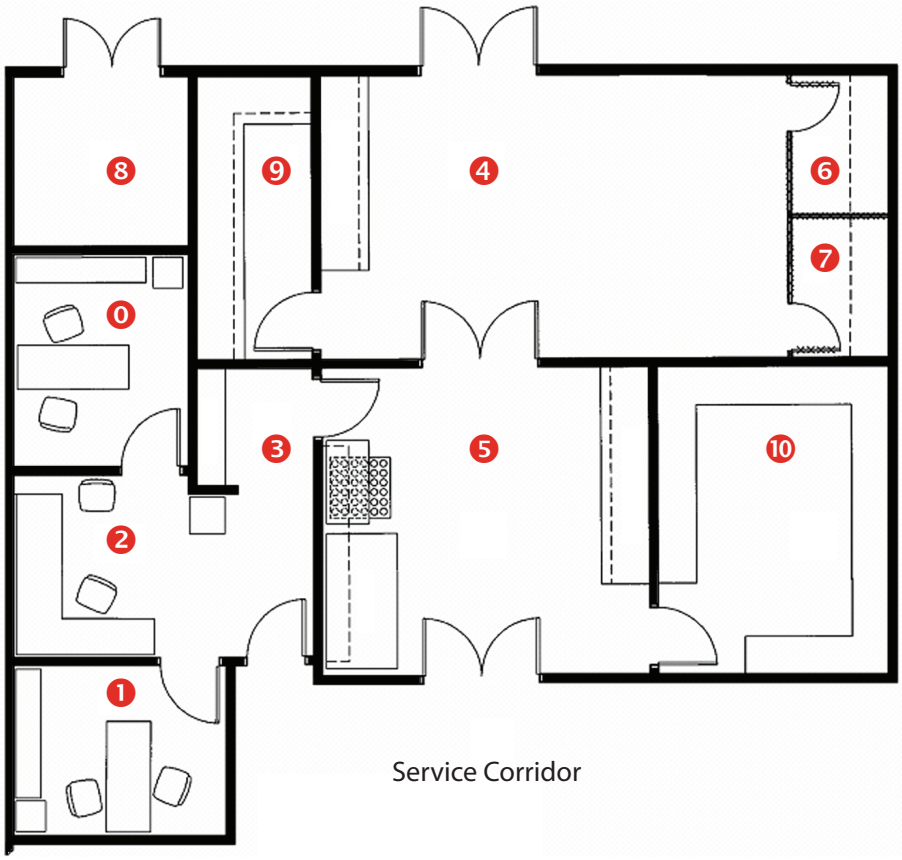

Figure 1 - Engineering & Maintenance - Example Plan

0 Director of Engineering
1 Chief Engineer
2 Reception
3 Files
4 Carpentry Shop
5 M + E Workshop
6 Tool Storage
7 Electrical Storage
8 Exterior Maintenance
9 Electric Repair
10 Parts Storage

C. Maintenance Shops:

1. Access: Entry through pair of 90 cm (3 ft.) wide doors at carpentry shop and landscape equipment. Easily accessible spaces with clear path of entry.
2. Doors: Hollow steel, except tool storage. See Module **<GR>** for additional general requirements for BOH doors, frames and hardware.
3. Electronic Lock: Provide electronic lock encoder at office area. **<16>**
4. Work Counters: Include counter and storage shelving space along interior perimeter with electrical service and cable testing outlets for T.V.'s and equipment.
5. Charging Stations: Provide power for radios and pagers at designated work bench stations
6. Storage: Wire mesh or chain link to store tools and electrical service parts.
7. Eye Wash Station: Centrally locate one emergency eye wash station in shop area. **<15B> <16>**
8. BAS: Provide location for Building Automation System
9. Landscape Equipment: Space accessible to exterior or in separate building if site area is large. Project area is determined on a case by case basis; see "Exterior Maintenance Facilities" below.

D. Finishes: Provide the following in Maintenance Shops except as noted for office spaces.

1. Floor: Concrete, sealed (carpet in office spaces)
2. Base: Painted same as walls (resilient base at carpeted office floors)
3. Walls: Painted
4. Ceiling: Exposed structure, painted (accessible acoustical tile in office spaces)

9.3 Receiving Area - Dock

A. **Program:** Provide for receipt of supplies, equipment, furnishings and other deliveries. Where possible and site allows, design area to accommodate largest truck turning radius such as typical over the road tractor trailer truck equipment.

B. **Location:** Locate convenient to food storage / preparation, Security Office, and BOH service circulation areas.

C. **Size / Area:** Sufficient space for storing carts, in addition to loading and unloading activities.

1. Bays (minimum): Three at 3.66 m (12 ft.) wide as follows:
   - One for 16.76 m (55 ft.) long tractor trailer
   - One for 10.67 m (35 ft.) long delivery truck
   - One for trash compactor / recycling
2. Dock Height: Typically 1.07 m (3'-6") from driveway surface to dock surface or design for proposed delivery vehicles serving the property.
3. Finish Dock Elevation: Same to meet BOH service corridor entry doors.
4. Dock Depth: 3 m (10 ft.) minimum, measured from dock front edge to building wall.
5. Overhead Clearance: 4.27 m (14 ft.) to underside of roof structure, except 5.5 to 6.1 m (18 to 20 ft.) at trash compactor bay (verify height if required).

D. **Dock Finish:** Hard steel troweled concrete with slip resistance of 0.6 wet / dry and sealed with material rated for wheeled traffic. Provide positive drainage slope away from building to dock edge.

E. **Dock Leveler:** Provide manually operated dock leveler at edge of one bay; no scissor lift.

F. **Compactor:** Locate at grade with direct access from the dock level. Design for largest, transportable refuge container that can be supplied to the project. Include steel rails at compactor to slide container into position without damage to pavement during hauling and delivery operation.

G. **Access Ramp:** Provide for persons with disabilities with ramp slope at 8% maximum or per governing authority and sufficiently wide to transport a pallet.

H. **Service Paving:** Heavy duty paving; slope to area trench drain away from dock.

I. **Roof:** Provide roof covering over entire dock area with clearance as noted above.

J. **Air Curtains:** **<15A>** Provide at high traffic Receiving and Trash Handling entrance doors.

K. **Heating:** **<15A>** In very cold climates, provide radiant heating units at exterior doors to moderate temperatures for receiving dock employees.

L. **Water:** Provide hose bibb for washing down dock area. Locate in area that protects it from freezing.

M. **Electric:** Provide power for compactor, when required.

N. **Finishes:** Provide the following:
1. Floor: Concrete, sealed (see "Dock Finish" above)
2. Base: Painted
3. Walls: Painted
4. Ceiling: Exposed structure, painted

9.4 Receiving & Service Corridors

A. **Program:** The corridor from the Receiving Area to central storage areas and large Function Areas **<6>** is subject to heavy use and traffic by pallet jacks, fork lifts and heavy wheeled vehicles.

B. **Wall Protection:** Provide continuous 2 x 6 inch synthetic wood (recycled PVC / wood composite that will not splinter and does not need painting such as Trex) high and low bumpers and wall protection infill.
1. Low Bumper: Locate above base.
2. High Bumper: Locate at 0.9 m (3 ft.) above floor
3. Infill: At a minimum, protect the lower portion of walls (between bumpers) with:
   - epoxy (or industrial enamel) paint on masonry
   - heavy duty thermo plastic sheet on gypsum walls or
   - diamond plate sheet on gypsum walls

C. **Corner Guards:** 10 x 10 cm x 2 m (4 x 4 inch x 6 ft) high, 16 gauge stainless steel guards at outside wall corners.

D. **Finishes:** Provide durable corridor finishes to limit damage and maintenance.
1. Floors: Concrete hardened and sealed; rated for heavy wheeled traffic.
2. Base: Epoxy painted masonry; vinyl base at gypsum walls.
3. Walls: Masonry preferred with wall protection.
4. Ceiling: Exposed structure or accessible, suspended lay-in system; consider corrosive resistant supports and panels.

9.5 Ancillary Receiving Area Facilities

A. **Program:** Provide the following programmed spaces to support property service and receiving area.

B. **Storage Areas:** Provide secure storage areas located between receiving and access to main kitchen. When property materials and products, including foods (coordinate with Module **<10>**) are delivered, they require immediate removal from the receiving area to storage. Include the following storage facilities:
   1. General Property Storage: General store (non-food items).
   2. Refrigerated Storage: Provide for food items as required by Module **<10>**.
   3. Guest Package Storage: Provide a secure room or lockable enclosure to temporarily store guest items forwarded to the property for functions and presentations.
   4. Contract Service Storage: If programmed, see requirements below.
   5. Design Coordination:
      a. Avoid locating transformers, electrical panels or mechanical equipment in storage spaces.
      b. Construct storage area walls full height (from floor to underside of structure) using masonry or equivalent materials.

C. **Related Storage:** Coordinate the location of the above and following storage spaces related to the Receiving Area.
   1. Main dry food storage **<10>**
   2. Freezers and coolers **<10>**
   3. Beverage coolers, liquor storage and refrigerated wine storage **<10>**

D. **Can Wash:** See Module **<10>**. Locate within contained area to avoid waste water flowing across receiving area.

E. **Recycling Facility:** Design this facility adjacent to the receiving area and comply with requirements developed by a principal recycling company that would service the property and review proposed design with MI.
   1. Determine recycling needs for material types, holding bins / containers for cardboard, cardboard bales, paper, paper, cans, plastics, various glass colors, etc.
   2. See above for compactor at dock area. Determine requirements, if any, applicable to recycling program.

F. **Laundry Holding:** At properties without an on-site laundry (see Module **<11A>**), include space for soiled and clean linen storage.

G. **Standby Generator:** See "MEP Equipment" below and Module **<15C>**.

H. **Contract Service Storage:** Consult with MI to determine if cleaning or maintenance services are provided by external service contractors. If on-site service storage is required, provide the following:
1. Enclosed, secure room for storing contractor's equipment and activity staging items.
2. Size: 38 m² (400 sq. ft.)
3. Utilities: Floor sink with hot and cold water
4. Finishes: Paint walls; vinyl composition tile on floor

9.6 Purchasing & Receiving Offices

A. **Program:** At large properties, provide private spaces for Purchasing Manager **<8B>**, shared office for Purchasing and Receiving employees, and shared work spaces for Storeroom Manager and Storeroom employees; see project Facilities Program.

B. **Location:** Adjacent to Receiving Area and within proximity to Security Offices **<16>**.

Spaces	Size:		Private	Open
	m²	sq. ft.		
Purchasing Manager	6.5	70	X	
Purchasing & Receiving Staff (3)	9.3	100	X	
Storeroom Manager & Staff (2)	4.6	50		X
Total Area	20.4	220		

C. **Equipment:** Provide typical office furniture, desk and chair, visitor chair, workstation counters and chairs, file cabinets, telephone and desktop PC with printer, in designated manager's office.

D. **Finishes:** Provide the following:
1. Floor: Vinyl composition tile
2. Base: Resilient base
3. Walls: Painted
4. Ceiling: Accessible acoustical tile

9.7 Mechanical, Electrical & Plumbing (MEP) Equipment

A. Program: Provide space for building MEP equipment, system components and convenient access for equipment service and maintenance. **<15>**

B. Size / Area: Provide space for the following based on the project design requirements for MEP systems and equipment:

1. Configuration: Most efficient space for equipment is square or rectangular (1 to 2) and column free areas. Other geometries may require larger building areas.
2. Clearances: Provide sufficient area to enclose and efficiently maintain, service, and repair equipment.
3. Ceiling Height: 5 m (16 ft.) minimum is recommended.
4. Views: Locate facilities to avoid or minimize guest views of equipment. If equipment is visible, screen equipment.

C. Lighting Controls / Dimming: Provide areas such as, closets or alcoves for placement and concealment of lighting controls and dimming equipment associated with function space **<6>**, food and beverage **<3>** and public spaces **<2A>**.

1. Location: Generally, multiple locations are required to permit equipment placement near lighting being controlled.
   a. See **<15C>** for electrical systems.
   b. Review concealment requirements with interior design and supplier of equipment to determine applicable design that allows easy access but maintains concealment from guest view.
2. Size / Area: 15 to 25m² (162 to 269 sq. ft.)

D. Standby Generator: Provide generator area and generator access.

1. Review proposed design and location with MI.
2. Design generator location that meets project's acoustical safety and environmental standards (noise, fuel storage / fueling, engine exhaust away from fresh air intakes, vibration, etc.)
3. See electrical design requirements in Module **<15C>**.

E. Features:

1. Exterior Access: Provide facilities (doors, panel, corridors) to permit convenient installation, service, and replacement of equipment.
2. Sound / Vibration: Locate vibrating equipment away from adjacent occupied areas to avoid occupant disruption. If adjacency is required, provide vibration isolation or barriers to control sound / vibration.

3. Ventilation: Provide adequate ventilation. **<15A>**
4. Access: Provide controlled access to equipment.

F. Finishes: Provide the following:

1. Floor: Concrete, sealed
2. Walls: Painted
3. Base: Painted (same as walls)
4. Ceiling: Exposed structure, painted

9.8 Exterior Maintenance Facilities

A. Program: When required, exterior, site and landscape maintenance may be performed under contracted services with the property. However, for properties that may not have satisfactory contract services available, provide adequate on-site ground maintenance, operational and storage space that may include the following:

1. Landscape maintenance carts, mowers, tools and material storage.
2. Gasoline / fuel storage tanks, fuel pump from storage tank, electric cart charging stations, etc.
3. At resorts, other equipment may include backhoe and beach grading equipment. Additionally, beach recreation equipment, boats and other equipment may be stored at this facility.

B. Location: In proximity to Receiving Dock and Engineering / Maintenance facilities with vehicle routes away from guest and public areas.

C. Grounds Maintenance Facilities: **<1>** If contract maintenance and replacement services are not feasible, provide on-site facilities.

9.9 Systems Coordination

A. Reference: Coordinate with requirements of other Modules including:

- GR General Requirements
- 8A Administration Facilities
- 10 Food & Beverage Production Facilities
- 11 Laundry & Housekeeping
- 13A Information Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical, Plumbing & Electrical
- 16 Loss Prevention

AUTOGRAPH COLLECTION®

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STANDARDS

MODULE 10

FOOD & BEVERAGE PRODUCTION FACILITIES

May 2014

Contents

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Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Contents

Food & Beverage - General

10.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Objectives: The criteria included in this Module models a generic foodservice facility for a MI managed property and guides the project design team with coordination, development, design and installation of foodservice facilities. However, for a franchised property the Module criteria is more for guidance and best practice.

1. Defines Standards and ensure quality and consistency among foodservice operations worldwide.
2. Identifies the coordination required in other Modules.

B. Foodservice Objectives:

1. Design and construct foodservice facilities with a high priority for sanitation and food safe materials.
2. Provide foodservice facilities with heavy duty equipment considering factors such as:
   - Labor efficient design with appropriate work flows
   - Life cycle value
   - Low maintenance
   - Ease of use
   - Cleanability and sanitation
   - Safety
3. Comply with MI Standards regardless of less stringent governing interpretations or practices at site locations.

C. Design Assumptions:

1. Typical Facility:
   a. 300 Guestroom business hotel
   b. One Lobby Lounge with beverage service
   c. Three Meal per Day Restaurant
   d. Possible Leased Restaurant
   e. Specialty Restaurant
   f. 929 m² (10,000 sq. ft) of Function spaces; see Module **<6>**
2. Convention Hotels:
   a. 1500 to 3000 Guestrooms
   b. A variety of Food & Bverage outlets as listed in Module **<3>**.
   c. 27,870 m² (300,000 sq. ft.) of Function spaces; see Module **<6>**.
3. Adjust quantities of larger or smaller facilities proportionally as appropriate.

D. Equipment Specification Packages: Contact MI for current 4KE and 5SU Package requirements and list. Coordinate the following:

1. Point of Sales (P.O.S.): See Module **<13A>** for systems equipment.
2. Electrical Service: Indicate location of terminals and printers on plan and provide electrical outlets to accommodate equipment.

10.2 Foodservice Planning - General

A. Market Study: Analyze market conditions, demand, competition and other influences to determine appropriate restaurant and menu concepts.

1. Prior to design, perform analysis of market specific conditions to determine relevant operations and space allocation requirements.
2. From the market study, identify the following site characteristics:
   - Import laws
   - Availability of products
   - Labor cost / wage rate

B. Impact on Planning & Space Allocation: Geographic locations (effecting products) and markets (effecting wages), drive the kitchen size and support facilities.

1. Wages: Wage rates determine the flow of service and design of kitchen spaces and adjacencies.
2. Efficiencies:
   a. Minimize full time equivalent (FTE) Employees
   b. Automate processes
   c. Minimize number of trips with increased capacity of hot / cold holding equipment for service items
   d. Close adjacencies of related functions
3. Other Factors:
   a. Where wages are low, design larger facilities as required to support more personnel.
   b. Where wage are low, consider impact on Employee housing and dining requirements
4. Products / Imports: Availability of products and import laws determines the need to make or buy certain products, including prepared breads and packaged meats.
5. High availability of products require:
   a. Preference to buy products
   b. Eliminate relevant pre-prep functions
   c. Storage facility sizes which are dependent on delivery frequency

6. Low availability of prepared and packaged products require:
   a. Preparing products on site from raw state
   b. Modular units required for additional processes such as Butchery, Fish Processing, Bakery, etc.
   c. Storage facility capacities typically increase accordingly
7. Energy Conservation: Provide energy saving and proven innovations wherever possible. Coordinate with Module **<15>**. Areas to provide energy saving equipment include:
   - Variable speed exhaust fans
   - Low volume exhaust hoods
   - Efficient refrigeration and monitoring systems
   - Low water consuming ware washers
   - Energy Star listed equipment

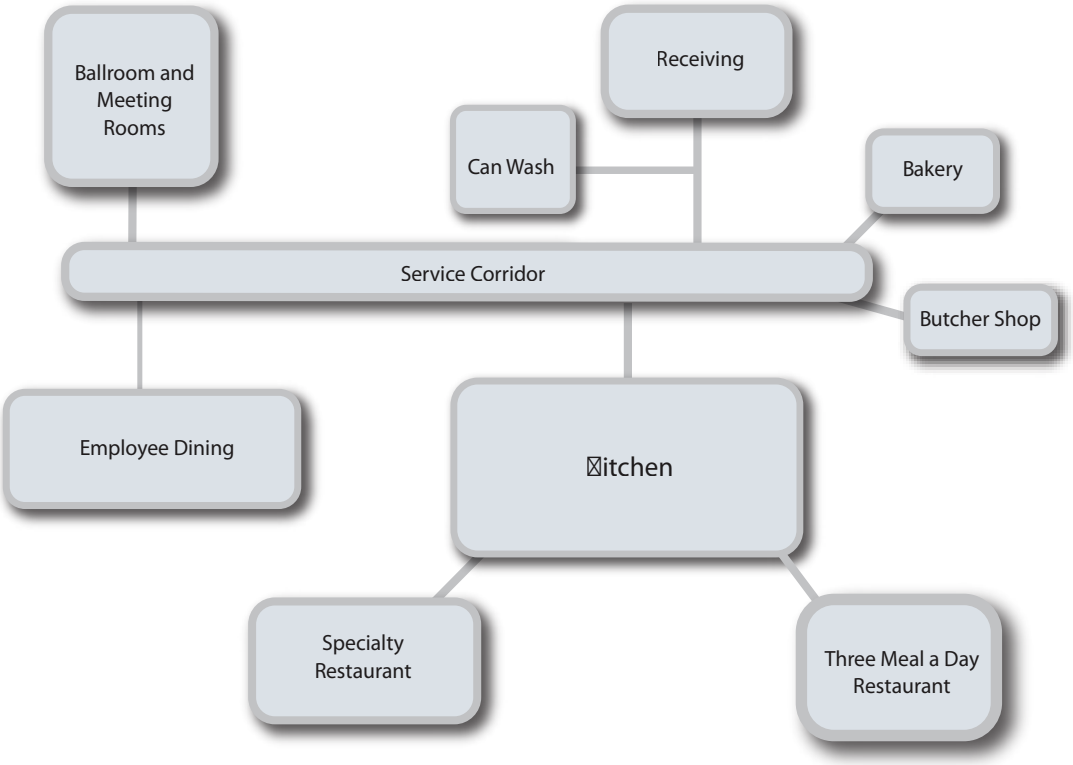
10.3 Space Planning

A. **Process Flow:** See the example, "Main Kitchen Relationship Diagram", Figure 1.
   1. Functions and Adjacencies: Arrange kitchen functions and adjacencies to follow flow of products from receiving through to kitchen finished product areas.
   2. Kitchen: Provide one centralized, main kitchen used for common processes.

B. **Spatial Parameters - General:** Use the following "Table: Kitchen Planning", Table 1, to estimate the initial space programming requirements (in meters and / or square feet) for foodservice, preparation and storage.
   1. Rooms / Areas: Provide the following:
      a. Rectangular shaped rooms
      b. Spaces without “dead” corners
      c. Straight and even wall lines
      d. Open spaces without unnecessary partitions and walls
      e. Maximize usable wall space for kitchen equipment.
      f. Ceiling Heights: 3 m (10 ft.) minimum
   2. **Columns / Shafts:** Minimize quantity and size of column and shaft protrusions in kitchen space where possible.
   3. **Corridor / Door / Elevator Widths:**
      a. Provide circulation paths capable of accommodating pallet size deliveries.
      b. Usually requires double doors.

4. **Aisle Widths:**
   a. Maintain 0.91 m (3 ft) minimum marked aisle widths in compliance with code and governing regulations for kitchen area exit corridors and pathways without obstructions from carts, warmers, chairs, storage items, etc.
   b. Maintain minimum of 1.5 m (5 ft) aisles for 2 way traffic, cart traffic and back-to-back processes.

Figure 1 - Main Kitchen Relationship Diagram



C. **Entrance to Main Kitchen / Dining:** Design entrance with baffled vestibule to prohibit light, noise and views from the kitchen to the dining area.
   1. Traffic Flow: Circular flow into dish washing then to Service Line and out past Service Station. Avoid traffic cross flow.
   2. Doors: Where possible, minimize doors within the kitchen circulation areas. Provide doors for the following:
      a. Fire / Smoke / Exit Doors: Provide rated doors for fire and life safety. If a fire rated wall separation is required by code between the main kitchen and dining area, then plan the vestibule to include an additional set of fire rated doors held open during normal operating conditions by an automatic hold open / release device.

Table 1 - Kitchen Planning (square feet)

Note: Use the Facilities Summary values to fill-in the formulas below. Calculations for 1A, B, C, D, E & 2 produce numeric factors used in the calculation below and not true area sub-totals.								
1A - Food Outlets								
	seats	x	5	sf / seat	if connected to main kitchen	=		sf
	seats	x	10	sf / seat	if not connected to main kitchen	=		sf
1B - Beverage Outlets								
	seats	x	1	sf / seat	if no separate kitchen required	=		sf
	seats	x	3	sf / seat	if small kitchen/pantry is required	=		sf
	= Total seats (use Food Outlet 1A count in 3A & 3B below)							
1C - Function Areas								
	total sf	x	0.15		1C	=		sf
1D - Employee Dining (includes seating area)								
	staff count	x	3	sf / staff member	1D	=		sf
(enter total staff count for property)								
1E - Room Service								
	keys	x	1	sf / key	1E	=		sf
					(add all items above) Sub-Total: 1	=		sf
2 - Main Kitchen Factor								
	sf	x	1.2		2	=		sf
(enter sub-total sf from 1 above)								
3A - Bakery (if included)								
	seats	x	2	sf / seat		=		sf
(enter dining seat count from 1A)								
	sf	x	0.03	sf		=		sf
(enter total function area from 1C)								
					Bakery sub-total area (add above two sums) 3A	=		sf
3B - Butcher (if included)								
	seats	x	0.5	sf / seat		=		sf
(enter dining seat count from 1A)								
	sf	x	0.01	sf		=		sf
(enter total function area from 1C)								
					Butcher sub-total (add above two factors) 3B	=		sf
4 - Kitchen (add four items above: 1, 2, 3A & 3B) *					Project Total:	=		sf
* Note: in low skill labor regions overall size may increase by 10 to15%								
Food and Beverage Storage: Typically, 25% of the Kitchen project total (from 3 above) is F&B storage with 75% dedicated to production space (in areas of limited product availability storage needs may increase by up to 25%).								

Imperial to Metric Conversion
1 sf ☒ 0.0929 sm

Program Area Exclusions

The program areas calculated above are "net" usable areas that exclude the following:

- **Columns, shafts and utility spaces**
- **Cart and can washing**
- **Service corridors**
- **Trash, garbage and recycling facilities**

Fire rated doors include the following:
- Self closing device
- Latching mechanism
- Automatic electric hold open / release device tied to fire alarm system

b. Non Rated Doors: Provide push / pull function and vision window. If automatic, electric eye door activation is required by MI.

c. Temperature: Provide doors between rooms with different design temperatures.

d. Storage and Security: Provide doors with locks at rooms and areas requiring security.

e. Light Weight Traffic Door: Provide double acting pass doors with vision window when doors do not require a functional rating.

f. Size: To accommodate bulk material and pallet movement, provide door and opening widths of 1.07 m (3'-6") or larger.

D. Office Spaces: Adjacent to or in kitchen area, provide dedicated offices for the following:
- Chef
- Restaurant Manager (if programmed)
- Storeroom supervisor (desk only within storeroom)
- Banquet Manager / Maitre d' Catering (accessible to public area)

E. Banquet Kitchen: Banquet areas are preferred on the same level as the Main Kitchen. Provide separate A' La Carte food production facilities to service Ballroom with banquet prep, banquet plating and food preparation line, dry and refrigerated storage, warewashing and pot and silver washing area when one or more of the following occur:

1. Ballroom is located on a different floor than main kitchen (not preferred).
2. Main Kitchen size, capacity, design, location, or operation is not capable of efficiently servicing the Ballroom.
3. Banquet seating capacity exceeds 1,500 seats.

F. Employee Lavatory: See Module **<8B>**. Locate facilities near (not to exceed 60 m (200 ft) and accessible to kitchen space when applicable.

1. Provide 1 unisex lavatory with sink and toilet per floor minimum when foodservice facilities are located on multiple floors.
2. Provide stainless steel sink with touchless, hot and cold water mixing valve control (foot or sensor operation) with drain connected direct to waste system.
3. Provide soap and towel dispensers at each sink.

10.4 Code Compliance & Standards

A. Architectural Design & Standards - General: Provide design, equipment and construction of facilities, at a minimum, in compliance with, or comparable to, foodservice sanitation and safety codes practiced in the United States by MI and as required by the governing codes. Submit conflicts concerning codes and standards compliance provisions to MI for resolution.

1. **Material Standards:** Recognized building material, testing and fabrication standards:
   - American National Standards Institute (ANSI)
   - American Society for Testing and Materials (ASTM)
   - Underwriters Laboratories (UL)
2. **Foodservice Code Standards:** Recognized foodservice code and fabrication standard:
   - National Sanitation Foundation (NSF)
3. **Construction / Design Code Standards:** Recognized construction and design code standards:
   - International Building Code (IBC)
   - National Fire Protection Association (NFPA)
   - American Gas Association (AGA)
   - American Society of Mechanical Engineers (ASME)
   - Americans with Disabilities Act (ADA)
4. **Health Department:** Design facilities in compliance with governing Department of Health provisions.

B. Foodservice Health Provisions:

1. Hand Sinks: Stainless steel; locate within a 6 m (20 ft) radius of food preparation, production and warewashing areas.
   a. Connect hand sinks direct to waste system.
   b. Provide touchless hot and cold water controls (electronic sensor operation).
   c. Isolate from work surfaces to avoid contamination.
2. Soap / Towels: Provide soap and towel dispensers at hand sinks. Coordinate with Operations to identify type and supplier.
3. Grease Disposal: Connect pot sinks and other grease wastes (not grinders / disposal waste machines) to grease traps.
4. Back Splashes: 15 cm (6 inch) high for worktables and counters against walls. Seal to wall with food safe, 100% silicone sealant.
5. Cleaning Clearance: Provide 10 cm (4 inch) minimum clearance for cleaning at stationary equipment not sealed to walls.

Maintain 15 cm (6 inch) minimum clearance for equipment above floor (including undershelves) for cleaning.

6. Exhaust Ventilators: Provide stainless steel wall finish on walls to tile floor base, behind cooking appliances and adjacent to exhaust ventilators.
7. Storage: Lockable; separate chemical from food storage.
8. Finishes: Provide safe, easy to clean finishes for floors, ceilings and walls of food prep and production areas. Behind cooking appliances and adjacent to exhaust ventilators, provide stainless steel wall finish extending from tile wall base to ceiling.
9. Paint / Coatings: Provide durable, non-toxic, non-dusting, non-flaking, mildew resistant, NSF approved coatings; suitable for foodservice areas.

10.5 Mechanical / HVAC

A. **Utilities:** **<15A>** Choose utility based on the following:
   1. Use natural gas when available.
   2. If municipal gas service is not available, provide central LPG system with exterior bottle storage.
   3. Provide combination of utilities to reduce impact of utility system failure.
   4. Prefer induction in buffet areas.
   5. Conceal utility lines in walls and stub-out of walls as required for connections. Do not stub out from floor or expose runs on face of walls and ceiling.

B. **Gas:** Comply with NFPA 54, National Fuel Gas Code. Do not use or store gas bottles or containers within building.

10.6 Plumbing

A. Waste Requirements:

1. Direct Waste: Use only when required by code or recommended by equipment manufacturer.
   a. Connect hand sinks to direct waste to contain bacteria.
   b. Provide foot operated or electric sensor faucets with mixing valve.
2. Indirect Waste: Provide indirect waste from kitchen equipment that is not required to be directly connected.
   a. Avoid placement of drains in traffic areas.
   b. Use funnel floor drain vs. recessed floor sink based on capacity, cost and use.
   c. As a general rule, provide air gap for indirect wastes equal to 2 times the diameter size of drainpipe to prevent back siphonage and contamination.
   d. Provide funnel floor drains for low volume indirect waste sites. Place in easily accessible locations for service.
   e. Provide recessed floor sinks for high volume indirect waste sites.

B. Waste Disposers (Grinders): Provide at scrap sinks of dishwashing areas. Provide in major pot wash and prep sink drain boards (not in sinks) with the following motor sizes:

1. 2 hp minimum
2. 5 hp at dish washing
3. Provide waste collectors or pulpers if disposers are not permitted.

C. Area Floor Drains:

1. Location - General: Locate area floor drains throughout facility to assist with floor washing and specifically in wet areas such as pot washing, warewashing and trash room.
2. Provide floor trench drains in regions where customary.
3. Slope: Pitch floor to area drains at a minimum of 10 mm/m (⅛ inch/ft) and maximum of 20 mm / m (¼ inch/ft).
4. Grate Cover: Flush with finished floor. Minimum 15 mm (½ inch) grate opening to prevent clogging.

D. Floor Troughs and Grates: Locate in areas of high volume water pouring such as in front of tilt kettles and ice machines.

1. Size floor trough to accommodate full pour path of equipment.
2. Provide 10 cm (4 inch) deep depression from rough slab to finished floor to receive stainless steel floor trough lining and grating.

3. Size floor grate openings to prevent equipment caster (wheels) entrapment in grates with grates flush to floor.
4. Provide grates with non skid surface.

E. **Water Lines:** Connect water lines to foodservice equipment through individual water filters when required. Use flexible lines and quick disconnect connections; see **<15B>**

F. **Water Filters:** Provide water filters at point of use for descaling of minerals in equipment such as coffee and tea brewers, ice machines and boiler base steamers.

G. **Gas Regulator Valves:** Verify need for regulator valves to ensure sufficient gas pressure for operation of cooking and heating equipment.

H. **Hand Sinks:** See *Section 10.4* Code Compliance and Standards, "Foodservice Health Provisions".

10.7 Electrical

A. **Requirements – General:** **<15C>**

1. Prefer single receptacles to direct electrical connections where possible.
2. Use drop cord receptacles from ceiling for island workstations, banquet plating and holding areas.
3. Conceal utilities in walls. Do not stub out of the floor or run exposed on the face of walls and ceilings.

10.8 Property Systems (Data & Telephone)

A. **Data Systems:** See Module **<13A>**

B. **Telephone Systems:** See Module **<13B>**; Provide a telephone in each independent kitchen area.

10.9 Construction Requirements - General

A. Floors: Provide with minimum slip resistance **<16>** coefficient of 0.6, wet / dry (level floor) and 0.8 wet / dry for ramps.

1. Floor Loading: Comply with governing code. Minimum live loading is 490 kg / m² (100 lbs / sq. ft).
2. Paver Tile: Comply with Tile Council of America (TCA) standards.
   a. Provide cleanable, 6 x 6 inch (15 x 15 cm) minimum, vitreous (0.5% to 3% water absorption), square edge tile of red / gray / brown through body color.
   b. Provide mud set installation on concrete subslab and grout meeting ANSI A118.5 requirements.
3. Seamless Floor: *Duraflex* or accepted equal.
4. Concrete: Hard steel troweled and sealed with a heavy duty sealer designed for vehicle traffic (storage and non food production areas only that do not receive tile).

B. Steps, Stairs & Ramps: See Module **<16>** - Loss Prevention.

C. Natural Light: Verify code requirements for daylight / natural light in kitchen. Incorporate natural daylight and views into the plan wherever possible.

D. Windows & Safety Glass: See Modules **<GR>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

E. Walls:

1. Kitchen Walls: Construction may be masonry or gypsum board on metal stud system. If gypsum board, construct framing on 20 cm (8 inch) high concrete or concrete masonry unit curbs to control water seepage into adjacent Public areas (including bar dies) from kitchen areas.
2. Wall Height: Construct kitchen perimeter walls full height to underside of structure and seal to contain kitchen noise and odors.
   a. Extend perimeter walls to slab / structure above and seal to prevent odor and sound transmission to Public spaces.
   b. Construct walls common with dining rooms from concrete masonry units.
3. Ceramic Tile (preferred): Follow TCA standards for product selection and installation.
   a. Provide off-white 100 x 100 mm (4 x 4 inches) ceramic tile walls to ceiling or 1.8 m (6 ft) minimum height from floor with white grout. Coordinate height with equipment and Kitchen Consultant.

   b. Where finish walls are exposed to guest view, provide ceramic tile and design to support restaurant concept and interior design.

4. Fire Rated - Fiber Reinforced Finish Paneling (FR-FRFP): Provide Fire Rated Paneling (FRP) type as approved by MI and Zurich Services Corporation in areas of food processing and production, and on kitchen corridor walls, that require fire rated, sanitary, cleanable walls.
5. Security: Construct walls for lockable and secure areas (storage, offices, etc.) to structure above (or provide equal security barrier of expanded metal lath or welded wire fabric) to deter unauthorized entry or theft.
6. Reinforcement: Reinforce walls and ceiling to support wall and ceiling mounted equipment.
7. Wall Thickness: Provide materials of sufficient thickness to receive recessed wall equipment when required.
8. Walls Above Walk-In Freezer / Refrigerator Units: Provide closure panels of same finish as walk-in unit exterior to close off space above perimeter of units to ceiling to prevent storage use, prevent excessive loads on units and to enhance sanitation.
9. Wall Protection: Provide in service corridors, cart parking, etc. and other similar areas of traffic. Provide high and low continuous stainless steel channel rails **<8B>** or armor metal plates fastened to wall from floor to 1.2 m (4 ft) high mounted to provide wall protection. Avoid wood rails.
10. Corner Guards: Provide 10 x 10 cm x 1.5 m high (4 x 4 inch x 5 ft), 16 gauge stainless steel at exposed outside wall corners of interior spaces subject to cart traffic.
11. Wall Finishes at Cooking Lines: Behind BOH cooking lines, provide 20 gauge stainless steel wall flashing with lock seams from top of cove base to bottom of exhaust hood (by Kitchen Contractor). For wall finishes behind cooking lines of public areas, when specified by the Interior Designer, obtain governing health department approval.

F. **Ceilings:** Provide materials that meet the following criteria:
   1. Washable surfaces, but non corrosive
   2. Accessible, non corrosive support systems
   3. Recessed light fixtures (not surface mounted to ceiling)
   4. Fire rated ceiling panels (FRP), approved by MI, Zurich Services Corporation and by governing regulations.

G. **Raceways:** Provide 15 cm (6 inch) diameter raceway (PVC, EMT, or other material required by code) to run soda and beer lines from bag in box rack to dispenser with easy sweep bends of 60 cm (24 inch) radius minimum. Run conduit on underside of slab or above finished ceiling as appropriate and provide support.

H. **Cabling:** Use shielded and unshielded cable for PBS / PMS and P.O.S. systems as required by Modules **<13A>** and **<13B>**.

I. **Foodservice Openings:** Provide stainless steel trim around both sides of wall openings to receive pass-through or recessed foodservice equipment.

J. **Pass Doors:** Provide easy opening, in / out door with vision panel in high traffic areas between restaurant and kitchen.

10.10 Kitchen Equipment

A. **Product Quality:** Provide equipment manufacturers' highest grade of kitchen equipment designed for heavy duty, commercial, hospitality use.
   1. Provide features like casters on cooking equipment, tables and other items where reasonable for the operational application.
   2. Where utility connections can be accommodated reasonably, provide "flexible quick disconnect" connections.

B. **Equipment Specification Packages:**
   1. 4KE Package: Permanent equipment, hard wired and hard plumbed is part of the "4KE Kitchen Equipment Package"; examples include espresso machine, storage shelf, oven, etc. (see MI property list for examples).
   2. 5SU Package: Attachments and accessories ordered with the supplies package (i.e. 5SU).
      a. Mobile or temporary equipment considered as part of the 5SU smallwares; examples include banquet carts, glass racks, blenders, etc.
      b. Design and plan for 5SU equipment supplies.

C. **Warranty:** Provide one year (warranty begins when MI occupies facility) on parts and labor for foodservice equipment. Provide a five year warranty on refrigeration components (compressor, condenser, evaporators, etc.)

D. **Manufacturers:** Table 2 includes a comprehensive list of kitchen equipment. Exact equipment is based on project requirements. MI accepts equipment from the following manufacturers:

Table 2 - Equipment Manufacturers						
Item	**Americas**	**Europe**	**China**	**Asia / Pacific Region**	**Middle East / Africa**	**Remarks**
Receiving						
Insect Killer	Insect-o-cutor	Starkey / Sammic	Starkey / Sammic	Starkey / Sammic	Starkey / Sammic	
Platform Scale	Penn	Mettler Toledo / Soehnle	Mettler Toledo / Soehnle	Mettler Toledo / Soehnle	Mettler Toledo / Soehnle	Mobile
Pressure Cleaner	SMT	Karcher / SMT	Karcher / SMT	Karcher / SMT	Karcher / SMT	
Trench Drain	Custom / IMC	Edelstahl / Ado Roste	Edelstahl / Ado Roste	Edelstahl / Ado Roste	Edelstahl / Ado Roste	
Hose Reel	T & S / Fisher	T & S / Fisher	T & S / Fisher	T & S / Fisher	T & S / Fisher	15.2 m (50 ft) hose
Air Curtain	Curtron / Berner	Curtron / Berner	Curtron / Berner	Curtron / Berner	Curtron / Berner	
Walk-in Refrigeration	Kolpak	Desmond / Williams UK	Desmond / Williams UK	Desmond / Williams UK	Desmond / Williams UK	Approximately 9.3 m^2 (100 sq. ft.)
Hand Sink	Advance	Custom	Custom	Custom	Custom	With soap and towel dispenser
Waste Compactor	Orwak / Harmony	Orwak / Harmony	Orwak / Harmony	Orwak / Harmony	Orwak / Harmony	
Can Washer	Aervoid	Aervoid	Aervoid	Aervoid	Aervoid	Mount on 100 mm (4 inch) high curb
Platform Truck	Kelmax	Kelmax	Kelmax	Kelmax	Kelmax	1,100 kg (2,500 lb) capactiy
Manual Pallet Jack	Dayton	Dayton	Dayton	Dayton	Dayton	2,500 kg (5,500 lb) capacity

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Common Equipment (Use in Each Food Handling Area Below)						
Tables, Counters, Sinks, Shelves	Custom	Custom	Custom	Custom	Custom	Comply with Section 10.13
Hand Sink	Advance	Custom	Custom	Custom	Custom	Conply with Section 10.4
Water Filter	Everpure	Everpure	Everpure	Everpure	Everpure	Provide for all ice machines, steam equipment, coffee and beverage dispensing items
Exhaust Ventilator	Halton / Gaylord	Halton / Gaylord	Halton / Gaylord	Halton / Gaylord	Halton / Gaylord	Halton Capture Jet or Gaylord ELX
Fire Suppression System	See Module 14	See Module 14	See Module 14	See Module 14	See Module 14	Provide pre-plumbed in all cooking exhaust hoods, Include as part of kitchen equipment package
Faucets, Sink Wastes, and Dishwashing Pre-rinse Spray Hoses	T & S / Fisher	T & S / Fisher	T & S / Fisher	T & S / Fisher	T & S / Fisher	All stainless or brass components, no aluminum. Pre-rinse sprays comply with EPAct 2005 6.0 lpm (1.6 gpm) or lower

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Pre-Processing						
Pan Rack Cart	Cres-Cor / Metro	Cres-Cor / Metro	Cres-Cor / Metro	Cres-Cor / Metro	Cres-Cor / Metro	
Ice Flaker	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	90 kg (200 lbs) minimum
Fish File Refrigerator	Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	
Meat Saw	Hobart	Hobart	Hobart	Hobart	Hobart	All stainless steel finish
Butcher Blocks	J. Boos	J. Boos	J. Boos	J. Boos	J. Boos	Hard maple on stainless stand
Refrigerator	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Reach-in
Air Degerminator	Hussman	Bioclimatic	Bioclimatic	Bioclimatic	Bioclimatic	
Meat Grinder	Hobart	Hobart	Hobart	Hobart	Hobart	
Food Cutter	Hobart	Hobart	Hobart	Hobart	Hobart	
Bench Scale	Pelouze	Mettler Toledo / Soehnle	Mettler Toledo / Soehnle	Mettler Toledo / Soehnle	Mettler Toledo / Soehnle	
Vacuum Packing Machine	Multivac	Multivac / Komet	Multivac / Komet	Multivac / Komet	Multivac / Komet	
Butcher Bins	Cambro / Metro	Cambro / Metro	Cambro / Metro	Cambro / Metro	Cambro / Metro	
Hose Reel	T & S / Fisher	T & S / Fisher	T & S / Fisher	T & S / Fisher	T & S / Fisher	
Shelving	Metro	Metro	Metro	Metro	Metro	Secure storage, walk-in
Trench Drain	Custom	Custom	Custom	Custom	Custom	
Orange Juicer	Citrocasa	Citrocasa	Zumex	Zumex	Citrocasa	Fully automatic

Table 2 - Equipment Manufacturers						
Item	**Americas**	**Europe**	**China**	**Asia / Pacific Region**	**Middle East / Africa**	**Remarks**
Storage						
Dunnage Rack	Metro / Cambro	Metro / Cambro	Metro / Cambro	Metro / Cambro	Metro / Cambro	
Storage Shelving	Metro / Cambro	Metro / Cambro	Metro / Cambro	Metro / Cambro	Metro / Cambro	5-tiers of stainless steel or plated chrome
Walk-in Refrigeration	Kolpak	Desmond / Williams UK	Desmond / Williams UK	Desmond / Williams UK	Desmond / Williams UK	
Refrigeration System	Cold Zone / RDT	Copeland / Bock	Copeland / Bock	Copeland / Bock	Copeland / Bock	
Garde Manger (Cold Prep)						
Plate Stacker	Plate Mate	Plate Mate	Plate Mate	Plate Mate	Plate Mate	
Vegetable Cutter	Robot Coupe / Halde	Robot Coupe / Halde / Anliker	Robot Coupe / Halde	Robot Coupe / Halde	Robot Coupe / Halde	With set of 12 cutters
Scale	Pelouze	Mettler Toledo / Soehnle	Mettler Toledo / Soehnle	Mettler Toledo / Soehnle	Mettler Toledo / Soehnle	For portioning
Bench Scale	Pelouze	Mettler Toledo / Soehnle	Mettler Toledo / Soehnle	Mettler Toledo / Soehnle	Mettler Toledo / Soehnle	
Slicer	Hobart	Hobart / Univex	Hobart / Univex	Hobart / Univex	Hobart / Univex	Automatic with 305 mm (12 inch) diameter blade
Pacotize Machine	Pacojet	Pacojet	Pacojet	Pacojet	Pacojet	
Blender	Vitamix / Blendtec	Vitamix / Blendtec	Vitamix / Blendtec	Vitamix / Blendtec	Vitamix / Blendtec	
Mixer	Hobart	Hobart	Hobart	Hobart	Hobart	28 liter (30 quart) and 19 liter (20 quart)
Induction Cooker	Spring / Cooktek	Cooktek / Inducs	Cooktek / Inducs	Cooktek / Inducs	Cooktek / Inducs	2.5 kW
Smoke Oven	Alto-Shaam	Alto-Shaam	Alto-Shaam	Alto-Shaam	Alto-Shaam	Undercounter, portable, hot & cold capability
Vacuum Packing Machine	Multivac	Multivac / Komet	Multivac / Komet	Multivac / Komet	Multivac / Komet	Counter top model
Food Processor	Robot Coupe / Halde	Robot Coupe / Halde	Robot Coupe / Halde	Robot Coupe / Halde	Robot Coupe / Halde	
Combi Oven	Rational	Rational	Rational	Rational	Rational	6-10 pan unit, counter top model
Ice Cuber	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	90 kg (200 lb) capacity minimum
Disposer	In-Sinkerator / Salvajor	IMC	IMC	IMC	IMC	In-sink at prep tables

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Refrigerator	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Above counter as necessary
Walk-in Refrigeration	Kolpak	Desmond / Williams UK	Desmond / Williams UK	Desmond / Williams UK	Desmond / Williams UK	Cooler, freezer, separate finished product cooler
Trolley	Cambro / Metro	Cambro / Metro	Cambro / Metro	Cambro / Metro	Cambro / Metro	For vegetables
Vegetable Washer	Nilma / Meiko	Nilma / Meiko	Nilma / Meiko	Nilma / Meiko	Nilma / Meiko	
Vegetable Dryer	Nilma / Dito Electrolux	Nilma / Dito Electrolux	Nilma / Dito Electrolux	Nilma / Dito Electrolux	Nilma / Dito Electrolux	
Juice Extractor	Santos / Sanomat	Rotor Lips / Santos	Rotor Lips / Santos	Rotor Lips / Santos	Rotor Lips / Santos	
Citrus Juicer	Santos	Rotor Lips / Santos	Rotor Lips / Santos	Rotor Lips / Santos	Rotor Lips / Santos	
Vacuum Packing Machine	Multivac	Multivac / Komet	Multivac / Komet	Multivac / Komet	Multivac / Komet	
Knife Sterilizer	Edlund	Sofinor / Edlund	Sofinor / Edlund	Sofinor / Edlund	Sofinor / Edlund	
Cutting Board	Teknor Apex	Okulen / Euroceppi	Okulen / Euroceppi	Okulen / Euroceppi	Okulen / Euroceppi	Synthetic, anti-microbial, color coded
Potato Peeler	Hobart	Hobart / IMC	Hobart / IMC	Hobart / IMC	Hobart / IMC	

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Bakery (If required)						
Bakery Cart	Cres-Cor / Metro	Blanco	Blanco	Blanco	Blanco	
Bakers Table	J. Boos	J. Boos	J. Boos	J. Boos	J. Boos	Wooden top with open base
Ingredient Bin	Rubbermaid	Rubbermaid	Rubbermaid	Rubbermaid	Rubbermaid	
Combi Oven	Rational	Rational / Convo-therm	Rational	Rational	Rational	10 pan capacity double stack
Retarder Proofer	Gemini / Doyon	Sweba Dahlen / Miwe	Sweba Dahlen / Miwe	Sweba Dahlen / Miwe	Sweba Dahlen / Miwe	
Rack Oven	Gemini / Doyon	Sweba Dahlen / Miwe	Sweba Dahlen / Miwe	Sweba Dahlen / Miwe	Sweba Dahlen / Miwe	Gas fired, full size wheel in, single rack capacity, all stainless steel, eyebrow ex-haust, retarder proofer, integral steam, view port
Range	Jade / Vulcan	MKN / Therma	MKN / Therma	MKN / Therma	MKN / Therma	4 open burners
Fryer	Frymaster / Vulcan	MKN / Therma	MKN / Therma	MKN / Therma	MKN / Therma	With self filtering system
Proofer / Retarder	Gemini / Doyon	Miwe / Revent	Miwe / Revent	Miwe / Revent	Miwe / Revent	
Mixer	Hobart	Hobart / Dito Elec-trolux	Hobart / Dito Elec-trolux	Hobart / Dito Elec-trolux	Hobart / Dito Elec-trolux	One 5 liter (5 quart) and one 57 liter (60 quart) with 57 and 28 liter bowls. Provide with timer, beater, wire whip, dough arm, dough knife, and bowl truck
Bread Slicing Ma-chine	Oliver / Berkel	Berkel / Ade	Berkel / Ade	Berkel / Ade	Berkel / Ade	
Dough Sheeter	Rondo	Rondo / Fritsch	Rondo / Fritsch	Rondo / Fritsch	Rondo / Fritsch	Semi-automatic, table top, fold-up type, reversible, adjust-able belts, with cutter capability
Mixer	Hobart	Rotor Lips / Kolb	Rotor Lips / Kolb	Rotor Lips / Kolb	Rotor Lips / Kolb	Planetary type
Mixer	Hobart	Hobart	Hobart	Hobart	Hobart	Spiral type

Table 2 - Equipment Manufacturers						
Item	**Americas**	**Europe**	**China**	**Asia / Pacific Region**	**Middle East / Africa**	**Remarks**
Dough Divider	Rondo	Erika / Fritsch / Roll Fix	Erika / Fritsch / Roll Fix	Erika / Fritsch / Roll Fix	Erika / Fritsch / Roll Fix	
Water Chiller	Doyon	Tecnomac / Alaska	Tecnomac / Alaska	Tecnomac / Alaska	Tecnomac / Alaska	
Water Meter	Doyon	Tecnomac / Alaska	Tecnomac / Alaska	Tecnomac / Alaska	Tecnomac / Alaska	
Induction Cooker	Spring / Cooktek	Cooktek / IE	Cooktek / IE	Cooktek / IE	Cooktek / IE	Two 2-burner, 2.5 kW each
Blast Chiller/Freezer	Irinox	Koma / Irinox	Koma / Irinox	Koma / Irinox	Koma / Irinox	
Hot Plate	Vulcan	Roller Grill / Neumaker	Roller Grill / Neumaker	Roller Grill / Neumaker	Roller Grill / Neumaker	For pancakes
Batch Freezer	Bravo Systems / Carpigiani	Carpigiani / Autofrigor	Carpigiani / Autofrigor	Carpigiani / Autofrigor	Carpigiani / Autofrigor	With pastuerizing capabilities, floor model, 5 liter (5 quart) capacity, wash down faucet
Pasteurizer	Carpigiani / Taylor	Carpigiani / Autofrigor	Carpigiani / Autofrigor	Carpigiani / Autofrigor	Carpigiani / Autofrigor	
Scale	Pelouze	Pelouze	Pelouze	Pelouze	Pelouze	Counter top; one 6 kg x 0.002 and 20 kg
Waffle Iron	Wells / Carbon	Neumarker / Roller Grill	Neumarker / Roller Grill	Neumarker / Roller Grill	Neumarker / Roller Grill	
Whipped Cream Machine	Carpigiani	Kolb / Schalagra	Kolb / Schalagra	Kolb / Schalagra	Kolb / Schalagra	
Refrigerator / Freezer	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Reach-in
Wall Cabinet	Custom	Custom	Custom	Custom	Custom	With sliding doors
Refrigerated Base	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	With room temperature marble top
Hardening Cabinet	Global	Koma / Irinox	Koma / Irinox	Koma / Irinox	Koma / Irinox	Single door, self-contained with temp range -40C to 21C (-40F to 70F)
Praline Cabinet	Sofinor	Sofinor	Sofinor	Sofinor	Sofinor	
Chocolate Warmer	Hilliard	Chocovision / Jufeba	Chocovision / Jufeba	Chocovision / Jufeba	Chocovision / Jufeba	
Chocolate Tempering Machine	Hilliard	Chocovision / Jufeba	Chocovision / Jufeba	Chocovision / Jufeba	Chocovision / Jufeba	

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Beverage Storage						
Storage Shelving	Metro	Metro	Metro	Metro	Metro	Non-corrosive chrome, wire type
Security Shelving	Metro	Metro	Metro	Metro	Metro	Cage type with locks, stainless steel, flat shelf to accommodate wine bottles vertically
Dunnage Rack	Metro	Metro	Metro	Metro	Metro	
Wine Bottle Storage	Metro	Metro	Metro	Metro	Metro	Security shelving to accommodate wine bottles horizontally
Keg Storage Racks	Metro	Metro	Metro	Metro	Metro	
Beer Dispensing System	Micromatic / Perlick	By Vendor	By Vendor	By Vendor	By Vendor	
Walk-in Refrigeration	Kolpak	Desmond / Williams UK	Desmond / Williams UK	Desmond / Williams UK	Desmond / Williams UK	
Pot Washing						
Disposer	In-Sinkerator/Salvajor	IMC	IMC	IMC	IMC	Or pupler, cone mounted in soiled side drainboard of 3 compartment sink
Storage Shelving	Metro	Metro	Metro	Metro	Metro	
Mechanical Sink Agitator	Wells					
Trench Drain	Custom	Custom	Custom	Custom	Custom	300 mm (12 inch) wide by length of 3 compartment sink
Pot Wash Machine	Hobart	Hobart	Hobart	Hobart	Hobart	Automatic single tank with clean and soiled drainboards, high chamber

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Warewashing						
Soiled and Clean Dish Tables	Custom	Custom	Custom	Custom	Custom	Soiled: "L" shaped, sink with rack guide, glass rack shelf, connect to dish machine. Clean: Minimum 1.5 m (5 feet), connect to dish machine
Disposer	In-Sinkerator / Salvajor	IMC	IMC	IMC	IMC	Or pulper, 5 horse-power, mounted in sink on soiled dish table
Vent Ducts	Custom	Custom	Custom	Custom	Custom	Stainless steel
Dish Machine	Hobart	Hobart / Meiko / Winterhalter	Hobart / Winter-halter	Hobart / Winter-halter	Hobart / Meiko / Winterhalter	Base size on 70% of rated capacity, con-veyor or flight type, with booster heater
Silver Burnishing Room						
Burnishing Machine	Blakeslee	IMC	IMC	IMC	IMC	Open top, vibrating type, 250-300 piece capcity, 204 kg (450 lbs) of steel burnishing balls
Work Table	Custom	Custom	Custom	Custom	Custom	With sink
Shelving	Metro	Metro	Metro	Metro	Metro	

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Ice Production						
Ice Cuber	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Sized for 0.5 kg (1 lb) per dining seat
Ice Flaker	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Approximately 270 kg (600 lb)
Ice Bin	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Sized for 150% of daily production capacity of ice machine
Refrigerated Trash Holding						
Walk-in Refrigeration	Kolpak	Desmond / Williams UK / Koldtech	Desmond / Williams UK / Koldtech	Desmond / Williams UK / Koldtech	Desmond / Williams UK / Koldtech	Sized to maintain 13C (55F)
Hose Reel	T & S	T & S	T & S	T & S	T & S	
In Room Dining Service						
Refrigerator	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	2 door reach-in, 2 door glass door roll-in, separate flower refrigerator
Ice Cuber	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	180 kgs (400 lbs)
Coffee Brewer	Fetco / WMF	WMF	WMF	WMF	WMF	
Espresso Machine	WMF / Franke	Franke / WMF / Schaerer	Franke / WMF	Franke / WMF	Franke / WMF	Fully Automatic
Juice Dispenser	Crathco / Cofrimell	Crathco / Cofrimell	Crathco / Cofrimell	Crathco / Cofrimell	Crathco / Cofrimell	
Microwave Oven	Panasonic	Panasonic	Panasonic	Panasonic	Panasonic	
Shelving	Metro	Metro	Metro	Metro	Metro	May also use architect designed millwork storage
Conveyor Toaster	Hatco / Savory	Hatco / Savory	Hatco / Savory	Hatco / Savory	Hatco / Savory	
Trolley	HIS Global	HIS Global	HIS Global	HIS Global	HIS Global	For in-room dining
Hot Box	HIS Global	HIS Global	HIS Global	HIS Global	HIS Global	For in-room dining

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Closing Room						
Wine Cooler	Eurodib	Iglu	Iglu	Iglu	Iglu	
Espresso Machine	Scanomat / WMF	Scanomat / WMF	WMF	WMF	Scanomat / WMF	
Refrigerator	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	With glass doors
Pool Kitchen						
Fryer	Frymaster	MKN / Ambach	MKN / Ambach	MKN / Ambach	MKN / Ambach	Two vat with self filtering system
Salamander	Roller Grill / Franke	Franke	Franke / Roller Grill	Franke / Roller Grill	Franke / Roller Grill	Top down electric only
Range	Jade / Vulcan	MKN / Ambach / Therma	MKN / Therma	MKN / Therma	MKN / Therma / Ambach	Charbroiler, griddle, burner with oven base
Combi Oven	Rational	Rational	Rational	Rational	Rational	Counter top
High Speed Oven	Turbochef / Merrychef	Turbochef / Merrychef	Turbochef / Merrychef	Turbochef / Merrychef	Turbochef / Merrychef	Programmable, counter top unit
Ice Cream Freezer	Taylor	Carpigiani	Carpigiani	Carpigiani	Carpigiani	
Dipper Well	Wells	Wells	Wells	Wells	Wells	
Conveyor Toaster	Hatco / Savory	Hatco / Savory	Hatco / Savory	Hatco / Savory	Hatco / Savory	
Waffle Iron	Wells / Carbon	Neumarker / Roller Grill	Neumarker / Roller Grill	Neumarker / Roller Grill	Neumarker / Roller Grill	
Refrigerator	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Reach-in freezer, roll-in double door
Walk-in Refrigeration	Kolpak	Desmond / Williams UK	Desmond / Williams UK	Desmond / Williams UK	Desmond / Williams UK	Cooler, freezer, beverage cooler
Dish Machine	Hobart	Hobart / Meiko / Winterhslter	Hobart / Winterhalter	Hobart / Winterhalter	Hobart / Meiko / Winterhalter	Single rack
Storage Shelving	Metro	Metro	Metro	Metro	Metro	

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Bars						
Back Bar Refrigerator	Perlick / Glastender	IMC	IMC	IMC	IMC	Glass doors, remote refrigerated in public areas, minimum 2 doors per bartender
Ice Cuber	Manitowoc / Kold Draft	Manitowoc / Kold Draft	Manitowoc / Kold Draft	Manitowoc / Kold Draft	Manitowoc / Kold Draft	30 x 30 x 30 mm (1-1/4 x 1-1/4 x 1-1/4 in) cube size
Coffee Brewer	Franke / Schaerer	Franke / Schaerer	Franke / Schaerer	Franke / Schaerer	Franke / Schaerer	Fully automatic
Espresso Machine	Chimbali / La Marzocco / Faema	Elektra / La Marzocco / Faema	Elektra / La Marzocco	Elektra / La Marzocco	Elektra / La Marzocco	Semiautomatic
Bar Blender	Blendtec / Vitamix	Blendtec / Vitamix	Blendtec / Vitamix	Blendtec / Vitamix	Blendtec / Vitamix	1.3 liter (44 oz) capacity
Blender Station	Perlick / Glastender	IMC / Perlick / Eagle	IMC / Perlick / Eagle	IMC / Perlick / Eagle	IMC / Perlick / Eagle	460 mm (18 inch) wide, with 250 mm (10 inch) blender shelf
Beer Tap	Perlick / Glastender	Celli / Servend	Celli / Servend	Celli / Servend	Celli / Servend	Minimum 3 flavor, drainer below
Cocktail Station	Perlick / Glastender	Perlick / Eagle	Perlick / Eagle	Perlick / Eagle	Perlick / Eagle	With speed rail, juice wells, and condiment tray
Glass Washer	Perlick / Glastender	Winterhalter / Meiko	Winterhalter / Meiko	Winterhalter / Meiko	Winterhalter / Meiko	Extra high compartment
Mug Froster	Perlick / Glastender	IMC	IMC	IMC	IMC	Optional
Wine Bottle Display	Wine Trend / RPI	Wine Trend / Iglu	Wine Trend / Iglu	Wine Trend / Iglu	Wine Trend / Iglu	
Wine Dispenser	Enomatic / Wine-keeper	Enomatic	Enomatic	Enomatic	Enomatic	
Hand Sink	Perlick / Glastender	IMC	IMC	IMC	IMC	With integral soap and towel dispenser and splash guards on both sides
3 Compartment Sink	Perlick / Glastender	IMC	IMC	IMC	IMC	4 Compartment preferred, with drainboards
Drainboard	Perlick / Glastender	IMC	IMC	IMC	IMC	

Table 2 - Equipment Manufacturers						
Item	**Americas**	**Europe**	**China**	**Asia / Pacific Region**	**Middle East / Africa**	**Remarks**
Soda Gun	By Vendor	By Vendor	By Vendor	By Vendor	By Vendor	With holder located on left side of cocktail station
POS Terminal / Printer	By Owner	By Owner	By Owner	By Owner	By Owner	With cash drawer located on front bar integral with bar design
Trash Receptacle	Rubbermaid	Rubbermaid	Rubbermaid	Rubbermaid	Rubbermaid	At each station
Bar Top Closer	Counter Balance	Counter Balance	Counter Balance	Counter Balance	Counter Balance	
Refrigerator	Perlick / Glastender	IMC	IMC	IMC	IMC	
Bar Top (BOH)	Custom	Custom	Custom	Custom	Custom	Stainless steel at back-of-house service bars
Security Gate	By Architect	By Architect	By Architect	By Architect	By Architect	For service bar area; roll-down type, full length of bar, by architect
Restaurant						
Mixer	Hobart	Hobart	Hobart	Hobart	Hobart	19 liters (20 quarts)
Salamander	Rollergrill / Franke	Franke / Rollergrill	Franke / Rollergrill	Franke / Rollergrill	Franke / Rollergrill	Top down electric only
Range	Jade / Vulcan	MKN / Ambach / Therma	MKN / Therma	MKN / Therma	MKN / Ambach / Therma	Open burner with convection base, hot top with convection base, griddle, charbroiler
Broiler	Montague	Montague	Montague	Montague	Montague	For steak restaurants
Fryer	Frymaster	MKN / Ambach / Therma	MKN / Therma	MKN / Therma	MKN / Ambach / Therma	With self filtering system
Food Warmer	Hatco / AP Wyott	Hatco / AP Wyott	Hatco / AP Wyott	Hatco / AP Wyott	Hatco / AP Wyott	
Wok Range	Yu Po	Yu Po	Yu Po	Yu Po	Yu Po	
Combi Oven	Rational	Rational	Rational	Rational	Rational	Counter top
Toaster	Hatco	Hatco / Dualit	Hatco / Dualit	Hatco / Dualit	Hatco / Dualit	
Pasta Cooker	Frymaster	MKN / Ambach	MKN / Ambach	MKN / Ambach	MKN / Ambach	If required
Induction Cooker	Spring / Cooktek	Cooktek / IE	Cooktek / IE	Cooktek / IE	Cooktek / IE	If required, 2.5 kW
Mixer	Hobart	Hobart	Hobart	Hobart	Hobart	Counter top

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Sandwich Unit Refrigeration	True / Randell	Delfield / Randell	Delfield / Randell	Delfield / Randell	Delfield / Randell	
Ice Cream Dipping Cabinet	Kelvinator	Silver King / Delfield	Silver King / Delfield	Silver King / Delfield	Silver King / Delfield	
Steam Kettle	Cleveland	MKN / Ambach	MKN / Therma	MKN / Therma	MKN / Ambach / Therma	
Range	Jade / Vulcan	Profit / Flamemate	Profit / Flamemate	Profit / Flamemate	Profit / Flamemate	Stock Pot
Rice Cooker	Panasonic	Fujimak / Rinnai	Fujimak / Rinnai	Fujimak / Rinnai	Fujimak / Rinnai	
High Speed Oven	Turbochef / Merrychef	Turbochef / Merrychef	Turbochef / Merrychef	Turbochef / Merrychef	Turbochef / Merrychef	Programmable, counter top unit
Tilting Skillet	Cleveland	Cleveland / MKN / Therma	Cleveland / MKN / Therma	Cleveland / MKN / Therma	Cleveland / MKN / Therma	150 liters (40 gallons)
Dish Machine	Hobart	Winterhalter / Meiko	Winterhalter / Meiko	Winterhalter / Meiko	Winterhalter / Meiko	
Microwave Oven	Panasonic / Amana	Panasonic / Amana	Panasonic / Amana	Panasonic / Amana	Panasonic / Amana	
Pizza Oven (hearth)	Woodstone	Beech / Woodstone	Beech / Woodstone	Beech / Woodstone	Beech / Woodstone	
Pizza Oven, counter top	Bakers Pride	Miwe	Miwe	Miwe	Miwe	If required
Walk-in Refrigeration	Kolpak	Kolpak / Koldtech	Kolpak / Koldtech	Kolpak / Koldtech	Kolpak / Koldtech	Cooler and freezer
Refrigeration System	Cold Zone / RDT	Copeland / Bitzer	Copeland / Bitzer	Copeland / Bitzer	Copeland / Bitzer	
Refrigerator	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Reach-in, under-counter, upright

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Food Pickup Lines						
Plate Warmer	Hatco	Hatco	Hatco	Hatco	Hatco	Built-in, for 300 mm (12 inch) plates
Cold Food Pan	True / Randell	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Recessed, with space bars for hotel pans; 50 cm x 30 cm (20 x 12 inch) well for expeditor
Refrigerator	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Drawers under work tops or equipment
Waffle Iron	Wells / Carbon	Neumarker / Roller Grill	Neumarker / Roller Grill	Neumarker / Roller Grill	Neumarker / Roller Grill	
Toaster	Hatco / Toastmaster	Hatco	Hatco	Hatco	Hatco	6 slot
Dipper Well	Wells	Wells	Wells	Wells	Wells	
Ice Cream Dipping Cabinet	Kelvinator	Kelvinator	Kelvinator	Kelvinator	Kelvinator	
Mixer	Hobart	Hobart	Hobart	Hobart	Hobart	5 liter (5 quart), counter-type
Trash Receptacle	Rubbermaid	Rubbermaid	Rubbermaid	Rubbermaid	Rubbermaid	On each station
Heat Lamp	Hatco	Hatco	Hatco	Hatco	Hatco	With remote switch

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Buffet						
Refrigerator	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	
Coffee Brewer	Fetco	WMF	WMF	WMF	WMF	
Induction Warmer	Spring / Cooktek	Cooktek / Inducs	Cooktek / Inducs	Cooktek / Inducs	Cooktek / Inducs	Built-in, flush mounted
Conveyor Toaster	Hatco / Savory	Hatco / Dualit	Hatco / Dualit	Hatco / Dualit	Hatco / Dualit	
Waffle Iron	Wells / Carbon	Neumarker / Roller Grill	Neumarker / Roller Grill	Neumarker / Roller Grill	Neumarker / Roller Grill	Heavy duty, dual type
Heat Lamp	Hatco	Hatco	Hatco	Hatco	Hatco	
Induction Cooker	Spring / Cooktek	Cooktek / Inducs	Cooktek / Inducs	Cooktek / Inducs	Cooktek / Inducs	2.5 kW
Heated Counter Top	Hatco	Berkeley / Hatco	Berkeley / Hatco	Berkeley / Hatco	Berkeley / Hatco	
Refrigerated Display Case	RPI / Oscartielle	Iglu cold system / Tanaka	Iglu cold system / Tanaka	Iglu cold system / Tanaka	Iglu cold system / Tanaka	
Heated Display Case	RPI / Oscartielle	Eurolnox / Josef Holler	Eurolnox / Josef Holler	Eurolnox / Josef Holler	Eurolnox / Josef Holler	
Chilled Top	Atlas / Randell	Randell / Josef Holler	Randell / Josef Holler	Randell / Josef Holler	Randell / Josef Holler	
Cold Food Pan	RPI	RPI	RPI	RPI	RPI	Insulated ice cooled
Wine Display Chiller	Wine Trend / RPI	Iglu cold system / Tanaka	Iglu cold system / Tanaka	Iglu cold system / Tanaka	Iglu cold system / Tanaka	
Carving Station	Hanson Brass	Hanson Brass / Scholl	Hanson Brass / Scholl	Hanson Brass / Scholl	Hanson Brass / Scholl	
Noodle Boiler	Yu Po	Yu Po	Yu Po	Yu Po	Yu Po	
Induction Cooking Pan	Sambonet / WMF	Sambonet / WMF	Sambonet / WMF	Sambonet / WMF	Sambonet / WMF	
Griddle Plate	Evo	Evo	Evo	Evo	Evo	Display

Table 2 - Equipment Manufacturers						
Item	**Americas**	**Europe**	**China**	**Asia / Pacific Region**	**Middle East / Africa**	**Remarks**
Server's Station						
Counter						3.6 m (12 feet) in length with sink
Beverage Equipment	Fetco	Franke / WMF	Franke / WMF	Franke / WMF	Franke / WMF	Coffee brewer, cappacino machine, iced tea brewer, water dispenser, soda dispenser
Ice Storage	Cambro	Cambro	Cambro	Cambro	Cambro	
Refrigerator	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Undercounter reach-in, 2 door upright reach-in
Conveyor Toaster	Hatco / Savory	Hatco / Savory	Hatco / Savory	Hatco / Savory	Hatco / Savory	One per 5 servers
Work Table	Custom	Custom	Custom	Custom	Custom	With sink
POS Terminal / Printer	By Vendor	By Vendor	By Vendor	By Vendor	By Vendor	
Storage Shelving	Metro	Metro	Metro	Metro	Metro	
Glass Rack Dolly	CresCor / Metro	CresCor / Metro	CresCor / Metro	CresCor / Metro	CresCor / Metro	
Millwork Storage	Custom	Custom	Custom	Custom	Custom	For cutlery, clean linen, clean glasses
Specialty Restaurant Kitchen						
Chinese Kitchen						
Deck Steamer	Yue Po	Yue Po	Yue Po	Yue Po	Yue Po	
Wok Range	Yue Po	Yue Po	Yue Po	Yue Po	Yue Po	
Ring Steamer	Yue Po	Yue Po	Yue Po	Yue Po	Yue Po	
Moon Cake Oven	Yue Po	Yue Po	Yue Po	Yue Po	Yue Po	
Duck Roaster	Yue Po	Yue Po	Yue Po	Yue Po	Yue Po	
Pig Roaster	Yue Po	Yue Po	Yue Po	Yue Po	Yue Po	
Noodle Maker	Heng lian	Heng lian	Heng lian	Heng lian	Heng lian	
Noodle Boiler	Yue Po	Yue Po / Profit	Yue Po / Profit	Yue Po / Profit	Yue Po / Profit	
Towel Warmer	Taiji	Taiji	Taiji	Taiji	Taiji	
Fish Tanks	Austmarine	Austmarine	Austmarine	Austmarine	Austmarine	

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Indian Kitchen						
Handy Range	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	
Tawa Griddle	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	
Romali Griddle	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	
Tandor Oven	Jumbo / Raj Tandoor	Jumbo / Raj Tandoor	Jumbo / Raj Tandoor	Jumbo / Raj Tandoor	Jumbo / Raj Tandoor	
Idli Steamer	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	Continental Indian / Indian Metal Works	
Masala Grinder	Trident / Lincoln	Trident / Lincoln	Trident / Lincoln	Trident / Lincoln	Trident / Lincoln	
Pulveriser	Trident / Lincoln	Trident / Lincoln	Trident / Lincoln	Trident / Lincoln	Trident / Lincoln	
Wet Grinder	Trident / Lincoln	Trident / Lincoln	Trident / Lincoln	Trident / Lincoln	Trident / Lincoln	

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Japanese Kitchen						
Fryer	Fujimak / Rinnai	Fujimak / Rinnai	Fujimak / Rinnai	Fujimak / Rinnai	Fujimak / Rinnai	For tempura
Temppayaki Griddle	Fujimak / Rinnai	Fujimak / Rinnai	Fujimak / Rinnai	Fujimak / Rinnai	Fujimak / Rinnai	
Rice Cooker	Fujimak / Rinnai	Fujimak / Rinnai	Fujimak / Rinnai	Fujimak / Rinnai	Fujimak / Rinnai	
Display Case	Tanaka / Iglu	Tanaka / Iglu	Tanaka / Iglu	Tanaka / Iglu	Tanaka / Iglu	Custom for sushi
Yakitori Grill	Beech / Fujimak	Beech / Fujimak	Beech / Fujimak	Beech / Fujimak	Beech / Fujimak	Gas
Japanese Range	Beech / Fujimak	Beech / Fujimak	Beech / Fujimak	Beech / Fujimak	Beech / Fujimak	Gas
Robatayaki Grill	Beech / Fujimak	Beech / Fujimak	Beech / Fujimak	Beech / Fujimak	Beech / Fujimak	Gas
Fish Grill	Beech / Fujimak	Beech / Fujimak	Beech / Fujimak	Beech / Fujimak	Beech / Fujimak	Gas
Towel Warmer	Taiji	Taiji	Taiji	Taiji	Taiji	
Italian Kitchen						
Pasta Cooker	Frymaster	MKN / Ambach	MKN / Ambach	MKN / Ambach	MKN / Ambach	
Hearth Oven	Woodstone	Beech / Woodstone	Beech / Woodstone	Beech / Woodstone	Beech / Woodstone	Wood fired
Bain Marie	Custom	MKN / Ambach	MKN / Ambach	MKN / Ambach	MKN / Ambach	
Range	Jade / Vulcan	MKN / Therma	MKN / Therma / Ambach	MKN / Ambach / Therma	MKN / Ambach / Therma	Open burner
Fryer	Frymaster	MKN / Therma	MKN / Therma	MKN / Therma	MKN / Therma	2 vat with self filtering system
Food Warmer	Hatco / APW Wyott	Hatco / APW Wyott	Hatco / APW Wyott	Hatco / APW Wyott	Hatco / APW Wyott	
Combi Oven	Rational	Rational	Rational	Rational	Rational	
Pasta Maker	Imperia / La Monferrina	Imperia / La Monferrina	Imperia / La Monferrina	Imperia / La Monferrina	Imperia / La Monferrina	
Dough Sheeter	Doughpro	Doughpro / Friul	Doughpro / Friul	Doughpro / Friul	Doughpro / Friul	

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Deli / Gourmet Counters						
High Speed Oven	Turbochef / Merrychef	Turbochef / Merrychef	Turbochef / Merrychef	Turbochef / Merrychef	Turbochef / Merrychef	Programmable, counter top unit
Microwave Oven	Panasonic / Amana	Panasonic / Amana	Panasonic / Amana	Panasonic / Amana	Panasonic / Amana	
Refrigerator	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Upright glass door
Refrigerator	RPI / True	True	True	True	True	Open front type
Baking Oven	Miwe / Watchel / Winkel	Miwe / Watchel / Winkel	Miwe / Watchel / Winkel	Miwe / Watchel / Winkel	Miwe / Watchel / Winkel	Display
Blender	Blendtec / Vitamix	Blendtec / Vitamix	Blendtec / Vitamix	Blendtec / Vitamix	Blendtec / Vitamix	
Slicer	Hobart	Hobart	Hobart	Hobart	Hobart	
Chocolate Tempering Machine	Hilliard	Chocovision / Jufeba	Chocovision / Jufeba	Chocovision / Jufeba	Chocovision / Jufeba	
Panini Grill	Electrolux	Electrolux	Electrolux	Electrolux	Electrolux	
Specialty Equipment						
Churrasco Grill	J&R / Beech	Beech	Beech	Beech	Beech	
Outdoor Portable Grill / Broiler	Magic Kitchen	Bakers Pride	Bakers Pride	Bakers Pride	Bakers Pride	Outdoor type

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Function Space Kitchen						
Combi Oven	Rational	Rational	Rational	Rational	Rational	Roll-in, 1 for every 250 seats
Plate Trolley	Rational	Rational	Rational	Rational	Rational	For combi oven, with heat blanket, for every 84 seats
Range	Jade / Vulcan	MKN / Ambach	MKN / Therma	MKN / Ambach / Therma	MKN / Ambach	4 burner, 2 required; griddle; charbroiler; salamander broiler
Heated Banquet Cart	AltoShaam / Carter Hoffman	Rieber / AltoShaam / Carter Hoffman	AltoShaam / Carter Hoffman	AltoShaam / Carter Hoffman	Rieber / AltoShaam / Carter Hoffman	
Refrigerated Cabinet	AltoShaam / Carter Hoffman	AltoShaam / Carter Hoffman	AltoShaam / Carter Hoffman	AltoShaam / Carter Hoffman	AltoShaam / Carter Hoffman	Mobile
Steam Kettle	Cleveland	Cleveland / MKN / Therma	MKN / Therma	MKN / Therma / Cleveland	MKN / Therma / Cleveland	150 or 225 liters (40 or 60 gallons); with manual tilt mechanism, hose, tangent draw off, and lid; Direct steam or gas fired
Steam Kettle	Cleveland	Cleveland / MKN / Therma	MKN / Therma	MKN / Therma / Cleveland	MKN / Therma / Cleveland	Counter top, 10 to 40 liters (2.5 to 10 gallons), selfcontained, electric or steam heated, table sized to capture full pour path
Tilting Skillet	Cleveland	Cleveland / MKN / Therma	MKN / Therma	MKN / Therma / Cleveland	MKN / Therma / Cleveland	150 liters (40 gallons); manual tilt mechanism
Trench Drain	Custom	Custom	Custom	Custom	Custom	Sized for full pour path of steam kettle, flush mounted
Fryer	Frymaster	Frymaster / MKN / Ambach	Frymaster / MKN / Therma	Frymaster / MKN / Ambach	Frymaster / MKN / Ambach	2 vat with self filtering system

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Bain Marie Table	Custom	Custom	Custom	Custom	Custom	With reinforced steel cover for bain marie
Scale	Pelouze	Pelouze	Pelouze	Pelouze	Pelouze	Table top, 6 kg x .0002 digital
Mobile Plate Conveyor	Traycon	Traycon	Traycon	Traycon	Traycon	With cover
Blast Chiller	Irinox	Irinox / Williams	Irinox	Irinox / Williams	Irinox / Williams	
Water Boiler	Fetco	Zip / Birko	Zip / Birko	Zip / Birko	Zip / Birko	
Storage Shelving	Metro	Metro	Metro	Metro	Metro	Stainless steel
Pot Rack	Custom	Custom	Custom	Custom	Custom	Ceiling mounted
Vacuum Packing Machine	Multivac	Multivac / Komet	Multivac / Komet	Multivac / Komet	Multivac / Komet	
Low Stock Pot Range	Jade / Vulcan	Yue Po / Profit	Yue Po / Profit	Yue Po / Profit	Yue Po / Profit	Stock pot
Coffee Brewer	Fetco	WMF	WMF	WMF	WMF	
Refrigerator	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Roll-in double door; Reach-in single section
Disposer	In-Sinkerator / Salvajor	IMC	IMC	IMC	IMC	Minimum 3 horsepower
Dish Machine	Hobart	Winterhalter / Meiko	Winterhalter / Meiko	Winterhalter / Meiko	Winterhalter / Meiko	Flight type
Conveyor System	Aerowerks / Traycon	Aerowerks / Nordien	Aerowerks / Nordien	Aerowerks / Nordien	Aerowerks / Nordien	
Glass Washer	Hobart	Winterhalter / Meiko	Winterhalter / Meiko	Winterhalter / Meiko	Winterhalter / Meiko	
Silver Burnisher	Adamation	Adamation / Morelion	Adamation / Morelion	Adamation / Morelion	Adamation / Morelion	
Glass Rack Dolly	Cres Cor / Metro	Blanco	Blanco	Blanco	Blanco	
Dish Dolly	CresCor / Metro	Blanco	Blanco	Blanco	Blanco	

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Function Space Beverage Area						
Refrigerator	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	
Walk-in Refrigeration	Kolpak	Desmond / Williams UK	Desmond / Williams UK	Desmond / Williams UK	Desmond / Williams UK	Approximately 2.4 x 3 m (8 x 10 feet)
Coffee Brewer	Fetco	Bravillor / WMF	Bravillor / WMF	Bravillor / WMF	Bravillor / WMF	
Ice Cuber	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	With bin
Shelving	Metro	Metro	Metro	Metro	Metro	
Water Fill Station	T & S	T & S	T & S	T & S	T & S	
Beverage Counter	Custom	Custom	Custom	Custom	Custom	

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Function Space Pantries						
Walk-in Refrigeration	Kolpak	Desmond / Williams UK	Desmond / Williams UK	Desmond / Williams UK	Desmond / Williams UK	Cooler and freezer
Heated Banquet Cart	Carter Hoffman / Alto-Shaam	Rieber / Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Rieber / Alto-Shaam / Carter Hoffman	
Ice Cuber	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	With bin
Water Fill Station	T & S	T & S	T & S	T & S	T & S	
Coffee Machine	Fetco	Franke / WMF	Franke / WMF	Franke / WMF	Franke / WMF	Wall mounted system with carts
Heated Banquet Cart	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Sized for 300 mm (12 inch) plates, mobile, electric heat
Combi Oven	Rational	Rational	Rational	Rational	Rational	
Heat Lamp	Hatco	Scholl / Hatco	Scholl / Hatco	Scholl / Hatco	Scholl / Hatco	
Refrigerated Cabinet	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Mobile
Queen Mary	CresCor / Metro	CresCor / Metro	CresCor / Metro	CresCor / Metro	CresCor / Metro	
Storage Shelving	Metro	Metro	Metro	Metro	Metro	Some lockable
Dish Machine	Hobart	Hobart	Hobart	Hobart	Hobart	Required if not on same level as main kitchen
Heated Cabinet	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Roll-in, single door
Refrigerator	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Roll-in, singledoor; reach-in undercounter

Table 2 - Equipment Manufacturers						
Item	**Americas**	**Europe**	**China**	**Asia / Pacific Region**	**Middle East / Africa**	**Remarks**
Club Lounge Pantry						
Refrigerator	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Single door reach-in; single door roll-in
Dish Machine	Hobart	Hobart	Hobart	Hobart	Hobart	Undercounter commercial type
Water Boiler	Fetco	Zip / Birko	Zip / Birko	Zip / Birko	Zip / Birko	
Ice Cuber	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Undercounter, low volume
Coffee Brewer	Fetco	Franke / WMF	Franke / WMF	Franke / WMF	Franke / WMF	4 to 6 liters (1 to 1.5 gallons) airpot brewer with cord and plug
Espresso Machine	Franke / Scherer	Franke / WMF / Scherer	Franke / WMF	Franke / WMF	Franke / WMF	Fully automatic
Induction Cooker	Spring / Cooktek	Cooktek / IE	Cooktek / IE	Cooktek / IE	Cooktek / IE	2.5 kW
High Speed Oven	Amana	Amana	Amana	Amana	Amana	Programmable, counter top unit
Microwave Oven	Panasonic	Panasonic	Panasonic	Panasonic	Panasonic	
Heated Cabinet	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	2 units
Disposer	In-Sinkerator / Salvajor	IMC	IMC	IMC	IMC	1 horsepower minimum
Wall Shelf	Custom	Custom	Custom	Custom	Custom	Or cabinets
Induction Warmer	Spring / Cooktek	Cooktek / IE	Cooktek / IE	Cooktek / IE	Cooktek / IE	3 minimum; hidden or undermount
Heat Lamp	Hatco	Hatco	Hatco	Hatco	Hatco	Retractable; 3 units
Refrigerator	Summit / True	IMC	IMC	IMC	IMC	2 stacked glass front beverage; 2 stacked
Cold Plate	RPI / Atlas	RPI / Atlas	RPI / Atlas	RPI / Atlas	RPI / Atlas	Air circulating
Wine Dispenser	Enomatic	Enomatic	Enomatic	Enomatic	Enomatic	
Trash Receptacle	Franke / Scherer	Franke / WMF	Franke / WMF	Franke / WMF	Franke / WMF	
Ice / Vending						
Ice Cuber	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Manitowoc / Hoshizaki	Water cooled, selfcontained, push button dispenser
Vending Machine	By Vendor	By Vendor	By Vendor	By Vendor	By Vendor	For bottled and canned soft drinks

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Housekeeping Dishwashing						
Dish Machine	Hobart	Hobart	Hobart	Hobart	Hobart	Undercounter, high temperature
Dish Table & Rack Shelf	Custom	Custom	Custom	Custom	Custom	With sink and pre-rinse spray. Glass racks overhead
Employee Dining						
Cooking Equipment	Vulcan	Ambach / Therma	Ambach / Therma	Ambach / Therma	Ambach / Therma	Influenced by regional preferences, see examples below
High Speed Oven	Turbochef / Merrychef	Turbochef / Merrychef	Turbochef / Merrychef	Turbochef / Merrychef	Turbochef / Merrychef	Programmable, counter top unit
Microwave Oven	Panasonic	Menumaster / Amana / Sharp	Menumaster / Amana / Sharp	Menumaster / Amana / Sharp	Menumaster / Amana / Sharp	
Equipment Stand	Custom	Custom	Custom	Custom	Custom	With refrigerated drawers
Coffee Machine	Fetco	WMF	WMF	WMF	WMF	
Cold Food Pan	Atlas / Randell	Randel / Delfield	Randel / Delfield	Randel / Delfield	Randel / Delfield	Built-in
Heated Food Cart	FEW / Alto-Shaam	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	Alto-Shaam / Carter Hoffman	
Refrigerator	True / Traulsen	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Foster / Williams UK	Double door upright; 2 roll-in
Serving Counter	Custom / Atlas	Custom	Custom	Custom	Custom	With tray slides
Beverage Counter	Custom / Atlas	Custom	Custom	Custom	Custom	
Salad Bar	Custom / Atlas	Custom	Custom	Custom	Custom	Island type with refrigerated cold pan
Vending Machine	By Vendor	By Vendor	By Vendor	By Vendor	By Vendor	For cold beverages and snack items
Storage Shelving	Metro	Metro	Metro	Metro	Metro	
Recycling Station	Custom	Custom	Custom	Custom	Custom	
Disposer	In-Sinkerator / Salvajor	IMC	IMC	IMC	IMC	Minimum 2 horsepower
Dish Machine	Hobart	Hobart	Hobart	Hobart	Hobart	Single tank with booster heater

Table 2 - Equipment Manufacturers

Item	Americas	Europe	China	Asia / Pacific Region	Middle East / Africa	Remarks
Staff Kitchen - Asian						
Rice Cooker	----	----	Rinnai / Fujimak	Rinnai / Fujimak	Rinnai / Fujimak	
Wok Range	----	----	Profit / Flamemate	Profit / Flamemate	Profit / Flamemate	
Range	----	----	MKN / Ambach	MKN / Ambach	MKN / Ambach	Open burner
Boiling Kettle	----	----	Groen / Cleveland	Groen / Cleveland	Groen / Cleveland	May follow range
Range	----	----	Profit / Flamemate	Profit / Flamemate	Profit / Flamemate	Stock pot
Steamer	----	----	Profit / Flamemate	Profit / Flamemate	Profit / Flamemate	Chinese only
Hot Section	----	----	Afinox / Meal System	Afinox / Meal System	Afinox / Meal System	
Steamer	----	----	Profit / Flamemate	Profit / Flamemate	Profit / Flamemate	Display
Coffee Brewer	----	----	Franke / WMF	Franke / WMF	Franke / WMF	
Juice Dispenser	----	----	Crathco / Cofrimell	Crathco / Cofrimell	Crathco / Cofrimell	
Staff Kitchen -Indian						
Tandor Oven	----	----	----	Jumbo International / Raj Tandor	Jumbo International / Raj Tandor	
Dosa Grill	----	----	----	Continental India / Indian Metal Works	Continental India / Indian Metal Works	
Range	----	----	----	Continental India / Indian Metal Works	Continental India / Indian Metal Works	Open burner
Idli Steamer	----	----	----	Continental India / Indian Metal Works	Continental India / Indian Metal Works	
Handy Range	----	----	----	Continental India / Indian Metal Works	Continental India / Indian Metal Works	
Milk Warmer	----	----	----	Bravillor / Animo	Bravillor / Animo	
Show Kitchen						
Range	Moltini / Montague	Moltini / Bonnet / Bohner	Moltini / Bonnet	Moltini / Bonnet	Moltini / Bonnet / Bohner	European block systems

10.11 Walk-in Refrigerated / Frozen Storage Units

A. Program: Provide insulated and refrigerated compartmentalized storage (complex of units) to house food products. Provide pass-through units consisting of two compartments for each food category as follows:

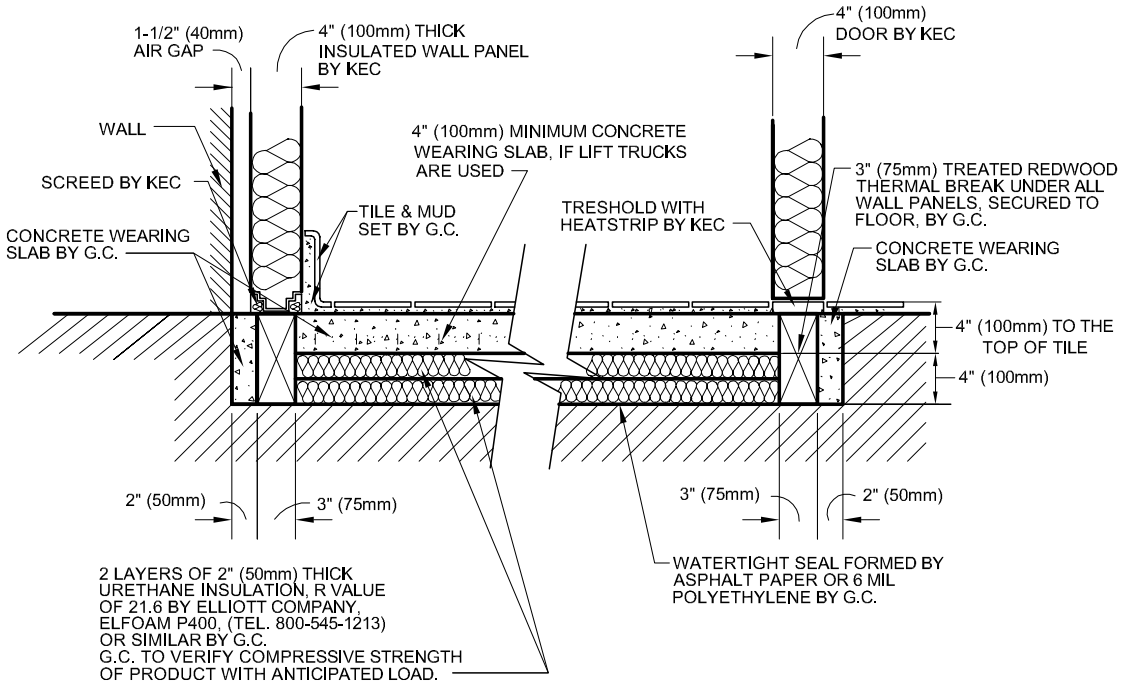
1. Separate general cooler, general freezer, freezer, beer / wine cooler and dairy cooler.
2. Compartment for holding raw product adjacent to Rough Prep rooms.
3. Compartment for holding prepared or finished product adjacent to Main Kitchen.

B. Location: Locate between Pre-Processing Area (Rough Prep rooms and Cold Prep area) of Main Kitchen.

C. Freezer Facilities: Provide and size according to the following:

- Market study
- Geographic location
- Delivery schedules
- Availability of products

Figure 2 - Floor Detail



NOTE:
FOR FREEZER OF OVER 400 SQUARE FEET, G.C. TO PROVIDE HEATING ELEMENT AND/OR VENTING SYSTEM UNDER SLAB AS DIRECTED BY WALK-IN MANUFACTURER

D. Entrance Access: Provide common entrance vestibule with other storage facilities such as dry, liquor, non food as indicated below in this Section. Requires dedicated storeroom attendant.

1. Secure space with door and electronic operated lock with audit record and door contact alarm **<16>**.
2. Provide double door entrance to accommodate pallet width.
3. Provide adequate space to store pallets.
4. Desk and chair
5. Computer with PMS / PBS **<13A>**

E. Walk-in Unit (Coldroom) Fabrication / Construction: Comply with the Energy Independence Act of 2007.

1. Floor: Depress supporting slab to receive insulation, minimum R-22, and floor surface to match balance of Main Kitchen. Provide walk-in floor surface flush with adjoining kitchen; no ramps or steps. See Figure 2.
2. Walls / Overhead: Foamed in place urethane insulated, minimum R-32, panels.
   a. Non painted, non corrosive, 20 gauge stainless steel or aluminum interior and minimum 20 gauge stainless steel, exterior walls where exposed.
   b. Cover exterior walls exposed to kitchen and work areas with 1.22 m (4 ft) high diamond plate. Unexposed exterior walls may be aluminum or galvanized.
   c. Enclose space above top of units to structure above with same panel / finish material as walk-in unit. Provide trim strips as necessary.
3. Door: Provide heaters and pressure relief ports for freezer compartments.
   a. Hinged, 0.9 m (3 ft) wide entrance door with three self closing hinges, observation window with heater, 1.22 m (48 inch) high diamond kick plate on both sides and a door locking mechanism for padlock.
   b. Provide sliding doors for heavy use and for bulk storage walk-ins.
4. Thermometer: Computer based with remote audit trail, viewable, mount at exterior unit entry door.

F. Storage Equipment: Provide the following:

1. Shelving: Non corrosive material such as stainless steel wire or Metro-Max meeting NSF material and fabrication requirements.
2. Shelf Units: Four tiers of shelving with 1.6 m (5'-3") posts, four leg / post casters and brakes on the two front casters.
3. First Shelf: Install 25 cm (10 inch) above floor with equally spaced shelves above.

G. Refrigeration System: Use indoor water cooled remote units (see mechanical condenser / compressor requirements in this Module).

H. Walk-in Unit Operating Temperatures: Provide for the following storage functions (may be dependent on local practice for food separation):

Food Type	Operating Temperature
Produce	+2 C (+35 F)
Meat (with cage security shelving)	+2 C (+35 F)
Dairy	+2 C (+35 F)
Holding / finishing	+2 C (+35 F)
Freezer	-23 C -10 F)
Beverage (with secure cage shelving)	+2 C (+35 F)
Chef box, located in kitchen space	+2 C (+35 F)

I. Walk-in Refrigeration Systems:

1. Controls / Alarms: Provide each walk-in compartment with computer based temperature and A/V alarm system that provides an audit trail of temperatures. Interconnect with the Building Automation System (BAS). **<15A>** Consider remote monitoring options.
2. Emergency (Backup Operational) Power: Connect walk-in refrigerators to emergency power source **<15C>**.
3. Condenser / Compressor Units: Provide water cooled units for refrigeration compressors of 1 hp or larger:
   a. Locate units in a secure room near walk-in refrigeration compartments.
   b. Do not locate above walk-in refrigeration compartments.
   c. Provide each unit with a water supply of 0.1 l / s (1.5 gpm) / hp at 21 C (70 F).
   d. Do not use domestic, potable water for cooling. Provide recirculating system.
   e. Provide a minimum air exhaust of 340 m / hr (200 cfm) to maintain compressor room temperature below 32 C (90 F).
   f. Verify that refrigerant line runs do not exceed manufacturer's requirements.
4. Condenser / Compressor Alternate: If water cooled units are not possible, review with MI Representative. Provide air cooled units (air cooled units use more energy and require more maintenance) as follows:
   a. Provide each unit with a minimum exhaust of 1700 m / hr (1000 cfm) / hp to maintain the compressor room below 32 C (90 F). Coordinate requirements with mechanical **<15A>**.
   b. Locate units in weather protected area within a secure room.

c. Do not locate units above walk-in refrigeration compartments.
d. Verify that refrigerant line runs do not exceed manufacturer's requirements.

5. Lighting: Provide minimum 40 foot-candles, three way light switches on timers for units with multiple entrances. Fluorescent lighting with minimum of 40 lumens per watt.

10.12 Type 1 - Grease Hoods & Ducts

A. **Fire Code Compliance:** Application is subject to Marriott Corporate Fire Protection review and provisions of governing code (U.S. and Canada) requirements. For specific details, see the following:
- NFPA 96, NFPA 13 or NFPA 17A.
- Module **<14>** in this Standard.
- Subject to provisions of governing codes.

B. **Other Codes & Standards:** Provide UL and NSF listed hoods at production and exhibition cooking in compliance with NFPA 96.

C. **Type 1 - Grease Hood:** Provide the following:
1. Type: High velocity, low air volume, energy efficient hood.
2. Filters: High efficiency, UL listed, baffle filters.
3. Make-Up Air: Low velocity make-up air discharge; no internal make-up air or "compensating hoods".
4. Exhaust Air Quantity: 100%
5. Overhang: Extend hood overhang a minimum of 15 cm (6 inch) beyond equipment.
6. Emission Control: Provide UV-C system for grease reduction and to improve hood and duct cleanability. To avoid burns, provide safety interlock to turn off when filters are removed.

D. **Exhibition Cooking Hood:** In exhibition cooking scenarios, design for and provide the following:
1. Exhaust Air Quantity: 100%
2. Noise: Eliminate noise that would disrupt customers in the buffet and dining area. Make-up air through ventilator is not permitted because of fan and air movement noise.
3. Air Curtain: Provide an air conditioned air curtain to control air, heat and odor between cooking area (edge of cooking hood) and restaurant area and customers.
4. Design Coordination: Coordinate hood design with interior design and restaurant concept.

E. Hood Cleaning:

1. High Grease Applications: Provide self cleaning hoods for high grease producing applications.
   a. Provide recessed mounted control panel to power hood, wash cycle, UV controls and fan.
   b. Locate fire protection system control and monitoring components in control panel cabinet when possible, and make accessible for servicing and maintenance.
2. Low Grease Applications: At a minimum, use dry cartridge, high velocity extracting hood for low grease producing applications. Mount control for lights and fan on wall.

F. Fire Suppression System: See Module **<14>**. Provide hood and duct fire suppression at locations involving food production cooking that produce grease laden vapors and when wood or charcoal equipment is provided.

1. Wet Chemical System: When water mist system cannot be used, provide *Ansul Piranha* dual agent (suppression system).
2. Coordinated Functions: Design the fire suppression system **<14>** to perform the following actions when activated (coordinate with Module **<15>**):
   a. Alarm Signal: Send to fire alarm control panel (FACP).
   b. Power: Automatically turn off power to cooking appliances, lighting and hood makeup air handler, except exhaust fan continues to operate.
   c. Gas: Automatically activate solenoid to turn off gas to affected cooking lines.

G. Acceptable Hood Manufacturers: *Halton* "Capture Jet" or *Gaylord* ELX type.

10.13 Commercial F&B Area Fixture Materials & Fabrication

A. Materials - General: Comply with NSF Standard for selecting commercial food and beverage (F&B) preparation and cooking area materials and finishes outlined in this Module. Facilitate ongoing and primary sanitation and cleaning concerns in and around equipment.

1. Stainless Steel: ASTM A240 Series 300, extra low carbon, non magnetic, austenitic, 18% chromium, 8% nickel, corrosion resistant.
   a. Thickness: Tops, tables, counters and sinks, 2.0 mm (U.S. 14 gauge); shelves, undershelves, tubing, legs and bracing 1.5 mm (U.S. 16 gauge); exhaust ventilators, 1.3 mm (U.S. 18 gauge).

   b. Finish: Exposed, #4 commercial finish; unexposed, #2B.
   c. Wall Shelves: Provide stainless steel double wall shelves above worktables wherever possible.
2. Joint Sealant: Seal joints with silicone; Dow Corning 780; General Electric SE 1200 or accepted equal. At heat producing equipment, seal joints with Hi-Temp silicone sealant.

B. **Fabrication:** Comply with NSF Standards No. 2 for fabrication.
1. General: Fabricate kitchen equipment of a single sheet of metal, if possible.
   a. Exposed Surfaces: Free of bolt, screw and rivet heads.
   b. Joints / Penetrations: Fabricate to avoid sharp edges and joints that could damage equipment or injure users.
2. Welding: Continuous welds, (field welding is acceptable) Heliarc method.
3. Trim: Not an acceptable substitute for accuracy and neatness.
4. Tops, Tables & Counters: Comply with above for metal thickness and the following:
   a. Provide stainless steel fabrication unless construction is concealed and not in contact with food, then galvanized steel is acceptable.
   b. Provide continuous top fabrication as one piece integrally welded without butt joints.
   c. Framework: Provide continuous galvanized or stainless steel angle or channel framework, welded to stiffen fabrication. In high salt and high moisture environments, provide all stainless steel construction.
   d. Do not use wood (except as required by bakery).
   e. Provide drawers in worktables.

C. **Plumbing:** Avoid back siphoning of water into water system with the use of check valves, air gaps and vacuum breaks.

D. **Electrical:** Provide waterproof wiring, internally wired within equipment or conduit with appropriate controls and safety features.
1. Exposed Conduit: Covered
2. Concealed Conduit (in walls / ceiling): Zinc coated (galvanized)

Kitchen

10.14 Receiving

A. Program: See Module **<9>**. Provide an area for the unloading of products from delivery trucks.

1. Deliveries are received, checked in and weighed by security and kitchen staff.
2. Large shipments of product are broken down for food production storage and returns are processed.
3. In warm climates, provide an air conditioned area for goods waiting to be moved to storage.

B. Bays: 2 bays minimum for truck unloading plus 1 bay for compactor, container and trash loading in an easily accessible location.

C. Trash Recycling: Provide facilities to separate and store recyclable material if required by governing regulations.

1. Provide for pest control in recycling and waste areas.
2. If provided within the building, locate in a sealed, refrigerated room.
3. Provide area for compostable recycling based on governing jurisdiction.

D. Trash Holding: Provide a refrigerated room with refrigerated compactor; see more requirements below in this Module.

E. Purchasing Office: See "Purchasing and Receiving Offices" in Module **<9>** - Engineering & Maintenance. Provide an office at Receiving (with view of Receiving Area) to manage food purchasing and holding for kitchen.

F. Scale: Heavy duty construction, mobile with capacity and increments dependent on delivery load requirements.

G. Cart & Can Wash: Provide a dedicated area or alcove for cleaning foodservice carts and equipment.

1. Location: At Receiving area or Pot Washing area
2. Size / Area: 2.4 x 2.4 m (8 x 8 ft), typical
3. Drainage: Provide positive slope to floor drains or trough drain.
4. Water / Hose & Rack: Provide 15.2 m (50 ft) hose with adjustable nozzle and hose rack with hot and cold water. **<15B>**

H. Can Wash: Provide dedicated room equipped with a machine used to clean and sanitize garbage cans. **<9>**

1. Location: Adjacent to Receiving (loading dock) area. Partition or isolate from Cart Wash to avoid contamination from garbage containers.
2. Size / Area: 2.4 x 2.4 m (8 x 8 ft.) enclosed room with 1 m (3'-6") wide door.

3. Can Wash Machine: Size machine to accommodate product (containers) used in foodservice operation. Mount on 10 cm (4 inch) high curb.
4. Water / Hose & Rack: Equip space with hose and hose rack with hot and cold water. **<15B>**

I. **Entry Doors:** Provide controls for prevention of pest contamination.
1. Includes automatic air curtains, door seals, sweeps, guards and automatic door closers.
2. See Module **<15A>** for Air Curtain requirements.

J. **Finishes – Receiving Areas:**
1. Floors: Concrete, sealed
2. Walls: Concrete masonry, epoxy painted
3. Ceilings: Exposed structure

10.15 Pre-Processing (Commissary)

A. **Program:** Locate the following pre-processing areas when market study determines that food and produce is not available or cost effective in a processed state adjacent to Receiving area and consistent with the project Facilities Program; see "Foodservice Process Flow Diagram" above:
- Rough Prep
- Fish, Meat & Poultry Prep Areas
- Vegetable Prep

B. **Rough Prep:** Provide when market study determines that food and produce arrives in a rough, unprocessed state that requires cleaning prior to entering the facility preparation areas.
1. Location: Adjacent to preparation areas.
2. Doors: Provide door widths of 1.2 m (4 ft) or larger to accommodate bulk material and pallet movement.
3. Features: Provide the following:
   a. Continuous 15 cm (6 inch) high concrete curb / base at perimeter walls
   b. Floor trench drain. Slope floor to drain
   c. Wash table and prep sink
4. Finishes: Provide the following:
   a. Floor / Base: Paver tile floor / concrete curb base
   b. Walls: Ceramic tile
   c. Ceiling: Exposed solid deck structure painted or food prep type suspended ceiling

C. **Fish, Meat & Poultry Prep Areas:** Separate products into categories of poultry, fish and meat and transfer into a dedicated room for processing.

1. Program: Provide dedicated enclosed room for preparing products for proper storage.
   a. Provide dedicated preparation facilities for the fabrication of meats and seafood and production of processed meat products.
   b. Doors: Provide door widths of 1.2 m (4 ft) or larger to accommodate bulk material and pallet movement.
   c. To prevent cross contamination, design facilities to accommodate separate worktable tops, sinks, cutting boards and refrigerated storage facilities for meat, poultry and fish.
   d. Pork: Provide a separate pork prep room in regions where dietary restrictions on pork are prevalent.
   e. Storage: Products are processed and placed in holding compartment of appropriate refrigerated storage room.
2. Location: Adjacent to Walk-in Coolers and Freezers.
3. Equipment: Provide specialized equipment for each food category to wash, uncrate and prepare product for storage. See Table 2.
   a. Water hose / hose reel with hot and cold water
   b. Floor drain
4. Refrigerator: Storage capacity is directly proportional to the size of the property, banquet facilities and F&B outlets and availability of products. Provide separate walk-in refrigerator for storage of bulk and prepared products.
5. Finishes – Preparation Area:
   a. Floor: Paver tile (same as Main Kitchen) flooring
   b. Base: Paver tile base
   c. Walls: Ceramic tile or FR-FRFP
   d. Ceilings: Accessible, washable tile on corrosion resistant grid and supports. See *Section 10.9*, "Ceilings".

10.16 Storage

A. Program : Provide dedicated area within kitchen for storage of all food items, paper / disposable goods, and food and beverage related supplies.

- Dry Storage
- Non Food Storage
- Walk-in Refrigerated / Frozen Storage Units

B. Dry Storage:

1. Program: Provide dedicated room to house non refrigerated food products. Size facilities according to the following:
   a. Market study
   b. Geographic location
   c. Delivery schedules
   d. Availability of products
2. Location: Provide in secure area adjacent to refrigerated storage and storeroom office. Shares common entrance vestibule with other storage facilities.
3. Equipment: See Table 2.
4. Entrance Door: 1.07 m (3'-6") wide minimum. Provide for cart and pallet accessibility. Secure door with electronic operated lock with audit record and door contact alarm **<16>**.
5. Finishes for Dry Storage:
   a. Floor: Tile pavers preferred or concrete, sealed
   b. Base: Same as walls
   c. Walls: Concrete masonry, epoxy painted
   d. Ceiling: Accessible tile on corrosion resistant grid and supports. See *Section 10.9*, "Ceilings".

C. Non Food Storage:

1. Program: Provide separate, dedicated areas with storage shelving to house the following non food products:
   a. Paper products
   b. Disposable wares
   c. Banquet / catering equipment
   d. China and silver
   e. Clean linen
   f. Chemical and janitorial supplies
2. Equipment: See Table 2.
3. Finishes – Non Food Storage:
   a. Floor: Concrete, sealed
   b. Base: Same as walls
   c. Walls: Epoxy paint
   d. Ceiling: Accessible tile on corrosion resistant grid and supports. See *Section 10.9*, "Ceilings".

D. Cold Storage: Provide refrigerated storage units to house food products. See Section 10.11 above.

10.17 Cold Preparation

A. Program: Provide dedicated area in Kitchen for the preparation of cold products and ingredients. Market study determines space requirements.

1. Ample storage for smallwares and pans
2. Adequate space for pan rack carts and shelving
3. Conceal trash (not in aisle spaces)
4. Conceal recycling / compostables
5. Dry storage area

B. Equipment: See Table 2.

C. Features: Provide and accommodate the following:

1. Access to flake and cube ice
2. Area floor drains for cleaning
3. Convenience duplex electrical outlets in work areas
4. Open base prep tables
5. Dedicated space for dessert production to include refrigerated storage with worktable space
6. Self-contained ergonomic work stations for efficient production movement and to control cross traffic
7. Self-contained work stations to limit movement and cross traffic
8. Water source required in preparation areas

D. Finishes for Cold Preparation:

1. Floor: Paver tile (same as Main Kitchen) flooring or seamless flooring.
2. Base: Paver tile base or seamless base.
3. Walls: Ceramic or FR-FRFP (see “Construction Requirements: “General” & “Walls” above).
4. Ceiling: Accessible tile on corrosion resistant grid and supports. See *Section 10.9*, "Ceilings".

10.18 Bakery

A. Program: Provide bakery based on market conditions.

1. When required, provide dedicated area for the preparation and production of breads, desserts, pastry, chocolates and other baked goods.
2. Location: Adjacent to main kitchen Pre-Processing area.
3. Size / Area: Provide space for storage shelving and bakery carts.

B. Equipment: See Table 2.

C. Specialty Baking Equipment: Provide for the production of breads. Specialty bread equipment is optional depending on program. See Table 2.

D. Chocolate, Pastry & Ice Cream Equipment: Provide ice cream, chocolate and pastry dessert production equipment based on market study. See Table 2.

E. Finishes for Bakery:

1. Floor: Paver tile (same as Main Kitchen) flooring or seamless flooring
2. Base: Paver tile base or seamless base
3. Walls: Ceramic tile or FR-FRFP
4. Ceilings: Accessible tile on corrosion resistant grid and supports. See *Section 10.9*, "Ceilings".

10.19 Beverage Storage

A. **Program:** Provide dedicated, secure area to store liquor, beer and wine with interior shelving and one entry door.

B. **Door:** Secure with electronic operated lock with audit record and door, contact alarm **<16>**.

C. **Wire / Cage Storage Shelving:** Non corrosive material such as stainless steel wire or polypropylene protected wire meeting NSF material and fabrication requirements. Provide lockable security cages, bottle storage and shelving.

D. **Dry / Ambient Storage:** Provide storage shelving and storage units. See Table 2.

E. **Refrigerated Storage (wine / beer):** See walk-in refrigeration in this Module. See Table 2.

F. **Design Temperatures:** Maintain the following design beverage temperatures:

Beverage Type	Temperature
Beer (bottle):	5.5 C (42 F)
Beer (draft):	3.3 C (38 F)
White Wine:	5.5 C (42 F)
Red Wine:	13.0 C (55 F)
General Liquor:	21.0 C (70 F) (ambient temperature)

G. **Finishes for Liquor Storage:** Dry / ambient areas (for refrigerated storage, see walk-in refrigeration requirements).

1. Floor: Concrete, sealed
2. Walls / Base: Painted
3. Ceiling: Exposed structure

10.20 Pot Washing

A. Program: Provide equipment for washing and sanitizing pots and pans in dedicated space and/or with Warewashing.

B. Location: In Main Kitchen close to hot food production line. May combine area with Warewashing if space and ease of function permits.

1. Also, may share common clean dish table with Warewashing in a "U" shaped configuration.
2. Provide pot washing sink (3 compartment required) on each food handling / production floor at a minimum.

C. Equipment: See Table 2.

D. Features: Provide the following:

1. Drains: Ample floor drainage
2. Cart Space: Cart parking space for soiled pots from remote foodservice areas

E. Finishes for Pot Washing:

1. Floor: Paver tile
2. Base: Paver tile
3. Walls: Ceramic tile
4. Ceiling: Accessible, washable tile on corrosion resistant grid and supports. See *Section 10.9*, "Ceilings".

10.21 Warewashing

A. Program: Provide area for cleaning and sanitizing of plates and utensils for service. See "Pot Washing" above. Warewashing may be combined with Pot Washing.

B. Location: In Main Kitchen within accessible area to waitstaff near kitchen entrance from dining room and food pickup line.

C. Equipment: See Table 2.

D. Warewasher: Size machine according to seating capacity of restaurant banquet areas, and other foodservice areas. Provide heavy duty stainless steel construction with the following features.

1. Size: Provide machine based on 70% of rated capacity.
2. Type: Conveyor rack model or flight type depending on capacity requirement.
3. Efficiency: Use only water saving / energy saving models using conservation technology. No reduced speed "water savers."
4. Booster Heater: Size for 82 to 90 C (180 to 195 F) hot water rinse for sanitizing.
   a. Select most efficient utility to operate booster heater.
   b. Do not provide "low temperature" or chemical sanitizing machines.
   c. Temperature and pressure gauges
   d. Automatic tank fill options
5. Exhaust: Provide with exhaust hoods or directly connect to warewasher vent ducts for removing steam and condensate.
6. Drying Area: Provide adequate space for drying (minimum three rack lengths).

E. Features: Provide the following:

1. Drains: Ample floor drainage
2. Carts: Cart parking for soiled dish dollies and rack dollies. Provide cart parking space for a minimum of 10 dishware items and 4 glasses per seat served.
3. Ample clean service ware storage on mobile racks (5-SU).
4. Space for two 114 liter (30 gal) garbage containers

F. Finishes for Warewashing:

1. Floor: Paver tile
2. Base: Paver tile
3. Walls: Ceramic tile or FR-FRFP
4. Ceiling: Accessible, washable tile on corrosion resistant grid and supports. See *Section 10.9*, "Ceilings".

10.22 Ice Production - Main Kitchen

A. Program: Provide dedicated space and equipment, away from high traffic corridor, for the production and storage of ice for kitchen use.

B. Equipment: Water cooled, self-contained compressor system.

1. When selecting, consider low noise, heat gain, ventilation, unit size, height and capacity / efficiency of unit.
2. Verify ceiling height at ice bin location prior to installation.

C. Ice Machines: Select size and ice bin capacity according to market study and demand for ice production. Typically, base on the following per day production capacity at 32 C ambient, 21 C water (90 F ambient, 70 F water) temperature:

1. Cube: Approximately 0.5 kg (1 pound) per seat
2. Flake: Approximately 270 kg (600 pounds)

D. Water Filter: Size to accommodate cube and flaked ice machine capacities. Locate filter in easily accessible location for servicing.

E. Ice Bin: Select style based on ice quantity demand (low or high) and size bin for 150% of daily production capacity. If in remote location, provide mobile, insulated carts for ice transfer. See Table 2.

F. Unit Fabrication: Fully insulated with stainless steel or polypropylene interior and stainless steel exterior.

G. Drainage:

1. Provide 30 cm (12 inch) wide floor grate with non skid surface and trough in front of and for the length of the ice bin to capture excess water runoff.
2. Provide funnel drain for cube maker and bin located outside of traffic circulation path.

H. Finishes for Ice Production:

1. Floor: Paver tile (same as Main Kitchen) or seamless flooring
2. Base: Paver tile base or seamless base
3. Walls: Ceramic tile wainscot on concrete masonry; epoxy painted above
4. Ceiling: Accessible tile on corrosion resistant grid and supports. See *Section 10.9*, "Ceilings".

10.23 Trash Holding - Refrigerated

A. **Program:** Provide dedicated room with refrigeration system to hold wet waste between pick ups in areas where climate or waste pick-up schedules dictate. See "Receiving" in this Module and Module **<9>**.
   1. Location: Adjacent to Loading Dock at Receiving
   2. Size: Base on trash holding and pick up frequency

B. **Features:** Provide and accommodate the following:
   1. Equipment: See Table 2.
   2. Door: Size entrance door to accommodate carts and trash trucks.
   3. Washing: Equip room with water hose and hose reel.
   4. Drainage: Slope floor to floor drain.

C. **Finishes:**
   1. Floor: Concrete, sealed
   2. Base: Same as walls
   3. Walls: Concrete masonry, epoxy painted or ceramic tile on masonry
   4. Ceiling: Exposed structure

10.24 Room Service

A. **Program:** Provide for delivery of foodservice items to guestrooms.
   1. Coordinate requirements with MI's Call Center criteria.
   2. For properties with 300 rooms or more, MI recommends separate 3 meal cooking line.
   3. Provide space for room service carts and warmers.

B. **Workstation:** **<13>** Accommodate P.O.S. terminal, telephone and other computer requirements based on size of workstation.

C. **Staging Area:** Provide in Main Kitchen adjacent to Food Pickup Line (or exhibition kitchen where applicable) that shares common cooking line.
   1. Size / Area: Provide room service area with adequate space for a minimum of 5 set up tables or carts per 100 guestrooms.
   2. Location: Provide adjacent and accessible to Service Elevator.

D. **Equipment:** See Table 2.

E. **Storage:** Provide for amenities such as VIP platters and gift baskets. Include general storage for dedicated Room Service items such as silverware, trays, coffeepots and other smallwares.

F. **Mini-Bars:** If required, provide self service, half sized refrigerator for liquor, beer, wine, soda and snacks charged to guest.

1. Supply Storage: Provide dedicated, secure storage room for food, beverage stock and to resupply service carts.
   a. Size / Area: Provide 7 to 9.3 m² (80 to 100 sq. ft) per 300 rooms.
   b. Location: Adjacent to Room Service and accessible from service corridor and elevator.
2. Service Carts: Stored in Room Service area.

G. **Finishes:**
1. Floor: Paver tile (same as Main Kitchen) or seamless flooring.
2. Base: Paver tile or seamless base
3. Walls: Ceramic tile or FR-FRFP
4. Ceiling: Accessible, washable tile on corrosion resistant grid and supports. See *Section 10.9*, "Ceilings".

10.25 Pool Kitchen / Pantry

A. **Program:** Size to accommodate demand. Provide food service from adjacent pool bar and kitchen pantry. Provide service routing to main kitchen.
1. HVAC: Fully air condition the Pool Kitchen and work areas to accommodate frequently opened doors.
2. Washing Facilities: Provide for reusable, non breakable service ware.
3. Refrigeration: Size for ambient conditions.

B. **Equipment:** See Table 2.

10.26 Commercial Kitchen Offices

A. **Program:** Provide (where applicable) dedicated, secure office space for the Executive Chef and kitchen managers to administer management tasks and hold private meetings.
1. Size / Area: See the project Facilities Program for the following office spaces:

Office	Area Required	Remarks
Executive Chef	10 m² (100 sq. ft)	Minimum area
Administrator	10 m² (100 sq. ft)	If programmed
Storeroom Supervisor	7.4 m² (80 sq. ft)	Desk only within storeroom
Closing Room		See Section below

2. Location: In Main Kitchen space within view of employee workstations.

B. **Chef's Office:** Include the office space as follows:
1. Size / Area: 10 m² (100 sq. ft) minimum or larger area 13 m² (140 sq. ft) total for a small conference table if office is not included with the Closing Facility.

2. Location: Where possible, position adjacent to the Kitchen preparation area and Administrator's Office (if required).
3. Communications Opening (no glass): Between Chef's and Administrator's Offices, provide an opening for communications and operations efficiency.
4. Glass Opening: Provide a window to view preparation / production areas.
5. Door: Full flush, solid wood and lockable.

C. Administrator's Office: If required by the project Facilities Program, include the office space as follows:

1. Size / Area: 10 m^2 (100 sq. ft).
2. Location: Where possible, locate adjacent to the Chef's Office.

D. Other Offices: Comply with the project Facilities Program and include equipment for office spaces (see below).

E. Closing Facility: At large banquet and catering properties, the Chef's and Administrator's Offices are integrated into the Closing Room design to create a Closing Facility as shown in the example.

1. Access: The Chef's and Administrator's Offices are accessed through the Closing Room when provided as a Closing Facility.
2. Location: Where possible, locate the Chef's and Administrator's Offices adjacent to each other.

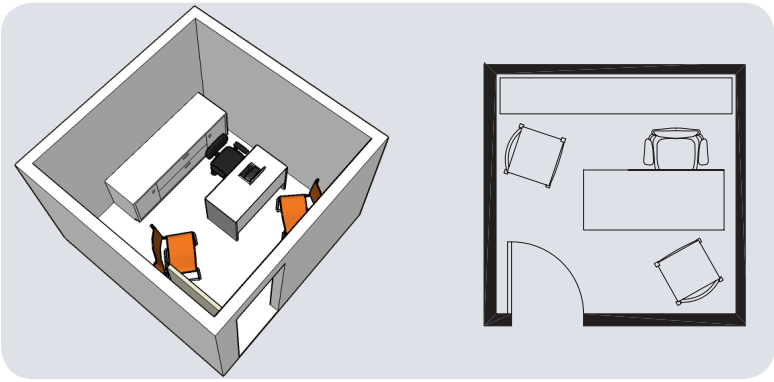
F. Equipment: Provide the following for office spaces:

- Desk and chairs
- Computer with Internet access **<13A>**
- Book shelf
- Filing cabinet
- Telephone **<13B>**

G. Finishes:

1. Floors: Same as Kitchen (or may include carpet)
2. Base: Same as Kitchen
3. Walls: Painted
4. Ceilings: Accessible acoustical tile

***Figure 3* - O□ ce - Sample Layout**



10.27 Closing Room

A. Program: If a Closing Room is required by the project Facilities Program, design the space to showcase the property's culinary expertise while providing the prospective guest groups with a transparent view of the property's back-of-house standards and practices. Also, it provides the sales and event management team at resort, convention and group business properties with a strong, competitive advantage for selling and "closing" group business plans.

1. Size / Area: 10 to 20 m^2 (100 to 200 sq. ft); varies by region.
   a. Provide adequate space to accommodate facility features and equipment.
   b. Space may be used for employee "line up."
2. Location: Position in banquet or production Main Kitchen, adjacent to the main function space.
   a. Provide a clear view of the food production area.
   b. Choreograph location and path to demonstrate the facility's high standards and quality.

B. Features - Closing Room: Provide the following:

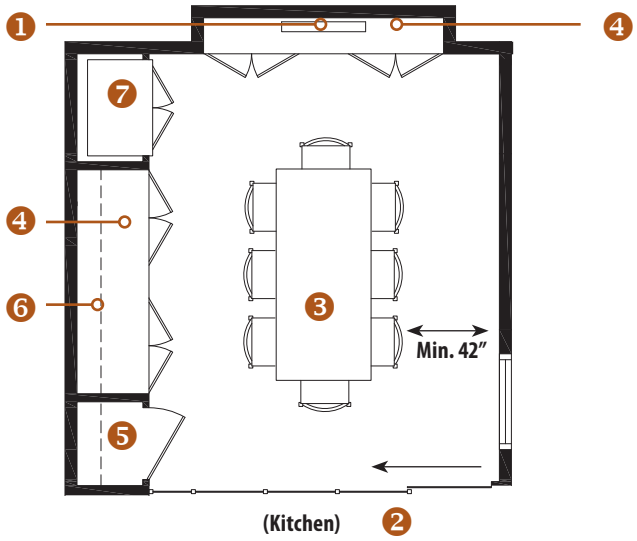
1. Views: Glass window or glass wall with sliding door to view preparation and production areas (if located in kitchen area).
2. Countertops: Include granite countertops for displays and service along two walls.
3. Base Cabinets: Below countertops with cabinets and shelves for storage.
4. Wine Rack: Position on wall above countertop.
5. Coat Closet: For garment storage with clothes rod, hangers and shelf above.
6. Table: For 8 persons minimum; position table and chairs to provide 1.1 m (42 inch) minimum, clear circulation space to maximize the guest's view of preparation, production and TV monitor.
7. Seating: 8 chairs minimum at table
8. TV: **<13C>** Flat screen (may include DVD / CD player unit and cable system connections)
9. Cappuccino Machine: On countertop
10. Refrigerator: With glass display doors

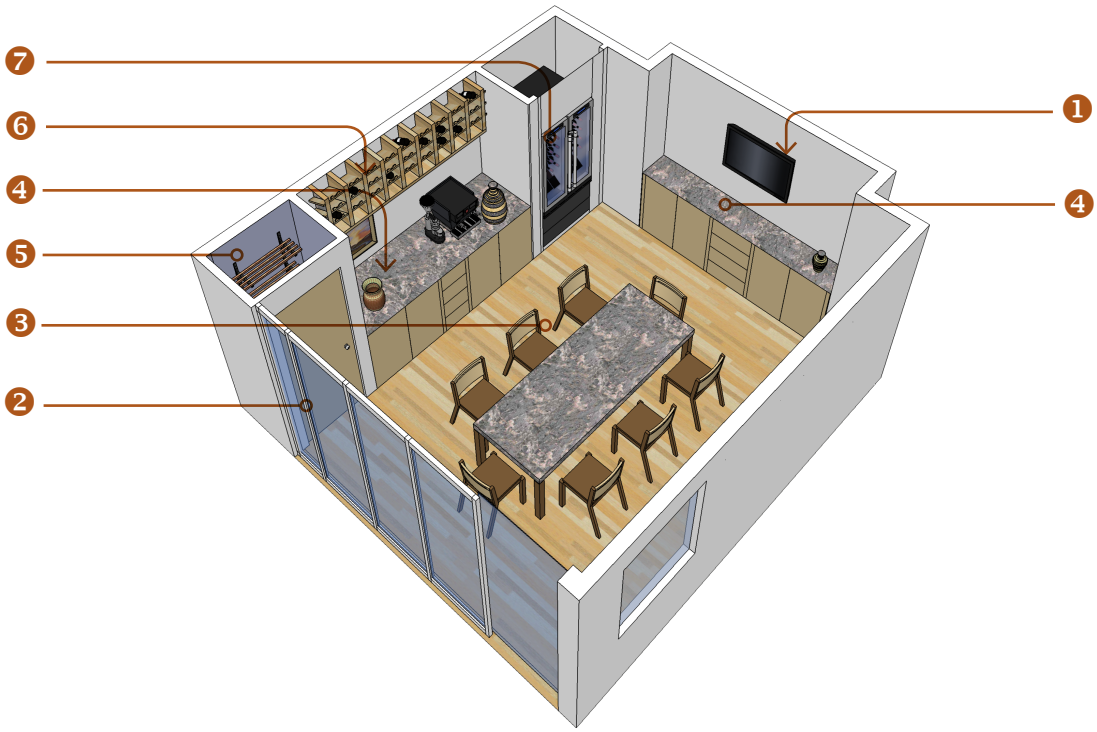
C. Access Control: **<16>** Provide controlled access.

D. Lighting: Architectural feature down lighting above conference table.

Figure 4 - Closing Facility

1. Flat panel TV
2. Glass window or wall with sliding glass door
3. Table with seating for 8 minimum
4. Storage and service counter with undercounter shelves, cabinets
5. Coat closet
6. Wine rack
7. Display refrigerator





Bars

10.28 Bars

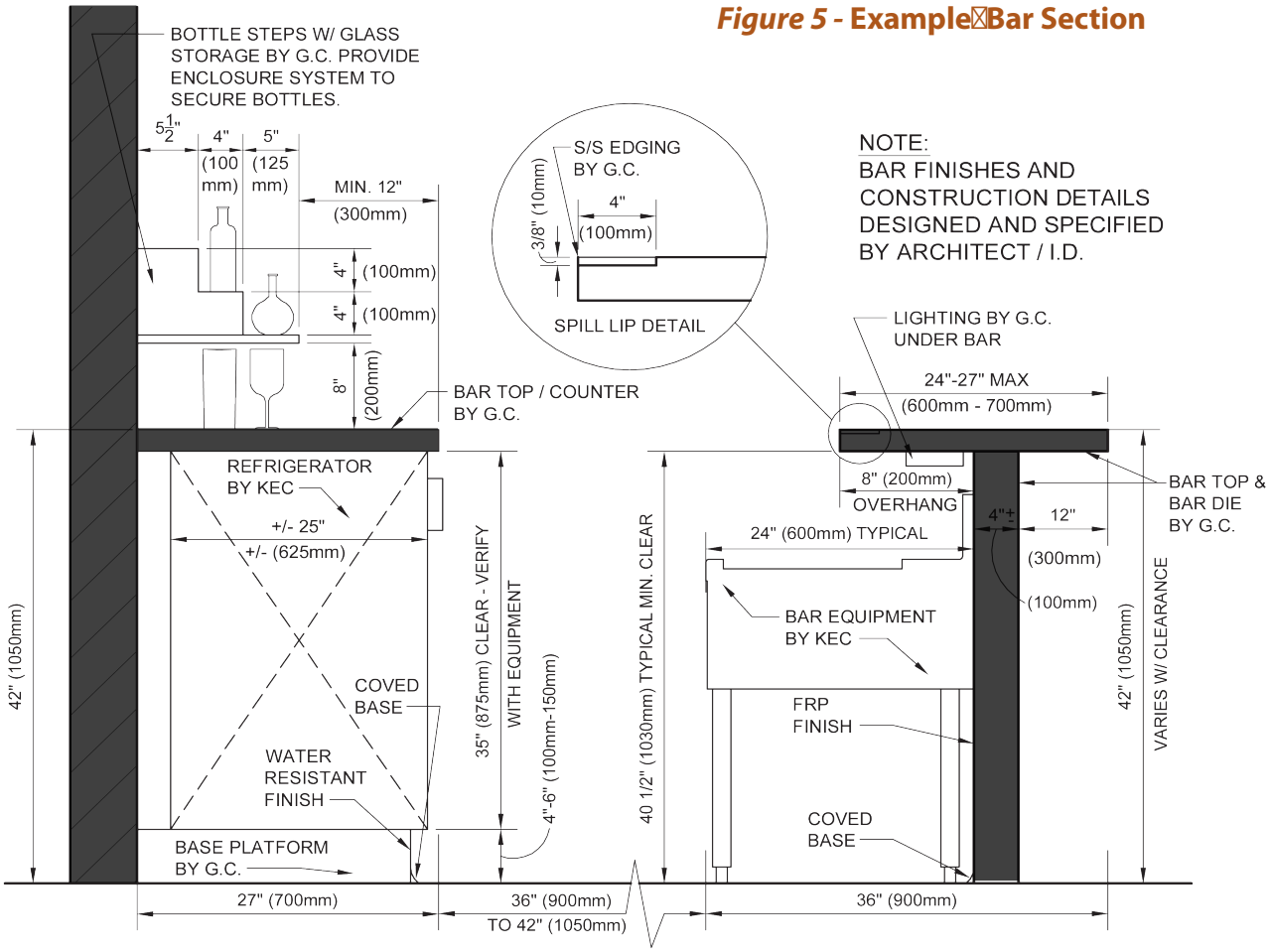
A. Program: Provide bars for preparation and serving of beverages in Lobby / Restaurant, F&B Outlets, Room Service and Guest Floor Lounge.

1. Contact MI for specific project bar layouts, details and equipment requirements.
2. Service bar locations depend on F&B concepts, restaurant service volume and access to recreation areas requiring F&B service.
3. Provide flexible water connections when bar is a curved configuration.

B. Beverages: Do not provide liquor dispensing systems. Examples include, but are not limited to, the following:

1. Variety of liquor (include 2 varieties of premium call brands) of each category.
   - Assume 25 to 30 bottles on the front bar at each jockey box.
   - Assume an additional 85 to 100 on back bar.

***Figure 5* - Example Bar Section**



2. Draft beer (minimum 3 varieties). Coordinate beer tower type and style with Interior Designer for public area. Store and refrigerate draft beer kegs remotely with a maximum of 30 m (100 ft.) beer line run.
3. Assume approximately 200 wines with four bottles each in storage.
4. Bottled beer
5. Soda and juices
6. Wine rack refrigeration for red / white wine bottles

C. **Staffing:** General rules for staffing requirements:
1. One bartender per 150 seats for service bars. Bartender does not serve as cashier for waitstaff.
2. One bartender per 8 bar seats, serves approximately 30 people.

D. **Glass Storage:**
1. Generally, provide 4 glasses per seat.
2. Hanging stem glassware above front bar is not acceptable.

E. **Beverage Storage:** Provide space behind bar for 80 active bottles at a service bar, 150 at a display bar and 50 at a pool bar. Provide an equal storage area for backup bottles. Provide secure liquor storage behind the bar with the following:
1. Roll down gate to secure entrance to back bar area.
2. Locks on cabinet storage for liquor bottles.

F. **Cocktail Station:** Provide integral 8 circuit, cold plate, bottle wells with beverage line "chimney" access, full width, double speed rail, extra deep ice bin, sliding cover and condiment tray.

G. **Equipment - General:** See Table 1.

H. **Bar / The Lobby:** Generally, provide for F&B service to public and guests in Lobby.
1. Equipment for Public Bars: See Example Plan. Same (minimum) requirements for underbar equipment as noted for service bar with the addition of drop down drain board for P.O.S. **<13>** If kitchen is not easily accessible, a support Pantry may be required. See *Section 10.33* in this Module.
2. Server's Station: If service station is not provided within 30 m (100 ft) of bar, provide to accommodate remote functions. See Server's Station requirements *Section 10.32* in this Module.
3. Food Pickup Line: If food pickup line is not provided within 46 m (150 ft) of bar, provide Pantry to accommodate remote functions: See *Section 10.33* in this Module.
   a. Hot food holding cabinet
   b. Refrigeration
   c. Plating area
   d. Limited cooking equipment as required for menu

4. AM Coffee: If part of the concept, see "Retail Coffee Service" in this Module.

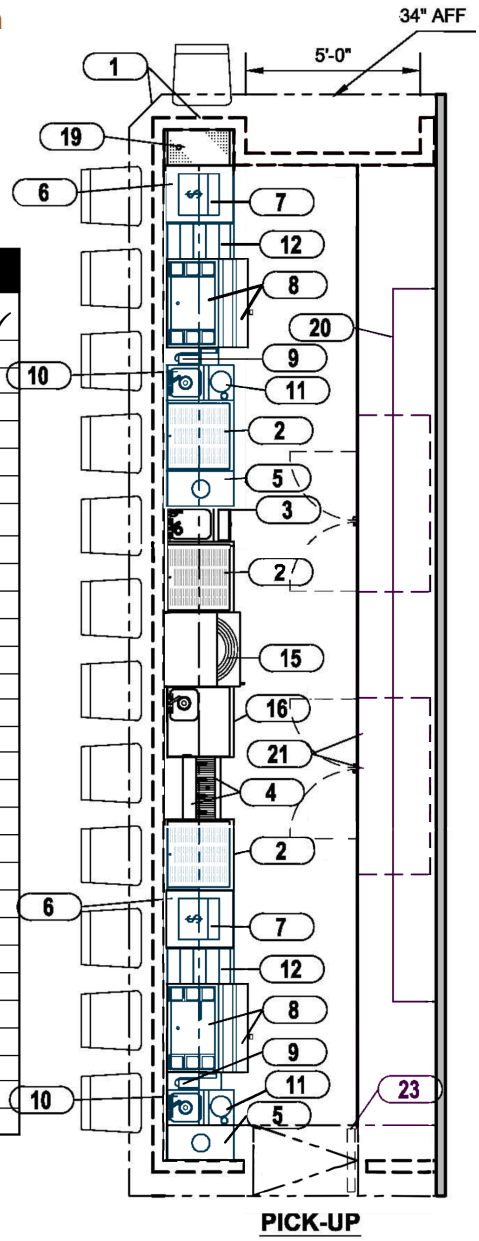
I. **Restaurant Service, Main Service & Dispensing Bar:** Typically, provide where Lobby Bar is remote from Restaurant. Provide the following:
   1. Equipment: See Bar - Example Plan.
   2. Food Segment: Consider, if appropriate or required, the integration of a food segment.
   3. Wine Storage: Shelving and glass door refrigerator for wine.
   4. Security: Service bar, walk-in cooler, liquor storage and temperature controlled wine storage is lockable and secured as a unit.
   5. Features:
      a. Stainless steel bar top
      b. Hanging glass storage above bar top
      c. Roll down security gate open full length of bar
      d. Stainless steel backbar top with backbar refrigerator and lockable cabinet above for liquor storage.
      e. Underbar and hand sink
      f. Glass storage
      g. Cocktail station
      h. Blender station with soda gun
      i. Under counter dish machine.
      j. Espresso machine

J. **Guest Floor Lounge Bar:** Size to accommodate demand. Provide a Pantry (Section 10.38) adjacent and accessible to the Lounge. See Table 2and Module **<7C>**.

K. **Finishes - Bar / Service Stations:** See applicable Modules for finish materials and coordinate with millwork details and interior design:
   1. Lobby Bar: Module **<2>**
   2. Restaurant Bar: Module **<3>**
   3. Pool Bar **<4>**
   4. Guest Floor Lounge Bar: Module **<7C>**

Figure 6 - Bar - Example Plan

EQUIPMENT SCHEDULE				
Item No	Qty	Equipment Category	Make & Model	✓
01	1	BAR TOP & DIE, 42" AFF	NIKEC/By Millwork	
02	3	24" DRAINBOARD W/ GLASS STORAGE	Glastender DBGR-24	
03	1	HAND SINK W/ SOAP & TOWEL DISP.	Glastender HAS-12D	
04	1	4-TAP BEER DISPENSER, W/DRAINER	Glastender UC-4-SS	
05	2	TRASH UNIT	Glastender DWB-12	
06	2	P.O.S. CABINET, 20" W	Glastender PCB-18	
07	3	P.O.S. TERMINAL	NIKEC/By Owner	
08	2	36" COCKTAIL STATION W/ DBL. BTL. RLS	Glastender IBA-30	
09	2	SODA GUN	NIKEC/By Vendor	
10	2	BLENDER STATION	Glastender BSA-12	
11	2	BLENDER	Vitamix 5085	
12	2	12" LIQUOR STEPS	Glastender LDB-12	
13		OPEN NUMBER		
14		OPEN NUMBER		
15	1	GLASSWASHER	Champion Ind. CG	
16	1	PREP CABINET W/ SINK	Glastender SWB24R-C	
17		OPEN NUMBER		
18		OPEN NUMBER		
19	1	CORNER DRAINBOARD	Glastender DBB-12	
20	1	BACK BAR COUNTER, 42" AFF	NIKEC/By Millwork	
21	2	BACKBAR REF, 2-SECTION, GLASS DRS.	Glastender BB60	
22	1	BACKBAR, 3-SECTION, GLASS DRS.	Glastender BB84	
23	1	BAR TOP ASSIST	Counter Balance CB318	
24	1	ESPRESSO MACHINE W/ MILK REF.	Franke Sinfonia 1-Step	
25	1	WATER FILTER, ESPRESSO	Franke H2E-1	
26	1	KEG COOLER, 10 KEG CAPACITY	Perlick US10KP	
27	1	BEER SYSTEM, TOP-MOUNTED	Glastender BLG1/3	
28	1	SODA SYSTEM	NIKEC/By Vendor	
29	2	SHELVING, STATIONARY	InterMetro A1836NK3	



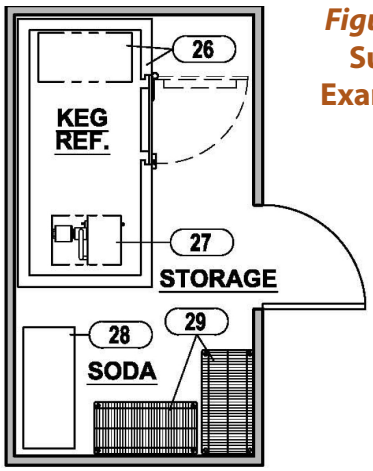


Figure 7 - Bar Support - Example Plan

Restaurant

10.29 Three Meal Restaurant Production Line

A. Program: Provide dedicated area in Main Kitchen for cooking hot food products for service. For conditions of designing a separate food production kitchen, see previous "Space Planning" requirements for "Main Kitchen" in this Module.

B. Equipment: Provide heavy duty equipment. Consider size of foodservice, F&B concepts and catering, to select equipment. See Table 2.

C. Specialty Equipment: Provide as necessary to accommodate local practices.

D. Features: Provide and accommodate the following:

1. Based on the space concept, consider use of American style linear line configuration. Include quick release, casters, under counter refrigeration, recessed plate storage and an identifiable pantry section.
2. Low Walls: Separate equipment with a 1.4 m (4'-6") high low wall with stainless steel wall flashing or top.
   a. Group equipment used for batch cooking on one side of low wall.
   b. Group a' la carte equipment on one side of low wall opposite Chef's Counter (food pickup line).
3. Provide mobile equipment with flexible gas hoses and quick disconnects (where applicable).
4. Place floor troughs in front of braising pans and wet applications.

E. Finishes for Three Meal Restaurant Production:

1. Floor: Paver tile or seamless flooring
2. Base: Paver tile or seamless base
3. Walls: Ceramic tile
4. Ceiling: Accessible tile on corrosion resistant grid and supports. See *Section 10.9*, "Ceilings".

10.30 Food Pickup Line (Chef's Counter)

A. Program: Provide counter to assemble and garnish finished plates for a' la carte service and assembly of orders for delivery to dining tables.

B. Equipment: Provide heavy duty, custom fabricated stainless steel construction. See Table2.

C. Location: Provide adjacent to a la carte Cooking Battery.

D. Features: Include the following:

1. Shelving: Maximize amount of open storage shelving in Chef's Counter.
   a. Provide 15 cm (6 inch) minimum clearance from floor for cleaning.
   b. Provide 28 cm (11 inch) clearance between shelving.
2. Stations: Required for dedicated hot food, cold food and dessert stations for garnishing and staging of plates for service.
   a. Provide electric outlets for small equipment at each station.
   b. Provide electric outlets at work counters.
3. Aisle Width: 1.1 m (3'-6") between Chef's Counter and cooking line and no more than 1.2 m (4 ft).
4. Point of Sale (P.O.S.): Provide locations for remote printers and a channel for cabling.
5. Floor Drains: Provide on chef's side of counter.

E. Finishes for Food Pick up Line:

1. Floors / Base: Paver tile (same as Main Kitchen)
2. Walls: Same as Main Kitchen
3. Ceilings: Accessible tile on corrosion resistant grid and supports. See *Section 10.9,* "Ceilings".

10.31 Breakfast Buffet (option)

A. **Planning Requirements:** See Module **<3>** for the Buffet style of meal service.

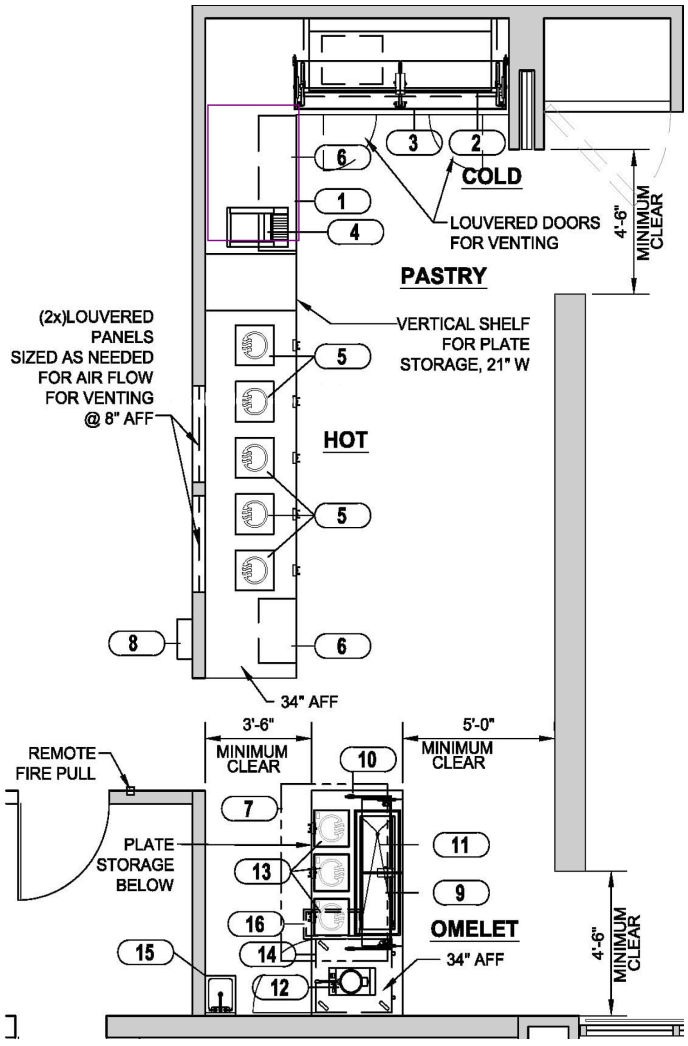
B. **Equipment:** Provide appropriate equipment for the four buffet components as follows:

1. Hot Buffet: Provide to support the MI breakfast program:
   a. Counter Length: Approximately 25 mm (1 inch) per seat
   b. Induction Units: Minimum of 4 built-in heating / holding induction units (no solid fuel heated chaffers).
      - Mount induction unit controls for staff access but out of view of guests integrated with millwork, respecting manufacturer's mounting instructions.
      - Built-in flush mounted induction units are preferred. Coordinate with interior designer's counter top selection for an "invisible" appearance.
2. Cook Station: Provide fixed or modular station:
   a. Station Length: Approximately 13 mm (½ inch) per seat
   b. Induction Cooking Units: Minimum of 2 flush mounted
   c. Refrigeration: Cold storage
   d. Refrigeration: Back up storage
   e. Trash receptacle
   f. Ventilation: **<15A>** Cooking areas outside of the kitchen require hooded ventilation.
3. Cold Food Area: Provide for refrigerated and chilled items:
   a. Refrigeration: Cold slab (preferred if visible after buffet closes) or air pan
   b. Length: Approximately 25 mm (1 inch) per seat
4. Bread, Pastries & Cereal Area: Provide for bakery components:
   a. Area for commercial toaster and condiments
   b. Counter Length: Approximately 13 mm (½ inch) per seat

C. **Buffet Design:** Coordinate equipment requirements with foodservice consultant and interior designer to provide a functional and aesthetically pleasing facility based on the property size and anticipated use.

1. Provide a method to close buffet area and equipment (no mobile equipment) from guest view when not in use.
2. At fixed buffet counters, provide covers or millwork details to conceal built-in equipment from guest view when not in use.
3. Lighting: In addition to ambient lighting, provide dedicated general and accent lighting to highlight buffet displays and tables.

***Figure 8* - Buffet - Example Plan**



EQUIPMENT SCHEDULE				
Item No	Qty	Equipment Category	Make & Model	
1	1	BUFFET COUNTER	NIKEC/By Millwork	
2	1	REFRIGERATED AIR PAN	RPI VIAP -5-0-R-SL	
3	1	BREATH PROTECTOR SNEEZEGUARD	BSI FS GUARD 1	
4	1	CONVEYOR TOASTER	Toastmaster TC17D3674	
5	5	INDUCTION WARMER	CookTec MB061 -D	
6	2	PLATE ALCOVE SHELF	NIKEC/By Millwork	
7	1	EXHAUST HOOD	Halton KV	
8	1	FIRE SUPRESSION SYSTEM	Ansul PIRANHA	
9	1	BREATH PROTECTOR CASE	BSI FS GUARD 3	
10	1	OMELETTE COUNTER	NIKEC/By Millwork	
11	1	REFRIGERATED COLD PAN, DROP -IN	Delfied N8146NB	
12	1	WAFFLE BAKER	NIKEC/By Vendor	
13	3	INDUCTION COOKER	CookTec MCD2500	
14	1	UNDERCOUNTER REFRIGERATOR	True TUC -24	
15	1	HAND SINK W/ SOAP & TOWEL DISP.	Glastender WHS-12	
16	1	WASTE CONTAINER	Rubbermaid 3541	

10.32 Server Stations

A. Program: Provide counters located in the dining areas of Restaurants to store service items and beverages during meal periods.

B. Dining Room Station: Provide for beverage service with P.O.S. equipment, partition baffles and doors (coordinate design with Interior Designer) to Dining Rooms.

1. Provide one remote service station (within Dining area) for every 50 dining seats; see Module **<3>**.
2. Provide doors with double acting hardware and window that swing with traffic flow and without cross traffic at this transition point, and in kitchen area.
3. No guest views into service areas and BOH spaces from public spaces.
4. Lighting of service stations and other foodservice areas open to public spaces matches the public spaces.
5. Stone or impervious surface, millwork or laminate on counter tops. Stainless steel counter tops within BOH areas.
6. Design front-of-house stations similar to the concept of restaurant design. Provide as focal element in dining space with clean, simple design.
7. P.O.S. Terminals: Include counter space for P.O.S. terminal at each station. Generally, provide 1 terminal for every 30 seats. P.O.S. is built-in to millwork.

C. Wet Server Station: Generally, locate 1 wet station.

1. For equipment see Table 2.
2. Wall mounted storage shelves or cabinets
3. Conveyer toaster (one per maximum of 5 servers)
4. Task lighting
5. Double door upright, reach-in refrigerator in BOH

D. Dry Server Station: Generally, locate 1 dry station per 75 seats.

1. For equipment see Table 2.
2. Provide half height wall to partially conceal area from guest / customer view.

E. Finishes for Server's Station: See Module **<3>** Food & Beverage. Base style and finishes on food / restaurant concept.

Figure 9 - Wet Server Station - Example Plan

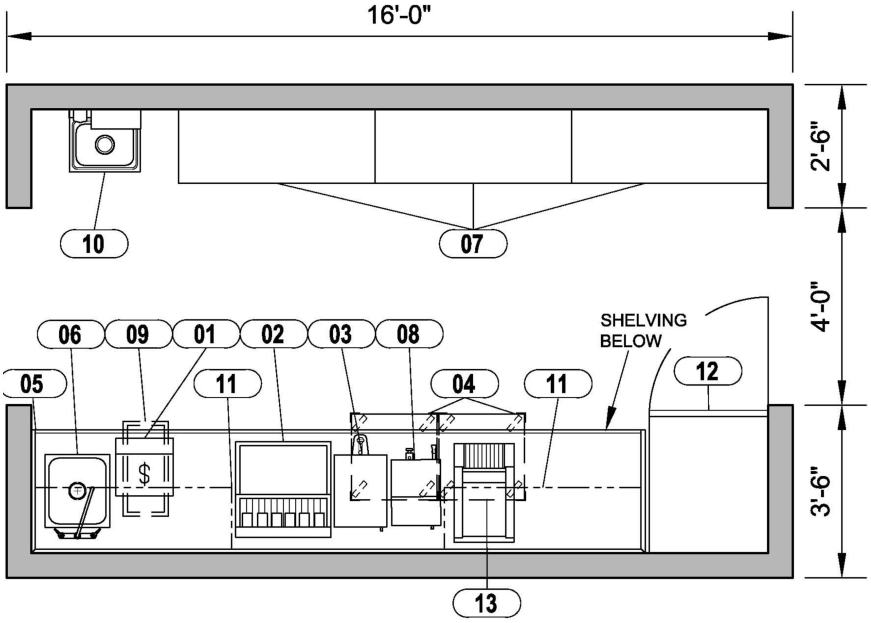
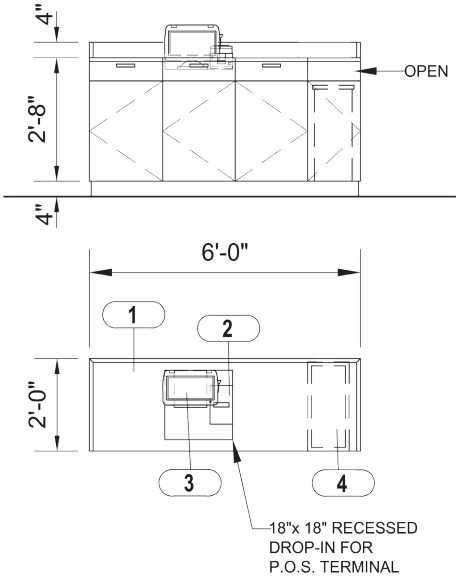


Figure 10 - Dry Server Station - Example



EQUIPMENT SCHEDULE

Item No	Qty	Equipment Category	Make & Model	✓
1	1	P.O.S. TERMINAL	NIKEC/By Owner	
2	1	SODA DISPENSER	NIKEC/By Vendor	
3	1	ICED TEA BREWER	NIKEC/By Vendor	
4	2	GLASS/CUP RACK DOLLY	Cambro CD2020110	
5	1	BEVERAGE COUNTER	Custom Stainless	
6	1	DROP-IN SINK	Advance Tabco TA11-J	
7	3	STORAGE SHELVING	Metro NK3 Series	
8	1	COFFEE BREWER	Fetco CBS-51H15	
9	1	WASTE CONTAINER	Rubbermaid 3540	
10	1	HAND SINK W/ SOAP & TOWEL DISP.	Advance Tabco 7-PS-80	
11	2	WALL CABINET	Advance Tabco WC-15-48	
12	1	REACH-IN REFRIGERATOR, 1-SECTION	True Foodservice TA1R-1S	
13	1	TOASTER	Toastmaster TC17D3674	

10.33 Main Lobby Pantry

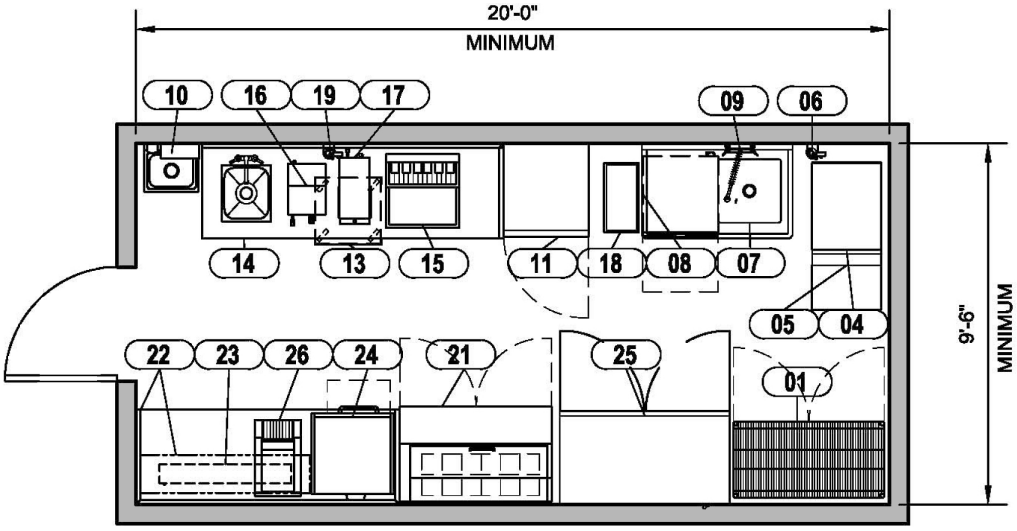
A. **Program:** Provide for hot and cold foodservice to guests in the Lobby area.
   1. Size / Area: Provide to accommodate guest demand and food concept for the Lobby area.
   2. Location: See Module **<2A>** Provide adjacent to the Lobby Bar when distance to a full service kitchen is greater than 46 m (150 ft.) or when kitchen operational characteristics or hours are not compatible with the Restaurant menu.

B. **Design Features:** Provide a minimum of 19 m^2 (200 sq. ft.); enclosed room easily accessible from the bar service area and seating. Shield entry and views from guest area.

C. **Equipment:** (includes, but is not limited to):
   1. Upright, double reach in (1.5 door) refrigerators and (half door) freezer
   2. Service counter / heat lamp
   3. Dishwasher
   4. Soiled and clean dish table
   5. Hand sink
   6. Plate storage
   7. Microwave
   8. Dry storage shelving
   9. Three compartment sink
   10. Panini grill
   11. Sandwich make-up table
   12. Turbo Chef / Merry Chef
   13. P.O.S. printer
   14. Garbage can
   15. Mop sink (if required)

D. **Finishes for Lobby Pantry:**
   1. Floor: Paver tile or seamless flooring
   2. Base: Paver tile or seamless base
   3. Walls: Ceramic tile or FR-FRFP
   4. Ceiling: Accessible tile on corrosion resistant grid and supports. See *Section 10.9*, "Ceilings".

Figure 11 - Pantry - Example Plan



EQUIPMENT SCHEDULE				
Item No	Qty	Equipment Category	Make & Model	
01	1	SHELVING UNIT	InterMetro Industries 2448NC	
02		OPEN NUMBER		
03	1	SODA SYSTEM - LOCATION TBD	NIKEC/By Vendor	
04	1	ICE CUBER, 500LB.	Hoshizaki America KM -515MWH	
05	1	ICE BIN, 300 LB.	Hoshizaki America B -300SF	
06	1	WATER FILTER, ICE CUBER	Everpure EV9324 -01	
07	1	DISHTABLE	Advance Tabco DTU -U60-48R	
08	1	UNDERCOUNTER DISHWASHER	Hobart US Foodservice LXIH	
09	1	PRE RINSE	T & S Brass B -0133-01	
10	1	HAND SINK W/ SOAP & TOWEL DISP.	Advance Tabco 7-PS-80	
11	1	REACH -IN REFRIGERATOR, 1 -SECTION	True Food Service T -23	
12		OPEN NUMBER		
13	1	GLASS RACK DOLLY	InterMetro Industries CB2121C	
14	1	WORKTABLE W/ SINK	Advance Tabco TKSS -307	
15	1	ICE AND SODA DISPENSER	NIKEC/By Vendor	
16	1	COFFEE BREWER	Fetco CBS -51H15	
17	1	ICE TEA BREWER	Fetco TBS -21A	
18	1	WASTE CONTAINER, SLIM TALL	Rubbermaid 3540	
19	1	WATER FILTER	Everpure EV9272 -22	
20		OPEN NUMBER		
21	1	REFRIGERATED PREP TABLE	True Food Service TSSU -48-12	
22	1	WORKTABLE W/ OVERSHELF	Advance Tabco KSS -307	
23	1	HEAT LAMP	Hatco GRAH -41	
24	1	RAPID COOK OVEN	TurboChef TORNADO 2	
25	1	REACH -IN DUAL TEMP, 2 -SECTION	True Food Service T -49DT	
26	1	CONVEYOR TOASTER	Toastmaster TC17D3674	
27		OPEN NUMBER		
28	1	PRINTER	NIKEC/By Owner	

10.34 Specialty Restaurant Kitchen

A. **Program:** Provide dedicated kitchen for cooking and finishing plates for service in separate specialty themed restaurant. Kitchen design and equipment is based on concept and Market.
   1. Specialty, remote and secondary restaurants require essentially same functions as a' la carte kitchen with bakery, garde manger and meat / fish functions are brought from the central Pre-Processing.
   2. Requirements for European, Oriental or Specialty kitchen are designed specifically to comply with Marriott requirements. Similarly, pool bars, grills, tennis centers, luaus and other resort facility spaces are custom designed to meet Marriott requirements, following an established schematic design concept.

10.35 Retail Coffee Service

A. **Program:** Provide a location to purchase coffee and light food items as required by the project Facilities Program.

B. **AM Coffee - Bar:** In addition to the Bar equipment, provide the following:
   1. Super-automatic espresso machine with water filter
   2. Filter coffee airpot system with water filter
   3. Syrup dispenser
   4. Undercounter refrigerator
   5. Blender with silencer for smoothies and frozen drinks
   6. Pastry Display: Undercounter with 50% refrigeration.

C. **Coffee Outlet:** Locate in public area along main circulation path. provide the following equipment:
   1. Work counter
   2. Ice maker / bin
   3. Hand sink
   4. Utility sink
   5. Full size refrigerator
   6. Cup dispenser
   7. Microwave
   8. Storage shelving
   9. Waste container
   10. Millwork display
   11. 3-compartment sink

Function Spaces

10.36 Main / Banquet Kitchen

A. Program: Provide dedicated area to perform bulk food preparation for restaurants, banquet and catering functions. When determining Banquet Kitchen requirements, see Section 10.3.

B. Location: Typically, combine area with Cold Prep. See *Section 10.17.* In larger hotels or facilities with remote Banquet Areas, provide a dedicated Banquet Prep area.

C. Equipment: See Table 2

D. Equipment for Ballroom Banquet Pantries: *see Section 10.38* .

E. Features: Provide and accommodate the following:

1. Cooking equipment on casters with flexible gas lines and quick disconnects (where applicable).
2. Maintain a minimum of 15 cm (6 inch) clearance above floor for equipment and undershelves for cleaning, except at plinth (curb) installations.
3. Floor drainage throughout. Provide continuous trench drains and flush mount grate in front of equipment having wet applications such as kettles and tilt skillets.
4. Condensate hoods over bain-maries and other equipment producing high moisture levels.
5. Duplex electric convenience outlets at workstations.

F. Finishes – Main Kitchen / Banquet Production:

1. Floor: Paver tile (same as Main Kitchen) or seamless flooring
2. Base: Paver tile or seamless base
3. Walls: Ceramic tile or FR-FRFP
4. Ceiling: Accessible tile on corrosion resistant grid and supports. See *Section 10.9*, "Ceilings".

10.37 Function Space Beverage Area

A. **Program:** Provide staging area for production and distribution of beverages for catering functions.

B. **Location:** Provide staging area in service corridors, adjacent to function spaces. See **<6>** for the number of stations.

C. **Equipment:** Provide dedicated Bar / Beverage station for banquet functions and the following:
1. Mobile bar storage as required (1 bar space per 150 guests)
2. Bottled beverage storage
3. Clean glassware storage
4. Coffee break space
5. Ice production and storage
6. Prefer built-in bars in pre-function spaces
7. Soiled glassware storage
8. Walk-in beverage refrigerator, approximately 2.4 x 3 m (8 x 10 ft)
9. Hand Sink: See *Section 10.4*: Code Compliance and Standards, "Foodservice Health Provisions".

D. **Finishes - Banquet Beverage Station:**
1. Floor: Concrete, sealed
2. Base: Same as walls
3. Walls: Ceramic tile or FR-FRFP
4. Ceiling: Accessible tile on corrosion resistant grid and supports. See *Section 10.9*, "Ceilings".

10.38 Function Space Pantries

A. **Program:** Provide dedicated area adjacent to Function space as required for staging of finished plates and carts being sent to a catering function.

Pantries for Remote Meeting Rooms: Size pantries at 14 m² (150 sq. ft) minimum.

B. **Equipment:** See Table 2.

C. **Dry Storage:** Provide the following:
1. Lockable storage for silver (when applicable)
2. Flat shelf storage for chaffing dishes and equipment

D. **Warewasher:** Share with main kitchen, where on the same level only.

E. **Finishes for Banquet Pantry:**
1. Floor: Paver tile or seamless flooring
2. Base: Paver tile or seamless base
3. Walls: Epoxy paint
4. Ceiling: Accessible tile on corrosion resistant grid and supports. See *Section 10.9*, "Ceilings".

Guest Accommodations

10.39 Guest Floor Lounge Pantry

A. Program: Provide limited foodservice pantry adjacent to the beverage bar with adjoining sitting areas in a controlled access lounge.

1. Size / Area: Varies by region. See Module **<7C>** for Guest Floor Lounge.
2. Location: Typically, the Guest Floor Lounge is available to guests on the Guest Lounge Floor. Direct access or adjacent to service elevator is desired.

B. Equipment: Do not use residential or domestic grade equipment. See Table 2.

C. Features: Provide the following in Guest Floor Lounge Pantry:

1. Counter / Cabinet: Provide built-in heavy duty stainless steel counter and wall cabinets. Coordinate wall cabinet location with coffee brewer.
2. Bar: Provide lockable, cabinet storage for backup liquor bottles and beer.
3. Credenza: Coordinate with interior design to determine if a credenza with induction heating is required to display and serve hot food items.
4. Storage: Provide storage area for goods / service items, dishes, paper goods, silverware, glassware, etc.
5. Breakdown Space: Conceal area from guest view, to hold soiled plates and glassware.

D. Buffet at Lounge: See Table 2 for equipment. Provide a counter as designed by interior design.

E. Finishes: See Module **<7C>**.

10.40 Ice / Vending - Housekeeping

A. Program: Provide ice cuber / dispenser and bottled / canned soft drink vending machine for guest access and use; see Module **<7B>**.

1. Size / Area: Coordinate requirements with Module **<7B>.** Verify ceiling height requirements to accommodate machine and for installation.
2. Location: One unit per guestroom floor (50 rooms maximum) in centralized vending space (if applicable) and / or ice dispensing machine room.

B. Equipment Features: Provide water cooled **<15>**, self-contained, condensers for ice cubers. See Table 2.

B. Finishes: See Modules **<7B>**.

Employee

10.41 Employee Dining

A. Program: Provide dedicated dining (cafeteria) facility for employees. Services offered, or independent kitchen, are determined by market conditions with input from MI.**<8B>**

1. Size / Area: Coordinate program and design requirements with Module **<8B>** Employee Facilities.
2. Location: Near Employee services (change / shower / toilet rooms). Satisfy local daylight requirements.
3. Larger properties: Provide separate kitchen to support Employee dining.

B. Features: Provide with the following applicable project Facilities Program design features:

1. Cashier: If required
2. No dishwashing or back-of-house kitchen facilities if in proximity to other kitchen and dishwashing facilities.
3. Cafeteria style, self-service. Minimum of approximately 30 linear feet of service line required.
4. Hot food station served by attendant
5. Self-serve salad, dessert and beverage stations
6. Emergency Power: Provide several power receptacles to permit limited employee food prep (coffee, sandwiches, etc.) in an emergency. See Module **<15C>**

C. Equipment: May be influenced by regional preferences. See Table 2.

D. Finishes - Employee Dining: See Module **<8B>**.

10.42 Systems Coordination

A. Reference: Coordinate with requirements of other Modules including:

- 2A Public Spaces
- 3 Food & Beverage
- 6 Function Spaces
- 7 Guest Accommodations
- 8 Administration & Employee Facilities
- 12 Elevators & Escalators
- 13A Information Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical - Plumbing - Electrical
- 16 Loss Prevention

AUTOGRAPH COLLECTION

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STANDARDS

MODULE

11

LAUNDRY & HOUSEKEEPING

11A - Laundry Facilities
11B - Housekeeping Facilities

May 2014

AUTOGRAPH COLLECTION®

STANDARDS

MODULE

11A

LAUNDRY & VALET FACILITY

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Laundry Facility

11A.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Objective: When qualified, dependable, high quality laundry services are not locally available for the property, provide an on-site washing and finishing facility to launder and finish high quality textile hospitality products in compliance with Marriott International (MI) Standards. See the project Facilities Program.

The criteria included in this Module models a generic laundry facility for a MI managed property and guides the project design team with coordination, development, design and installation of laundry facilities. However, for a franchised property the Module criteria is more for guidance and best practice.

B. Management Strategy: Develop a management strategy and design criteria for each property considering the following factors that impact the on-site facility design:

1. Potential to cooperatively share laundry facilities with local MI properties.
2. Potential for a regional MI program to consolidate laundry capacity and services.
3. Scope and quality of required laundry services.
4. Potential to outsource laundry, valet and uniform programs if high quality services are available.
5. Business objectives that require on-site laundry facilities.
6. Availability of the following:
   - Acceptable area or region commercial services
   - Adequate project space
   - Personnel
   - Potential for competitive on-site operating costs

C. Design Review: Prepare a design analysis and management strategy to form the basis for an on-site laundry facility design, subsequent submissions and reviews by MI.

D. Design Criteria: When the laundry management strategy requires an on-site Laundry Facility, the following factors determine the facility's workload (weight and piece quantities of textile and clothing items for finishing), space allocations, equipment sizes, capacities and types.

1. Quantity: Determine the quantity by guest bedrooms, average annual occupancy and degree of double occupancy, such as the average guest-nights per bedroom night.

2. Food & Beverage: Quantity of guests served utilizing reusable textiles (table clothes, napkins).
3. Function Space: Table and guest quantities utilizing reusable textiles.
4. Service Level: High thread count and over sized bed linens; all cotton versus poly-cotton for F&B napery, duvets and duvet covers, pillow shams, etc.
5. Spa: Expected spa activity (quantity of treatments).
6. Recreation: Pool and beach towel quantities, utilization, and towel size.
7. Uniforms: Quantity and type, dry cleaned versus wet washed

E. Off-Site Facility: If an on-site laundry is not required, see the "Clean & Soiled Linen Holding (option)" in this Module.

F. Coordination: Coordinate the utility service requirements, including MEP (see Module **<15>**) rough-ins, trenches, hook-ups, etc., and coordinate with design disciplines, procurement, installer, contractor, owner and MI.

11A.2 Clean & Soiled Linen Holding (option)

A. Program: If the property does not require an on-site Laundry Facility, provide a secure room for the following:

1. Soiled Linens Storage: For products awaiting delivery to an off-site service.
2. Clean Linen Return Storage: For products received from an off-site laundry.
3. Cart Area: For loading and staging the property's linen for delivery.

B. Location: Position holding room close to the Receiving Area and adjacent to the Service Corridor with access to support spaces, such as Housekeeping, Garment Shop and Uniform Issue room to provide efficient operations and supervision.

C. Holding Room: Provide the same general design criteria, features, clearance (except floor slab thickness and reinforcement), etc. as required for laundry facilities where appropriate. See "Laundry Facility - Design" below.

1. Provide continuous access with a 2 bay loading dock for removal and delivery of laundry.

D. Carts: Provide for linen delivery. See "Clean Linen Storage & Linen Carts" below.

11A.3 Laundry Facility - Design

A. General: The Standards are based on provisions for a dedicated, full service, on-site Laundry Facility to provide dependable, continuous, consistent service for guests and employees in a full service hospitality property.

B. Location: Locate Laundry, Garment Shop and Uniform Issue room adjacent to each other with suitable adjacencies for the work flow and connection to the Service Corridor.

1. Position adjacent to Service Corridor and near Service Elevators and Housekeeping and Laundry Chute.
2. Locate with clear access to Receiving Area to accommodate installation and replacement of equipment. Knock-out panels are an acceptable solution.
3. Provide shaft-ways and interstitial ceiling spaces for equipment supply air and exhaust ductwork systems. **<15A>**

C. Space Design:

1. Avoid triangular or other unusual, inefficient plan configurations.
2. Provide rectangular spaces to enclose facility components with maximum 2:1 ratio of length to width.
3. If columns fall within the space, provide area for an efficient layout to comply with equipment size, clearance and workflow.
4. Design laundry and equipment locations to accommodate service access and repair.

D. Area Program: Estimate facility areas based on the following design criteria and calculated laundry workload:

1. Workload Factors:
   a. Business, Urban: 8.2 kg (18 lb.) per occupied room night
   b. Resort (without beach facilities): 10 kg (22 lb.) per occupied room night
   c. Beach Resort & Large Spa Facilities: 12.7 kg (28 lb.) per occupied room night
2. Confirm actual materials and pieces to determine workload per room, function area and F&B.
3. Workload Calculation: Determine the product in "pounds per day" (PPD) assuming guestroom quantity at 80% occupancy utilizing one of the workload factors above.

E. Laundry Spaces: Utilize the following table for programming Laundry Facility spaces:

Space Components	m^2	(sq. ft.)
Laundry Manager and Clerk Offices	16.7	(180)
Soiled Linen Storage and Sorting	0.008 x PPD	(0.085 x PPD)
Washing and Finishing	0.04 x PPD	(0.425 x PPD)
Clean Linen Storage and Cart Loading	0.012 x PPD	(0.13 x PPD)
Garment Shop, Dry Cleaning and Valet	Based on equipment	
Uniform Storage, Issue and Tailoring	0.005 x PPD	(0.05 x PPD)
Mechanical and dedicated laundry water systems	Based on equipment	
Washing Chemical Storage and Injection Systems	Based on equipment	
Air Compressors and Refrigerated Dryer	Based on Equipment	
Clean and Soiled Linen Holding (if laundry is off-site)	0.018 x PPD	(0.2 x PPD)

F. Laundry Circulation Corridor: 2.4 m (8 ft.) wide minimum without structural clearance interference that would prevent equipment movement, installation, maintenance and service.

G. Doors: Provide two, separate access doorways, each a minimum of 2.4 m (8 ft.) wide, from the Laundry area to the Service Corridor. Ensure laundry equipment will fit through doors, corridors and vertical transportation.

H. Steps, Stairs, Ramps & Slip Resistance: See Module **<16>** - Loss Prevention.

I. Acoustic Control: Spring isolate equipment suspended from structure to prevent sound transmission to adjacent spaces. Do not locate Laundry under, over or adjacent to guestrooms and public spaces.

J. Weight & Vibration: Due to equipment weights and vibration, design reinforced concrete floor slabs for equipment mounting and coordinate anchorage requirements with laundry equipment vendor and structural engineer.

1. Slab Thickness: Typically, provide the following:
   a. 15 cm (6 inch) and thicker slabs for water tanks and steam boilers
   b. 30 cm (12 inch) or greater for solid-mounted washer-extractors
2. Raised & Recessed Floor Slabs: Not permitted.
3. Equipment Floor Supports: Provide sufficient mass to minimize and dampen harmonic vibration between laundry equipment and building structure.
4. Provide dynamic loading data for washers to structural engineer.

K. **Slab Waterproofing:** When laundry floor slab is above grade, provide waterproof membrane at troughs and floor drains.

L. **Floors:** Provide level floors, except slope areas to drains.

M. **Walls:** Masonry construction, painted finish. Protect outside corners subject to cart traffic with high impact resistant (such as stainless steel) corner guards, 10 x 10 x 150 cm (4 x 4 x 60 inch) high.

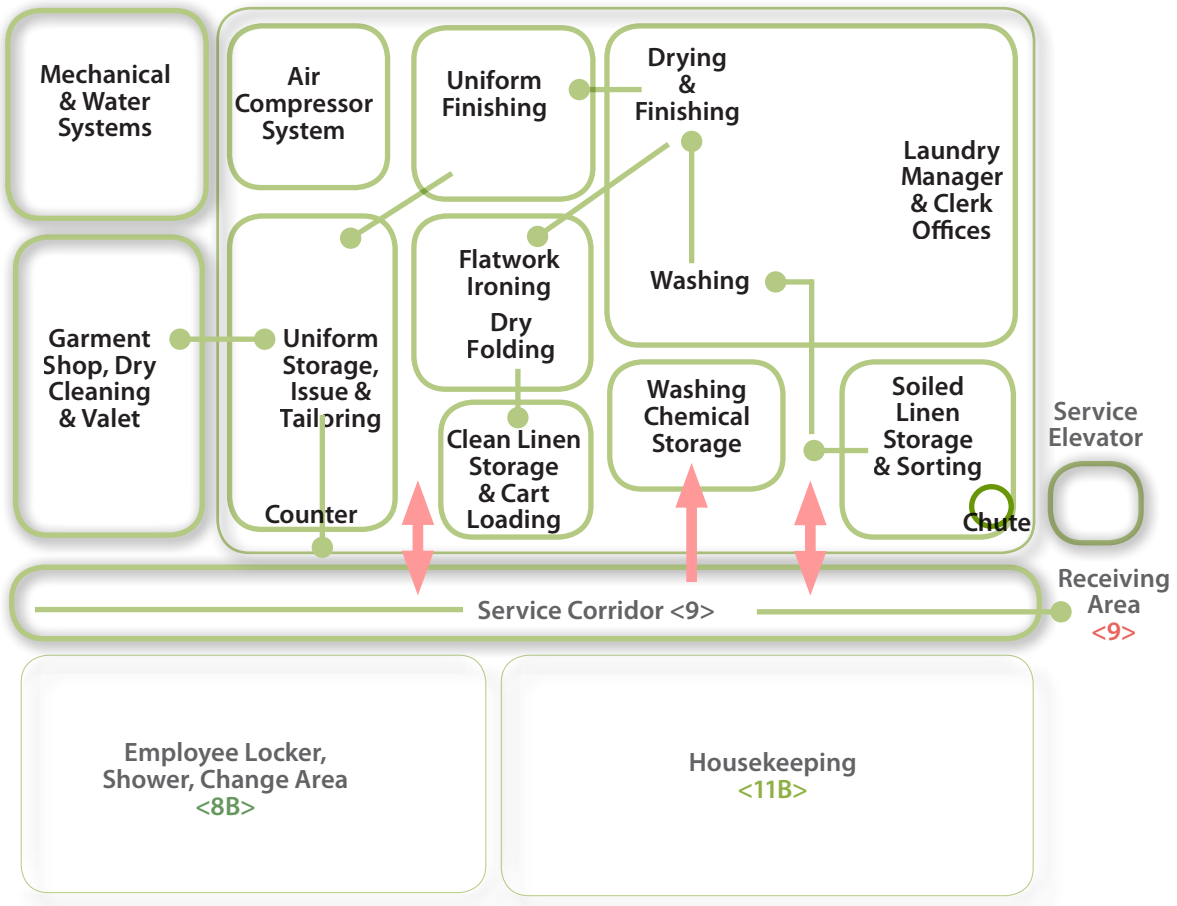
N. **Ceiling Height:** 4.6 m (15 ft.) minimum. Verify height based on equipment size, structural clearance, mechanical space requirements, maintenance and operations.

O. **Windows & Safety Glass:** See Modules **<GR>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

P. **Natural Light:** If possible or as required by governing regulations, provide natural light source.

Q. **Corner Guards & Wall Protection:** **<9>** Provide to prevent damage to corners and walls.

Figure 1 - Laundry Facility Adjacency Diagram



R. **Finishes:** Provide durable, easy to maintain and cleanable finishes such as the following:
1. Floor: Sealed concrete
2. Base: Painted or vinyl base
3. Walls: Epoxy paint
4. Ceiling: Consistent with the facility (painted or acoustical tile)

11A.4 Laundry Manager Office

A. **Program:** For an on-site Laundry Facility, provide offices as follows.
1. Large Properties: Provide enclosed offices for the Laundry Manager and clerk.
2. Small Properties (200 rooms maximum): The Laundry Manager may be located in an open work area adjacent to laundry processing
3. Private Offices: In enclosed offices, typically provide interior view windows to observe laundry work areas.
4. Assistant Managers: If the program requires one or more Assistant Managers, provide open work area with office equipment and furniture adjacent to laundry processing area.
5. Off-site Facility: If the facility is off-site, locate the Manager / Supervisor office in the Housekeeping **<11B>** area; a separate clerk's office is not required.

B. **Location:** Where possible, design adjacent to Laundry and Housekeeping areas for management efficiency.

C. **Equipment / Fixtures:** Desk, chair, filing cabinets; computer (PMS / PBS) **<13A>**; telephone **<13B>**

D. **Finishes:**
1. Floor: VCT
2. Base: Resilient base
3. Walls: Painted
4. Ceiling: Accessible acoustical tile

11A.5 Soiled Linen Transport, Sorting & Storage

A. Program: Provide dedicated area for transporting, sorting and storing linen in carts prior to the washing process.

B. Location: Position the linen delivery, sorting and storage area inside the door from the Service Corridor, adjacent to the wash area, on the side of the doorway away from the finishing area.

C. Transport: Soiled linen is delivered to the Laundry by linen chute or through the Service Corridor **<7B>**.

D. Sorting & Storage: Provide area to sort linen into classifications suitable to the washing process and to store linen carts prior to washing.

1. Typical Laundry:
   - **a.** Direct: If the majority of linen is delivered by linen chute, direct to the laundry area, linen is immediately sorted into linen carts and stored. Locate the linen chute, sorting and storage in an enclosed room constructed of masonry.
   - **b.** Linen Chute - Remote: Unsorted linens are deposited in carts and transported to the Laundry for sorting and storage.
   - **c.** Service Elevator: Bulk, unsorted linens are transported to the Laundry for sorting and storage.
2. Large Capacity Laundry: Use a soiled-sort conveyor for labor efficiency.

E. Scale: Provide to efficiently weigh carts with unsorted goods entering the Laundry and sorted goods prepared for full washer loads.

1. Type: 1,200 x 1,500 mm (4 x 5 ft.), electronic floor scale.

F. Carts: Provide bulk and hamper carts.

1. Bulk Carts: 1,200 x 760 mm or 1,500 x 760 mm or 1,830 x 1,067 mm (48 x 30 inch or 60 x 30 inch or 72 x 42 inch) typical size for unsorted goods.
2. Hamper Carts: 560 to 700 liter (16 to 20 bushel) with spring-lift platforms and four swiveling castors.

11A.6 Linen Chute

A. **Program:** Provide a prefabricated metal chute assembly from guestroom floors above with an outlet to a linen collection area.

B. **Standards:** Comply with NFPA regulations. See Module **<14>** for chute fire protection system requirements.

C. **Linen Loading:** See Housekeeping Linen Chute in Module **<7B>**. Locate loading at each upper floor in an enclosed housekeeping / linen room with chute access doors only accessible to employees. Provide access from a fire rated vestibule.

D. **Discharge:** Provide chute discharge in a discharge room or at an area suitable for efficient work flow in sorting area and to washroom without interfering with housekeeping and laundry traffic.

1. Mount bottom edge of chute opening 54 inches above the main laundry room floor with a side discharge; not from ceiling or overhead.
2. At discharge chute opening, provide a top hinged stainless steel door with a fusible link.
3. Vent full size chute through roof.
4. Provide an area that maintains soiled laundry away from foot and cart traffic paths. Include landing space to position a laundry cart with wheel brakes.
5. When chute enters an enclosed room, provide 2.4 m (8 ft.) minimum clearance from chute discharge to opposite wall or wall with door to allow space for housekeeping employee and one linen cart to avoid employee entrapment.

11A.7 Washing

A. Program: Provide washing equipment, fixtures and accessories.

B. Location: Position for direct access from Service Corridor without passing through adjacent Soiled Linen Storage and Sorting area.
Include an area near the washers to weigh and stage hamper carts containing loads for washing.

C. Soak Sink: **<15B>** Provide two compartment soak sink, with hand soap and towel dispensers.

D. Eye Wash Station: **<15B> <16>** Locate near washers.

E. Drain Trench: Provide under or behind washers and size to accommodate the combined total of washers' rinse cycle capacity.

F. Washers:

1. Typical Laundry:
   - **a.** Program: Provide 4 to 6 open-pocket units in a single bank arrangement, in front of or over the waste water trench with 115% minimum combined capacity of hourly washing task (see Laundry Facility, "Workload" above. Divide the calculated "PPD" by 8 washing hours per day to calculate hourly task).
   - **b.** Consultant: If the daily task (PPD) is expected to exceed 680 kg (1,500 lbs), contact a professional laundry consultant for a continuous batch tunnel washing system and requirements.
   - **c.** Capacity: Provide washers with clean-dry weight capacities equal to 113 kg, 57 kg, 23 kg, and 16 kg (250 lbs, 125 lbs, 50 lbs and 35 lbs). If hourly task exceeds 454 kg (1,000 lbs) per hour, provide 180 kg (400 lbs) capacity split-pocket washers.
     - Provide one small washer with a capacity equal to 5 to 10% of the hourly task;
     - If 5 or 6 washers are required, provide a second "mid-size" machine equal to about 10 to 20% of the hourly task capacity.
     - The remaining 3 to 4 washers are identical and individually equal in capacity to about 25 to 35% of the hourly task.

2. Large Capacity Laundry:
   a. Provide a continuous batch tunnel washing system sized based on 110% of programmed hourly washing workload. Tunnel washer to include the following:
      - 7-10 pockets
      - Programmable controls to adjust chemistry by pocket
      - Top transfer between pockets
      - Integration with extraction module
   b. Provide a minimum of 2 washers with a capacity equal to 10 to 15% of the hourly task.

11A.8 Drying

A. **Program:** Provide dryers in proximity to washing machines.

B. **Location:** Directly adjacent to washing equipment in an enclosure, and if possible, on an outside wall for make-up air through louvered openings.
   1. Allow adequate space at dryer sides to facilitate loading and unloading activities and staging work.
   2. Position in a single bank forming one of two lines of flow away from washers (flow in second line is flatwork ironing unit).

C. **Enclosure:** For traditional dryers, provide a tightly enclosed, fire rated dryer space with at least 914 mm (36 inch) clear service access behind machines.
   1. Access Door: 813 mm (32 inch) wide x 2 m (6'-8") high, outward opening door for dryer service.
   2. Connections: Coordinate and verify dryer utility connections **<15>** with equipment vendor and coordinate enclosure clearance, access details.

D. **Dryers:** Provide gas fired dryers with internal lint filtering screens (no separate lint filter) and fire suppression features. If high pressure steam is preferred and available, provide steam heated dryers.
   1. Size: Provide sizes to match capacities for each washer. Typically, a nominal rating of about 150% of the washer name plate rated capacity, maximum of 57 kg (125 lbs). For 113 kg (250 lb) open pocket washers and 180 kg (400 lb) split pocket washers, provide 77 to 86 kg (170 to 190 lb) dryers.
   2. Quantity: Provide about two-thirds of the washers quantity (3 to 4 units total). Generally, provide 2 to 3 units at 77 to 86 kg (170 to 190 lbs) and select 1 or 2 smaller units to match small washer sizes, 23 and/or 34 kg (50 and/or 75 lbs).

E. **Dryer - Supply Air & Exhaust:** Provide enclosure for dryers of 86 kg (190 lbs.) or less to isolate make-up air and heat radiation; see Module **<15>**.
   1. Lint Filter: Provide a separate lint collector or filter.
   2. Large Capacity Dryers: For 90 kg (200 lbs) capacity or greater dryers, provide supply air duct connection ports and integral lint filtering devices.

11A.9 Flatwork Ironing

A. **Program:** Provide flatwork ironing system (feeding device, ironer and folder).

B. **Location:** Position and orient the ironing equipment in an area near washing and drying to facilitate the flow from washers to clean linen staging and cart packing.

C. **Size / Area:** Provide equipment perimeter maintenance access and sufficient space for the ironing unit at:
   1. Front: For staging several loaded carts.
   2. Rear: For hand folding, stacking and loading finished goods into clean linen carts.

D. **Flatwork Spreader / Feeder:** Provide an automatic flatwork spreader / feeder when the daily task (PPD) exceeds 2,500 kg (5,500 lbs). Include 3 to 4 feeding stations, a retractable bridge to facilitate feeding small pieces, individual lane counters and an automatic grading system.

E. **Ironer:** Provide a three roll, steam heated, chest type ironer with 800 to 1,000 mm (32 to 40 inch) diameter rolls.
   1. Capacity: Provide equipment to iron 3,300 mm (130 inch) wide linen pieces.
      a. When daily task ("PPD") exceeds 2,948 kg (6,500 lbs), provide a four roll unit with same ironer features.
      b. If the space allocation rules in the "Laundry Program" above cannot be satisfied, provide a smaller "foot-print" ironer and consider a two roll, gas heated, roll type ironer.
   2. Air & Electricity: Provide with connections for air and electricity at front and rear ends, for the associated feeder and folder.
   3. Canopy & Exhaust: Include a canopy or hood, a vacuum exhaust system for 3,300 mm (130 inch) minimum rolls.

F. **Folder:** Provide four primary folding lanes with two static bars, one multi-lane small piece accumulator, individual lane counters, and a lane selector control to enable 1, 2 or 4 primary lanes of folding and 2 or 3 final cross folds.

G. Stackers: If an automatic spreader / feeder is provided, include one large piece stacker, minimum.
When the daily task (PPD) exceeds 2,948 kg (6,500 lbs), provide a second stacker to automatically separate king sheets from queen or double-size sheets when folded.

11A.10 Dry Folding

A. Program: Provide folding tables or one or more automated small piece folders based on capacity and labor requirements. Include space for moving materials from drying to storage areas.

B. Location: Adjacent to dryers and ironing equipment with sufficient area and work space for tables and nearby access to linen storage, cart packing and the Service Corridor.

C. Work Flow:

1. Fully dried work moves freely to folding area for finishing, stacking and placement on carts.
2. Finished folded work is joined with finished flatwork for storage and handling.
3. Provide a second doorway in the vicinity of the dry folding area with access to the adjacent Service Corridor.
4. Finished goods exit the facility directly or pass beyond to clean linen staging and cart preparation area.

D. Folder:

1. Large Capacity Laundry: Provide automatic small piece folders for folding bath and beach towels, hand towels and bath mats. Base quantity of folders on production rates per folder for 7.5 hours daily.
   a. Stack Conveyor: Include a stack conveyor to process towels and position to return finished stacks to the operator or away to a cart packing station.

E. Table: Provide a heavy duty folding table with plastic laminate or stainless steel top, one fixed lower shelf and drawers for supplies.

11A.11 Uniform Finishing

A. Program: If required by the project's Uniform Program and the project Facilities Program, provide equipment to finish wet-washed polyester-cotton employee uniforms.
Uniforms are first, pre-conditioned in dryers, moved freely and immediately to a garment finishing unit, and exit the facility to the Uniform Issue room.

B. Location: Adjacent to dryers with doorway, access to the Uniform Issue room and Service Corridor.

C. Garment Finisher: Gas or steam heated for items required with automatic feeder and return rail, and counting mechanism.

D. Garment Racks: Provide nestable garment racks with swivel castors for staging uniforms on hangers prior to finishing, after finishing and for temporary storage before loading into the storage carousel of the Uniform Issue room.

11A.12 Clean Linen Storage & Linen Carts

A. Program: Provide an area to temporarily store finished circulating linen carts, pack and stage carts containing guestroom linen for daily delivery to floor linen closets.

B. Location: Adjacent to the facility's three finishing areas (dry folding, flatwork ironing and uniforms) so finished goods flow freely, directly and immediately to delivery carts, storage and Service Corridor.

C. Banquet Linen Storage: See Module **<6>** for criteria.

D. Linen Delivery Carts: Provide large capacity linen carts for distribution of clean guestroom linens to property floor linen closets.

1. Cart Features: Provide the following:
   - With wire mesh or fully enclosed back and sides
   - 3 to 4 fixed shelves (including bottom tray)
   - 4 large diameter corners castors and two swivel
   - 1,200 to 1,830 mm (48 to 72 inch) long x 600 to 1,067 mm (24 to 42 inch) wide
   - Fabricate from plastic, chrome-plated or stainless steel or fiberglass.
2. Quantity: Provide enough carts for an entire day's guestroom linen supplies to store in the laundry for night time delivery.
   - If linen distribution occurs during the day, provide one clean linen delivery cart for every 10 guestrooms.

- If distribution occurs at night time when the laundry is not operating, provide one clean linen delivery cart for every 6 guestrooms.
- Retrieve, refill and return carts to floor closets when linen goods are finished in laundry during the day.

E. Scale: Provide a 1,200 mm x 1,500 mm (4 x 5 ft.) electronic floor scale to weigh finished goods exiting the laundry for property distribution.

11A.13 Valet (Garment Shop)

A. Program: If required by the project Facilities Program, provide a separate, well ventilated room for valet services to include on-site laundering, dry cleaning and press only services for dry clean only employee uniforms, staff clothing and guest clothing.

B. Size (approximate): Base size on a market study for the uniform program and valet services required at each property.

On larger properties, international locations and higher service demands, typically require an on-site facility. Otherwise, an alternate solution is to manage the majority of valet services off-site by a qualified by vendor.

C. Location: Immediately adjacent to the Uniform Issue Room with connectivity to the Service Corridor. Direct connectivity is not required to the Laundry area (unless as a convenience) but is typically near the Laundry Facility.

D. Features: See "Laundry Facility - Design" above, for applicable design features, criteria and include the following:

1. Entry Door: Provide a single entry with pair of doors each leaf 1.2 m (4 ft.) wide for adequate clearance to allow installation, movement and equipment replacement. Provide single door leaf with locking hardware to secure doors.
2. Steam: Provide steam service to equipment from a boiler or steam generator located in the property's power plant or mechanical room.
   a. Typical Laundry: Provide medium pressure steam, 30 to 50 bhp at 85 psi.
   b. Large Capacity Laundry: Provide 6.8 to 8.5 bar (100 to 125 psi)
   c. If a central steam system is not available, provide a separate mechanical room with fire rated walls to contain the equipment and water softener.
   d. Ventilate the mechanical room and provide a shaftway flue for the boiler gas exhaust.

E. **Check-In, Marking & Sorting:** Provide table for sorting folded clothing articles. Mount a quadruplex power outlet on the wall

F. **Marking Machine:** Provide dry ink or heat seal marking machines.

G. **Spotting Board:** Provide spotting boards with steam and water services, a water spray wand and associated hand tools and brushes.

H. **Dry Cleaning Machine:** Provide fully automatic, self contained dry cleaning machines.
   1. Typical Laundry: Provide each with 11 to 12 kg (25 lbs) or a single machine with 16 to 18 kg (35 to 40 lbs) capacity.
   2. Large Capacity Laundry: Base size on production requirements to process the work in 7.5 hours daily.
   3. Provide completely sealed to prevent escape of cleaning fluid vapors, and equip to produce nitrogen supplies to generate inert operating environs.
   4. Features include:
      - Button trap
      - Containment tray
      - Minimum of two solvent bath storage tanks
   5. Equip each machine with a refrigerated type cooler to provide chilled water for solvent recovery and condensation purposes, or a single cooler to serve both dry cleaning machines.
   6. Solvent type is hydrocarbon unless otherwise directed by owner, MI or governing authority.

I. **Washers & Dryers:** Provide conventional washers and dryers for wet washable staff and guest clothing (wet washable employee uniforms are processed in the primary laundry equipment).

J. **Shirt Finishing Unit:** Provide based on production requirements.

K. **Combination Pants, Coat & Dress Bay:** Provide based on production requirements.

L. **Finishing Board:** Provide based on production requirements.

M. **FF&E and Miscellaneous Equipment:**
   - Desk and chair; filing cabinet; computer (PMS / PBS) **<13A>**
   - Shirt folder
   - Garment bagging station
   - Basket scale to measure loads for dry cleaning machines
   - Central vacuum unit
   - Damp boxes or saddle carts
   - Slick rails for temporary staging of in-process garments
   - Metal storage cabinet, fire rated to store spotting and cleaning chemicals

N. **House Telephone:** **<13B>** Wall mounted, at one side of the check-in table.

O. **Name Tag Engravor Machine:** *Gravograph IS200*

11A.14 Uniform Storage & Issue

A. Program: Provide an enclosed area to support the property's Uniform Management Program for storage, tailoring, repair and issue of employee uniforms.

B. Location: Locate the room along the Service Corridor, immediately adjacent to the Garment Shop and close to, or across the Service Corridor from the Laundry area and position near the Employee Locker Rooms and Housekeeping department to maximize operational and supervisory efficiency.

C. Alcove: Provide a 915 mm (3 ft.) deep alcove off the Service Corridor, the full width of the Uniform Storage room so employees may queue at the issue counter without blocking the corridor.

D. Issue System - Large Capacity Laundry: Provide an automated uniform issue system.

E. Issue System - Typical Laundry:

1. Provide a counter in the wall separating the Uniform Room from the Alcove.
   - **a.** Size: 914 to 1,524 mm (36 to 60 inch) long on the corridor side and as long inside the room as other features may allow.
   - **b.** Counter Height: 1,000 mm (40 inch) above the floor
   - **c.** Configuration: Project the counter into the alcove at 305 mm (12 inch) and extend into the Uniform Issue room 765 mm (30 inch).
   - **d.** Opening: Size above counter:
     - Length: Same as counter length on alcove side
     - Height: 1,220 to 1,525 mm (48 to 60 inch)
     - Security: Provide a metal roll-up door or sliding glass panels to secure the room when not occupied.
   - **e.** Cart Space: Below the counter, inside the Uniform Room, provide space for hamper carts for collection of soiled clothing articles.
   - **f.** Finish: HPL or seamless aluminum sheet counter surface
   - **g.** Lighting: See Module **<15C>**.
   - **h.** Computer Stations: Provide for uniform tracking with scan station
2. Uniform Storage Carousel: Provide one, double-tier carousel with remote positioning selector. Size carousel large enough to provide hanging slots equal to or exceeding twice the guestroom count.

3. Door: 915 mm (36 inch) wide, immediately adjacent to the Issue Counter, with outward swing into corridor and hinge side away from the counter.

F. Tailoring Station: Inside the door and on the room side opposite the issue counter, and provide a 1.5 m (5 ft.) wide by 3 m (10 ft.) deep space to place two sewing stations (tables with sewing and button machines, and chairs).

1. Design the Uniform Issue room and Alcove at 3.5 to 4.1 m (11'-6" to 13'-6") wide minimum.
2. For the double-tier uniform storage carousel space, design a portion of Uniform Issue room narrower than the 3 m (10 ft.) depth required for the tailor station.
3. Equipment:
   a. Sewing Machine: One with work table and chair
   b. Button Machine: One with work table and chair
   c. Seal Marking Machine: One dry ink or heat seal machine to apply identification mark or label on employee uniforms.

G. Telephone: Provide a wall house phone at end of the Issue Counter. **<13B>**

H. Electrical: **<15C>** Provide duplex wall outlets for the following:

1. Sewing stations, two
2. Marking machine at end of Issue Counter

11A.15 Laundry Mechanical Equipment Room

A. Program: If a Laundry is required, provide a dedicated, enclosed (2 hour fire rated) Laundry Mechanical Equipment Room to accommodate the water systems equipment components and, if required, the Laundry and Garment Shop steam generating systems.

Configure to efficiently serve laundry process equipment (washers, dryers, ironer, etc.).

1. Size: Provide based on the extent the equipment program.
2. Location: Adjacent to laundry wash area and with an exterior wall for equipment installation or replacement, and boiler supply air requirements.

B. Equipment Access: Provide access ways and wide doorways, 2.4 m (8 ft.) minimum or removable wall panel systems that lead directly from grade access into the Mechanical Room.

C. Features: See the project Facilities Program and "Laundry Facility - Design" above for applicable Mechanical Room design features and criteria.

D. Water Storage Pits: If required, provide one or two sub-floor concrete water storage pits based on the programmed laundry usage considering the following:
- waste water heat recovery and reclamation system
- rinse water reuse system

11A.16 Wash Chemical Storage & Injection System

A. Program: Provide a secure, enclosed and well ventilated space for storage of washing chemicals and provisions for liquid chemical injection equipment as typically provided by a chemical vendor.

B. Location: Position close to the laundry washers with close access to the Service Corridor entrance at the soiled end of the laundry facility to allow unimpeded movement of chemical barrels (utilizing a barrel cart) from the corridor into the store room.

C. Features: See the "Laundry Facility - Design" above for applicable Chemical Storage Room design features, criteria and provide the following features:
1. Ceiling Height: 2.75 m (9 ft.)
2. Entry Door: 915 mm (3 ft.) wide x 2 m (6'-8") high and equip with locking hardware.
3. Tubing Access: Provide a 150 mm (6 inch) diameter opening through the storeroom wall for plastic tubing between the injectors and the laundry washers. Line the opening with a collar (such as a length of 150 mm (6 inch) diameter PVC pipe).
4. Floor Drains: Not required. (prevents chemical spills into the sanitary waste system).
5. Containment curbs: Not required.

D. Equipment & Fixtures:
1. Eye Wash Station. See Module **<16>** Loss Prevention and **<15B>**.
2. Water Mixing Valve: Thermostatic
3. Shelving: Provide fixed metal wall shelves above the barrel storage area.

11A.17 Air Compressor Room

A. Program: Provide air compressor equipment in a secure, enclosed and well ventilated space for compressed air service for the Laundry and Garment Shop equipment.

B. Location: Provide in a location appropriate for laundry equipment connections and operations such as flatwork folder, small piece folders and, if required, the dryer enclosure.

Do not position air compressors in the Laundry Mechanical Room where the space contains steam generating equipment.

C. Features: See the "Laundry Facility - Design" above for applicable Air Compressor Room design features, criteria and provide the following features:

1. Enclosure: Provide compressor room with high acoustic control, minimum of STC 60.
2. Ceiling: 2.75 m (9 ft.) high AFF with acoustical tile
3. Entry Door: 0.91 m (3 ft.) wide with a lock
4. Floor Drain: Provide 13 mm (½ inch) diameter copper drain lines from equipment (each compressor, air dryer and receiver tank) condensate connections to floor drains.

D. Air Compressors: Provide one to two, rotary style, air cooled air compressors. Base size on the equipment served.

E. Air Dryer: Provide refrigerated compressed air dryer sized to serve air compressors.

F. Air Receiver Tank: Provide compressed air receiver tank with pressure gauge. Air flows from the compressor, through the dryer before entering the receiver tank.

G. Filters: Provide in-line particulate and moisture filters with automatic condensate drains.

11A.18 Laundry Equipment Standard of Quality

A. Equipment Standard of Quality: The following list establishes an example for the level of quality, construction, features, etc., required for Laundry equipment:

Equipment	Manufacturer
Air Compressor	Ingersol Rand; Kaeser; Quincy
Air Vacuum (garment shop)	Rema; Cissell Dryset
Boilers and Steam Generators	Cleaver-Brooks; Fulton; Miura
Carousel, Uniform Storage	White Conveyors; Railex
Cart / Hampers	Meese; CR Daniels; ChemTainer; Tingue-Brown; Metropolitan Wire
Computer System, Production Data	Chicago Dryer CHILinc
Conveyor, Flat-Bed	Hy-trol or equal
Dry-Cleaning Machines	Multimatic; Columbia; Forenta; Firbimatic
Dryers, less than 200 lbs	Milnor; Cissell; Huebsch; American Dryer Corp; Unimac
Dryers, 200 lbs or larger	Challenge, Lavatec, ADC; Braun / Norman
Folder, Sheet	Chicago Dryer Skyline; Lavatec; Jensen; Braun Omega
Folder, Shirt	Forenta; Uni-Press
Folder, Towels	Chicago Dryer Air Chicago; Braun Sigma; Jensen; Kannegiesser
Form Finisher	Cissell; Forenta
Garment Bagger	Bishop-Freeman
Garment Finisher	Colmac; Leonard Automatics
Garment Rack, nestable	Astechnologies; Atlanta Rail & Conveyor
Heat Seal & Marking Machines	Texmark; Natmar; Thermopatch
Ironer, flatwork, gas-heated roll-type	Chicago Dryer Imperial 232
Ironer, flatwork, steam-heated chest-type	Chicago Dryer; Braun; Jensen, Lavatec
Ironer, flatwork, thermal-oil heated chest-type	Chicago Dryer Century PH
Pants Top Finisher	Cissell; Ajax; Forenta
Press, Collar-Cuff-Yoke	Forenta, Uni-Press; Ajax
Press, Pants Legger	Cissell; Ajax, Forenta
Press, Shirt Body Cabinet	Forenta; Uni-Press; Ajax
Press, Shirt Sleeve Cabinet	Forenta; Uni-Press; Ajax
Press, Utility Dry Clean Finishing	Forenta; Hoffman; Uni-Press; Ajax
Press, Utility Laundry Finishing	Forenta, Ajax
Puff Finisher	Forenta; Cissell
Scale, Basket	Newhouse Specialty, Bishop Freeman
Scale, Electronic Platform	Toledo; Richardson; Cardinal
Sewing & Button Machines	Chandler
Sheet Spreader / Feeder	Chicago Dryer King Edge; Braun; Jensen

Equipment	Manufacturer
Sink, Soak	E.L. Mustee; Durastone
Slick Rail	White Conveyor; Speed Check
Spotting Board	Cissell; Forenta
Up-Air Finishing Board	Uni-Press; Hi-Steam
Washers, 135 lbs or less	Milnor; Unimac; Washex
Washers, greater than 135 lbs	Milnor, Washex, Braun, Lavatec
Washers, home-style, and dryers	Speed Queen, Maytag
Water Systems, vented	Kemco Systems; Ludell; Thermal Engineering of Arizona

11A.19 Systems Coordination

A. Mechanical, Electrical & Plumbing (MEP) Coordination: See Module **<15>**.

B. Reference: Coordinate with requirements of other Modules including:

- 7B Guestroom Corridors / Support
- 11B Housekeeping
- 13A Information Technology Infrastructure
- 13B Telecommunications
- 14 Fire Protection & Life Safety
- 16 Loss Prevention

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STANDARDS

MODULE

11B

HOUSEKEEPING

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Housekeeping

11B.1 Overview

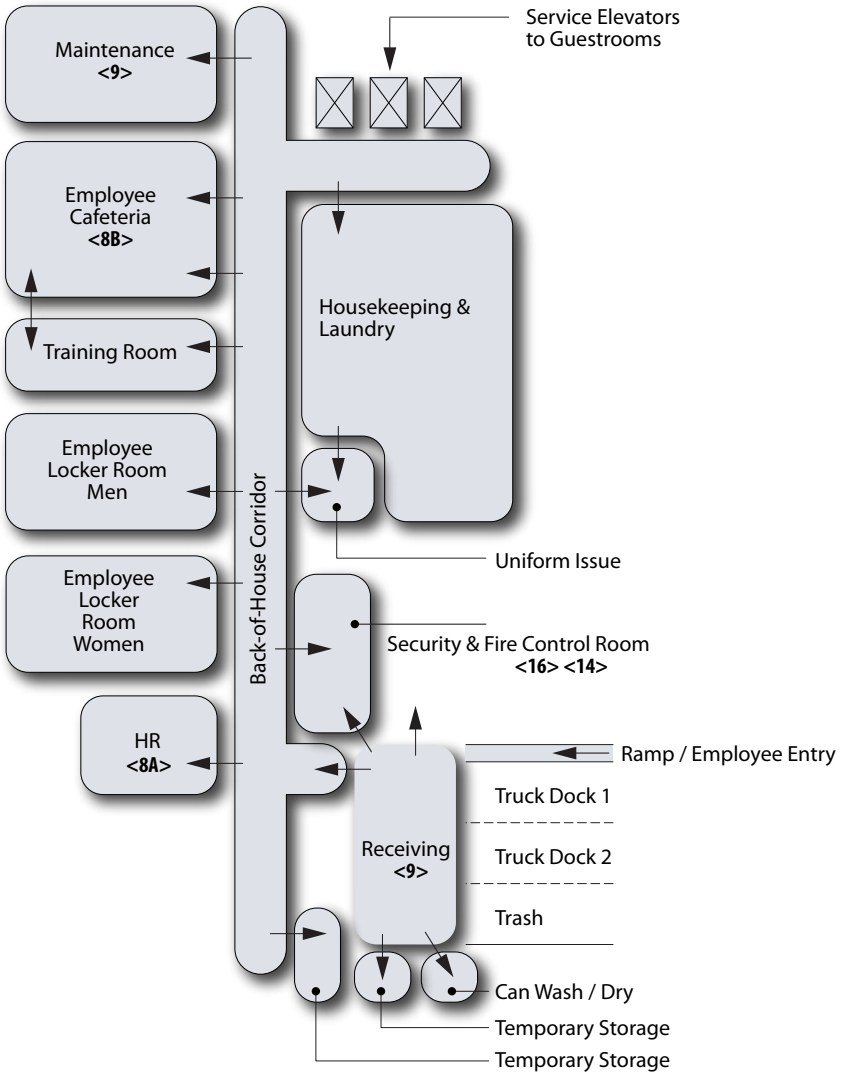
MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Program: Provide Housekeeping Facilities to support the property's high standards of guest service.
The criteria included in this Module models a generic housekeeping facility for a MI managed property and guides the project design team with coordination, development, design and installation of housekeeping facilities. However, for a franchised property the Module criteria is more for guidance and best practice.

B. Location: Locate in BOH area adjacent to Laundry for management efficiency and, as near as possible, to Service Corridor and Service Elevator to minimize travel by housekeepers.

Figure 1 **- Housekeeping Facilities Adjacency Diagram**



C. Size / Area: Comply with the following or as required by the Facilities Program.

1. Size / Area: 120 m² (1,200 sq. ft.)
2. Doors: Access space through pair of 0.9 x 2 m (3 ft. x 6'-8") doors adjacent to Issue Counter.
3. Ceiling Height: 2.4 m (8 ft.) minimum.

11B.2 Programmed Spaces & Areas

A. Programmed Spaces: Accommodate the functions as outlined in the project Facilities Program and as illustrated for the following spaces:

Space (see example plan)	Size: m²	Size: sq. ft.	Private	Open
Director of Services	9.3	100	X	
Housekeeping Manager	7.4	80	X	
Housekeeping Supervisor	4.5	48		X
Issue Counter (length)	1.8	6		X
Bulk Storage	42.0	450	X	
Lost and Found	6.0	64	X	
Glass washing	see example plan			
Cleaning Equipment	7.4	80	X	
Cleaning Chemical Station	see example plan			
Housekeeping Laundry	9.0	96		X
Uniform Distribution **<11A>**	see Laundry			

B. Steps, Stairs, Ramps & Slip Resistance: See Module **<16>** - Loss Prevention.

C. Windows & Safety Glass: See Modules **<GR>** and **<16>** for window, glass / glazing criteria, restricting window opening to 10 cm (4 inch) and for safety glass requirements.

D. Management Offices:

1. Director of Services: If Laundry is off-site, the Director of Services is located in Housekeeping.
2. Housekeeping Manager: Enclosed office area for the management of housekeeping activities, generally located convenient to housekeeping entrance. Housekeeping Manager generally reports to the Director of Services.
   a. Vision Panel: Provide glass vision panel to permit visual supervision of housekeeping activities while providing acoustical privacy.
   b. Office: May be combined with the office of Director of Service (Laundry Manager), especially when there is no on-site central laundry.
   c. Equipment: Desk, chair, filing cabinets, PMS **<13A>**, telephone. **<13C>**

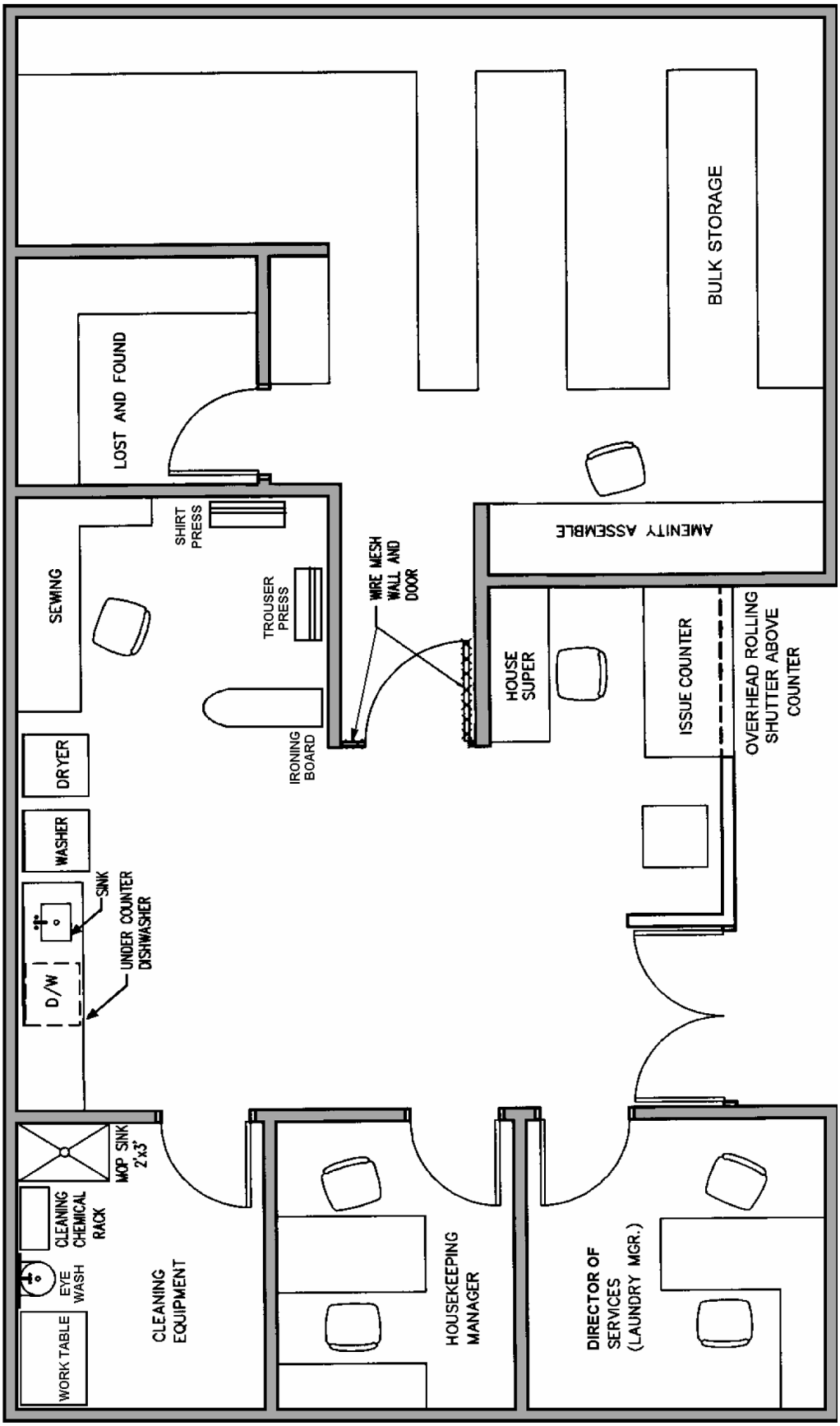


Figure 2 - Housekeeping Facilities Example Plan

3. Housekeeping Supervisor: Position reports to Housekeeping Manager and is responsible for managing the logistics of housekeeping assignments and activities.
   a. Locate adjacent to Issue Counter.
   b. Open area with desk, chair and PMS **<13A>**, telephone **<13B>**.
4. Finishes:
   a. Floor: Vinyl composition tile
   b. Base: Resilient base
   c. Walls: Painted
   d. Ceiling: Accessible acoustical tile

E. **Open Space:** Provide a common area where housekeepers meet for line up and receive housekeeping assignments and supplies.
1. Issue Counter: Pass through work counter at service corridor to facilitate distribution of housekeeping assignments and supplies.
   a. Size: 1.8 m (6 ft.) long; 1.1 m high and 1 m deep (3'- 6" x 3 ft.) open to Service Corridor.
   b. Counter: High pressure laminate top finish and open adjustable shelving below.
   c. Queuing Area: 1 m (3'-3") deep alcove for full length of Issue Counter on Service Corridor side.
2. Alcove: On housekeeping side, 1.7 m wide (5'-6") alcove adjacent to Issue Counter for housekeeping basket carts.
3. Overhead Rolling Steel Door: Clear head height of 2 m (6'-8"); lockable rolling metal shutter, mounted on Housekeeping side of opening.
4. Clip Board Space: Wall area convenient to entrance for mounting clipboards for housekeeping staff; one clip-board for every 15 rooms.
5. Equipment:
   a. Telephone: Wall mounted house phone located in the open space **<13B>**
   b. Computer (PMS / PBS): See Module **<13A>**
   c. PMS (systems applications): See Module **<13A>**
   d. Key lock box
   e. Radio PDA charging station

F. **Secured Bulk Storage:** Provide an enclosed, secured area for storing and controlling reserve housekeeping materials, bulk supplies, and guest room related equipment:
1. Enclosure: Enclose area with solid partition or wire mesh partition. Extend partition to underside of structure.
2. Door: Lockable and under the control of the Housekeeping Manager / Supervisor.

3. Amenity Assembly: Provide counter work area and bulk storage for assembling guestroom amenity (soap, shampoo, etc.) caddy storage rack and baskets for distribution to housekeeping.
4. Open Shelving: Provide full height metal shelving 0.6 m (2 ft.) deep with 0.9 m (3 ft.) aisles for storing reserve linens, pillows, cots, guestroom equipment and bulk housekeeping supplies and equipment.
5. Refrigeration for Guestroom amenities.

G. Lost & Found: Provide a separate enclosed and secured area, room or closet in Housekeeping to store Guest items turned in as Lost and Found. **<16>**

At larger hotels, Lost and Found may be located at the Security Office. At small hotels, Lost and Found is typically managed in Housekeeping. Verify location with MI.

1. Partition: Wire mesh or solid partition enclosure with framed door to secure space. Extend partitions to structure above.
2. Door: Framed door; secure with magnetic encoded card electronic operated lock with audit record. **<16>**

H. Housekeepers Storage Cleaning Equipment: Provide an enclosed room for storing and securing cleaning equipment and supplies (vacuums, floor care, carpet cleaning machines, mops, buckets, etc.).

1. Mop Sink: Include to allow convenient servicing of cleaning equipment.
2. Shelving: Provide shelving for storage of equipment and supplies.

I. Linen Storage: Provide a secure room with shelving to store linen and terry materials. May be included in Bulk Storage.

J. Glass Washing: If required, provide a work area to wash guestroom glassware. Facility is independent of kitchen dish washing to avoid disruption to food services. Within the open work area, provide the following:

1. Glass Washer: Under counter, rack type in center of plastic laminate counter top with open shelving below.
2. Work Surface: 0.6 x 2.4 m (2 x 8 ft.).
3. Utility Sink: 30 x 40 cm (12 x 16 inches) built into counter top.

K. Cleaning Chemical Station: Provide an area for the bulk storage and distribution of cleaning chemicals to include the following:

1. Cleaning Chemical Station: A proprietary combination and distribution system for bulk storage, mixing and refilling cleaning chemical dispensers used by housekeepers.
2. Eye Wash Station: **<15B> <16>** Centrally locate for shared availability for housekeeping activities.

L. Housekeeping Laundry: Provide a small capacity laundry to provide limited guest laundry service and to service housekeeping uses. Include the following features:

1. Provide utility clothes washer and dryer with adjacent 0.6 m deep x 1.2 m long (2 x 4 ft.) plastic laminate faced work counter.
2. Provide ironing and sewing areas for limited guest service.
3. If an on-site laundry and dry cleaning facility is available, the location of the housekeeping laundry may be adjusted to share facilities.

M. Sewing / Valet: Typically, located in the Uniform Issue area **<11A>**. Locate in housekeeping if Uniform Issue area is limited or off-site.

1. Uniform Distribution: See Laundry **<11A>**. At properties without on-site laundry and dry cleaning, uniform distribution may be managed within housekeeping.

N. Finishes:

1. Floor: Concrete, sealed or epoxy painted
2. Walls: Epoxy Painted
3. Ceiling: Exposed (not painted)

O. FF&E: Provide free standing furniture.

11B.3 Systems Coordination

A. Reference: Coordinate with requirements of other Modules including:

- 7B Guestroom Corridors / Support
- 11A Laundry / Valet Facility
- 13A Information Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical - Plumbing - Electrical
- 16 Loss Prevention

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STANDARDS

MODULE 12

ELEVATORS & ESCALATORS

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Elevators & Escalators

12.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Program: Provide efficient passenger and service elevators to support property operations and a high level of guest services.

B. Code Compliance: Design, construct and install elevators and escalators in compliance with standards, criteria and references in this Module including the following:

1. ASME A17.1 American Standard Safety Code for Elevators and Escalators, current edition and supplements enforced by governing jurisdictions.
2. Other governing codes, ordinances, laws, etc. applicable to elevators and escalators.
3. This Standard is not intended to negate governing codes or laws. When standards conflict, resolve with MI.

C. Access for Persons with Disabilities: Provide elevators and escalators accessible to persons with disabilities as intended by the "Americans with Disabilities Act" (ADA) or equivalent standard of the governing authority.

D. Elevator Performance: Provide performance analysis to support recommendations for the quantity, type, speed and capacity of passenger and service elevators and escalators to meet the requirements of this Module.

E. Circulation Planning: Coordinate elevator performance analysis with the following circulation requirements:

1. Lobby: When Lobby, Public and Function areas are located on more than one floor, vertical circulation is provided by a combination of grand stairs, public circulation stairs, escalators and shuttle elevators.
2. Street Entry: When the property street entry is not on the same floor as the Lobby or Function area, shuttle elevators and escalators are typically provided to transport property and function guests from street level to the Lobby or Function area.
3. Shuttle Elevators: Plan shuttle elevators serving public access areas (parking structure, street entry, etc.) to deliver passengers directly to the lobby / reception area or public circulation area without access to guest floors and to allow passive, visual access control for guests.
4. Beach / Pool: Provide a dedicated beach / pool elevator at a long guestroom wing to avoid requiring guests to return to the central elevator bank.

5. Multiple Building Wings: Consider providing elevator service at remote wings.
6. Remote Amenities: Provide an elevator at building wings that provide access to remote amenities and to avoid requiring guests to return to a central lobby elevator.
7. Function Areas: Plan circulation so those guests arriving and leaving the Function area do not overload the passenger elevators.
8. Multi-Use Projects: In order to maintain property operational and control access, do not share property elevators with other occupancies as determined by the Loss Prevention Review Process **<16>** – review with the MI representative.

F. Acceptable Manufacturers: Provide conveyance equipment from one of the following. Review other providers with MI representative.

- *Kone Inc.*
- *Mitsubishi*
- *Otis Elevator Company*
- *Schindler Elevator Corporation*
- *ThyssenKrupp*

Acceptable Manufacturer shall provide service office or service route within 80 k (50 miles) of the project location or provide a service organization with a 60 minute response to service request.

12.2 Common Elevator Features

A. Traction Control: Provide group operation, microprocessor controlled with AC Variable Voltage, Variable Frequency (VVVF) drive.

B. Loss Prevention (LP): See Module **<16>**.

1. Controlled Access: Provide passenger and service elevators with property operations programmable electronic key reader to match guestroom system that registers calls for selected floors when activated.
2. Elevator Monitoring Panels: Provide to monitor elevator service from the Security Office **<16>** and Call Center **<8>**.

C. Exterior Application: Avoid using exterior elevators exposed to weather. Provide stainless steel with required nickel content for salt air conditions.

D. Elevator Signage: Identify access requirements for the disabled, emergency exiting instructions, floor numbering **<7>** and way-finding graphics.

- Coordinate with governing code
- Confirm signage design and location with MI **<GR>**
- Identify signage location on Interior Design documents

E. Cab Ventilation: Provide cab ventilation for the comfort of occupants and to exhaust heat from lighting.

1. Natural Ventilation: Provide natural cab ventilation at top and floor of cab.
2. Exhaust Blower: Provide a quiet, exhaust blower at the cab ceiling.

F. Elevator Shaft Pressurization: See Module **<15>** for criteria.

G. Elevator Pit: Coordinate the following with Module **<15>**:

1. Light
2. GFIC power outlet
3. Sump pump, cover and drain where flooding is possible
4. Ladder access

H. Elevator Machine Room: Coordinate the following with Module **<15>**:

1. Light
2. Power outlet
3. Cooling or ventilation to maintain temperature within elevator operating limits

12.3 Fire & Emergency Control

A. General: See Module **<14>** for fire protection and life safety standards.

B. System Controls: Coordinate with governing regulations for the following elevator system fire and emergency control features.

1. Emergency Keys: Provide key operated terminal access switches at top and bottom floors for access to top of car and elevator pit. Locate key switch in elevator jamb immediately below floor identification plate.
2. Firefighter's Lock Boxes: Identify regulatory requirements. When required, provide lock box and coordinate its location with MI Design Managment and the Interior Designer.
3. Emergency Entry: Where allowed by governing authority, provide access keyways in hoistway doors at each floor served. Do not include emergency side exit in cab enclosures unless required by governing code.
4. Emergency Exit: In elevator cab ceiling, provide a personnel exit hatch that does not interfere with lighting. Coordinate lighting with the ceiling design.

C. Fire Command & Function Panel: <14>

1. Locate panel in Fire Command Room or Security Office in compliance with governing authority. Provide remote monitor panel at Call Center.
2. Elevator Recall & Firefighters' Operation: Provide Phase 1 Designated Level and Alternate Level Recall, Shunt Trip and Phase 2 Firefighters' In-Car Operations in compliance with current ASME A17.1.

D. Emergency Intercom / Telephone: <13> Provide 2-way emergency intercom / telephone. Mount integral with operating panel (not in a telephone cabinet).

1. Connection: Connect intercom telephone to Call Center or Security Office **<16>** for 24 hour, 7 days per week monitoring.
2. Speaker: Conceal intercom / telephone speaker from passenger view.
3. Operation: Provide instructions to activate intercom by pressing alarm button or dedicated "telephone" button in cab station.

E. Emergency Electrical Systems: See Modules **<14>** and **<15>** for standby power and emergency electrical requirements. Connect elevators, lighting, machine rooms and machine room cooling to standby power.

12.4 Passenger Elevators

A. Planning Guide: Provide a minimum of 2 passenger elevators.

1. Typically, provide one elevator for each increment of 100 guestrooms for low and mid-rise guestroom towers.
2. Additional elevators may be required when serving:
   a. Guestroom Towers: More than 20 floors.
   b. Large Function Areas: Above or below the property entrance floor.
   c. Guest Amenity Areas: Remote from the guestroom tower.
3. Also, see "Shuttle Elevators" hereafter.

B. Performance Criteria: Design passenger elevators to manage the highest demand. The following criteria are intended for a high-rise building with a central elevator lobby:

Passenger Elevator Selection Criteria

Floors Served	Speed		Machine Type
	m/sec.	(fpm)	
2 to 3	065 to 0.75/1.00	(100 to 200)	MRL
3 to 10	1.00 to 1.75	(200 to 350)	Traction / OHMR / MRL
7 to 13	1.75	(350)	Traction / OHMR
13 to 15	1.75 to 2.50	(350 to 500)	Traction / OHMR
15+	2.50+	(500+)	Gearless / OHMR

MRL = Machine Roomless
OHMR = Overhead Machine Room

1. Design passenger elevator performance with a calculated average interval of 40 to 45 seconds during periods of heavy 2-way traffic using a minimum handling capacity of 12% of guest population, with 1.75 occupants per guestroom in 5 minutes at 100% occupancy.
2. Adjust occupants per guestroom based on property use; verify with MI.
3. At property over 700 guestrooms use 2.0 occupants per guestroom.
4. Assume ballroom is fully occupied by guests not staying in property guestrooms.

C. Location: Central to guestrooms served.

1. Visible from front desk at Lobby.
2. Do not open elevators directly on guest corridors.
3. Provide a vestibule or foyer to define a waiting area.
4. Serve parking, if present, with separate shuttle elevators per Loss Prevention Review process **<16>**

D. Sizes (Passenger):

1. Capacity: 1600 kg (3,500 lbs.); in addition to special interior finish material loads, such as wood paneling, millwork, tile and stone.
2. Hoistway Entrance: 1070 x 2140 mm (3'-6" x 7'-0") minimum; center opening doors.
3. Cab: 2030 x 1650 mm (6'-8" x 5'-5") inside dimensions with 2900 mm (9'-6") cab height to accommodate a 2400 mm (8 ft.) light trough.
4. Convention & Large Hotels: 1800 kg (4,000 lbs.) capacity are preferred to manage large group schedules.

E. Cab Interior Construction: Coordinate passenger elevator cab construction with interior design. See Module **<2>** and the example diagrams and finish notes in this Module that represent the quality level of interior design.

1. Enclosure: Steel shell with interior finish materials.
2. Floor: 20 mm (¾ inch) tongue and groove plywood to receive thinset 10 mm (⅜ inch) tile, or stone.
3. Interior Walls: Millwork panels comply with requirements for flame spread and smoke development. Fabricate cab wall panels so that wall panels can be easily removed for maintenance and replacement without disassembling the cab.
4. Passenger Grab Rail: 3.8 cm (1½ inch) diameter, stainless steel rail with supports.
5. Identification Labels: Manufacturer's identification labels not permitted in cab.
6. Ceiling: Fabricate ceiling and lighting fixtures so lighting and fixture components are easily accessed for maintenance and replacement without disassembly of ceiling components.
7. Electrical: Coordinate for LCD T.V.

F. Destination Dispatch (DD) Control: When desirable for improving elevator calls at lobby by reducing passenger wait time, consider Destination Dispatch (DD) control systems (available from major elevator companies).

The DD controls, rather than the typical up and down buttons in the elevator lobby, have passenger call registration terminals to provide higher elevator service quality when the following building and passenger elevator design conditions exist:

1. Multiple Function Space Floors: When conference and meeting rooms are on multiple floors.
2. Elevators not Serving Same Floors: When groups of elevators do not serve the same floors. Example, only two elevators of a four car group service the lower level parking structure.

3. Group of Four Elevators or More: When there is a group of four elevators or more.
4. Comparison Study & Recommendations: Provide a full comparison study by the project elevator consultant to show performance of DD compared to standard passenger elevator call system and recommendations for DD control system.

12.5 High Speed Elevators

A. **Program:** In tall buildings, high speed elevators are typically considered for higher performance. High speed elevators travel between 300 to 500 mpm (1000 to 1600 fpm) and require special design considerations to minimize noise, vibration and good ride quality.
   1. Configuration: Same as passenger elevators for size, capacity, cab interiors, lighting, ventilation, etc.
   2. Quantity: Provide quantity necessary to meet performance criteria, but no less than two elevators in each location.

B. **Application:** Provide high speed elevators when elevators pass through an express zone of 20 or more floors without stops. To provide acceptable ride quality, comply with elevator manufacturer's recommendations and the following design criteria:
   1. Roller Guides: Heavy duty roller guides not to exceed 350 rpm.
   2. Car Slings: Extended car slings with side stiles not less than 5 m (16 ft.).
   3. Cab Walls: Double insulate cab walls to minimize ride noise.
   4. Rails: 8.4 kg (18.5 lb.) minimum main guide rails and 6.8 kg (15 lb.) minimum counterweight guide rails.
   5. Rail Brackets: Guide rail brackets with heavy duty connecting fish plates.
   6. Wire Rope Compensation: With tie down sheaves in pit.
   7. Wind Shrouding: Locate on top and bottom of car.
   8. Hoistway Size: Consider oversized hoistways to reduce air noise and vibration.

C. **Performance Criteria:** For high speed elevators, comply with the project elevator consultant recommendations and passenger elevator criteria.

12.6 Shuttle Elevators

A. Program: Provide passenger elevators designed to shuttle people between the street Entry, Lobby, Function floors (but not connecting to guestroom floors) and parking.

1. Configuration: Same as Passenger Elevators above for size, capacity, cab interiors, etc. unless MI dictates other project requirements.
2. Quantity: Provide quantity necessary to meet performance criteria, but no fewer than two in each location unless provided for disabled person access only.

B. Application: Typically, shuttle elevators serve floors that are accessible to guests and the public (but not guestroom floors) such as the following:

1. Street Lobby to property Lobby.
2. Parking structure, if present, to Lobby.
3. Lobby to Function areas, Ballrooms and Meeting Rooms (typically a grand or public staircase also connects these floors).

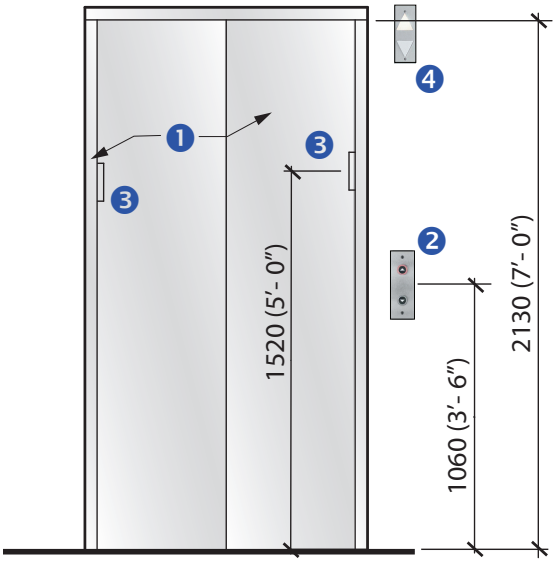
C. Performance Criteria: Provide shuttle elevators in compliance with the following:

1. Street Entry to Lobby: Base quantity on same criteria used to determine number of guest passenger elevators plus 20% additional for visitors (minimum of 2 elevators).
2. Parking Structure to Lobby: Base quantity on handling 10% of parking population estimated at 1.3 persons per parking space on elevators during 5 minutes of heavy 2-way traffic with average interval not exceeding 60 seconds (minimum of 2 elevators if stairs not accessible).
3. Function Area to Lobby: Transport a Ballroom full of guests to the entry Porte Cochere within 30 minutes.
   a. Estimate elevator occupancy at 15 sq. ft. per occupant in Ballroom and 35 sq. ft. in Meeting Rooms (minimum of 2 elevators). This criteria is not used for fire exit capacity; see Module **<14>**.
   b. If an open public or grand stair connects the Ballroom directly to the Lobby, 50% of the capacity can be assigned to the stair.

D. Vestibules: Provide separate vestibules or foyers at shuttle elevator stops that open to Lobby. Where possible, provide passive observation by locating the passenger circulation and shuttle elevator in view of the Lobby Front Desk.

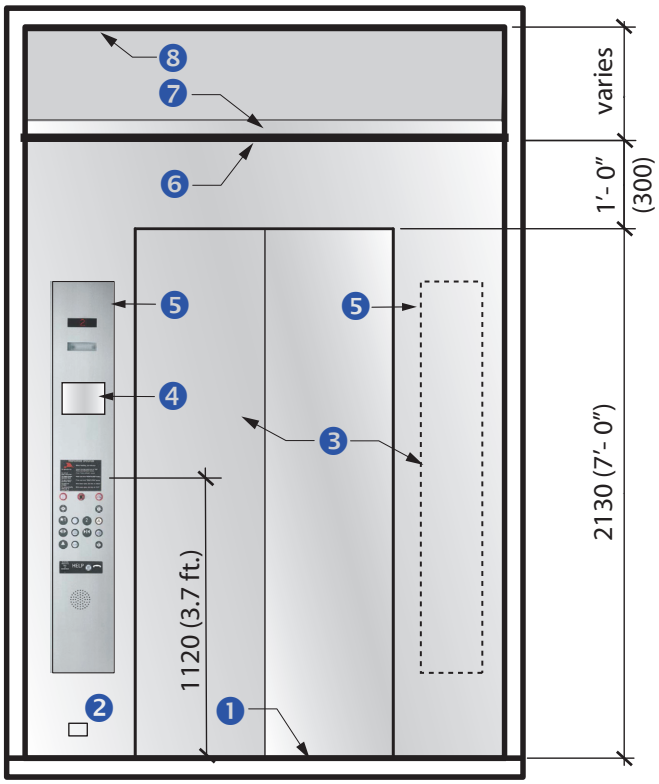
***Figure 1* - Passenger Elevator - Example Diagrams**

Exterior Elevation at Major Public Areas, Guest & Minor Public Areas



1. Entry Door and sill
   Major Public Areas: 14 gauge brushed stainless steel or bronze frame; applied 16 gauge stainless steel or bronze finish doors and sill.

   Guest & Minor Public Areas: 14 gauge steel frame and baked enamel door finish with solid aluminum or stainless steel sill.
2. Hall Call Buttons:
3. Floor Indicator: Raised number and in Braille
4. Hall Lantern: Up and Down indicators with audible signals, 1 for up, 2 for down at each floor. Provide integral digital car position indicator at public floors.



Front Elevation Interior

1. Cab Floor Finish:
   Hard surface such as selected stone for Lobby.
2. Electrical Service: Convenience outlet with matching metal cover plate.
3. Interior Doors & Side Panels: Stainless steel, No. 4 brushed finish or bronze.
4. Firefighter's Lock Box: Comply with governing code and coordinate its location with MI Design Management and Interior Design.
   Certificate Frame: Provide if required by code. Typically, provide signage indicating that certificate is on file in the Engineer's Office of the property.
5. Operating Panel: Lighted buttons, typically 3 to 4 rows wide; controlled access with electronic card reader, same as required for guestroom system **<16>**. Two panels at properties with 400 guestrooms.
6. Ceiling: Decorative, suspended ceiling design; coordinate material selection with Lobby interior design.
7. Lighting: Decorative lighting on dimmer control - coordinate with entry Lobby interior design
8. Overhead Ceiling Space: Paint flat black above suspended ceiling in passenger elevator.

12.7 Service Elevators

A. Program: Provide service elevators for Guestroom service, Housekeeping, F&B service and facility maintenance.

1. Service Operation: Consider providing a dedicated service elevator to Guestrooms at large properties where service operations **<11>** may interfere with service elevator capacity for general housekeeping or if service elevator is remote from room service. **<10>**
2. Food Service: **<10>** Verify that food service equipment (banquet equipment, portable service bars, etc.) required to be transported on service elevators are sized to fit through the elevator door and within the elevator cab.

B. Planning Guide: Typically, provide a minimum of one service elevator for low and mid-rise guestroom towers.

1. Additional service elevators are required when serving:
   a. Guestroom Towers: more than 20 floors.
   b. Large Function or Exhibit Areas: above or below support areas.
   c. Service Areas: remote from the guestroom tower.
2. Minimum of 2 elevators at each bank in areas of the world where service and parts are not immediately available and passenger elevators cannot serve as backup.

C. Performance Criteria: The highest demand on the guestroom service elevators is in the morning with staff start up and room service.

Verify adequacy of "quantity" established by given rules based on calculations using the following criteria.

Service Elevator Selection Criteria

Floors Served	Speed		Machine Type
	meter / second	(fpm)	
2 to 10	1.00 to 1.75	(200 to 350)	Traction / MRL /OHMR
7 to 13	1.75	(350)	Traction / OHMR
13 to 15	1.75 to 2.50	(350 to 500)	Traction / OHMR
15+	2.50+	(500+)	Gearless / OHMR

MRL = Machine Roomless
OHMR = Overhead Machine Room

1. Calculation: Provide service elevator performance with an average interval of 60 seconds or less during a five minute period of high demand utilizing 150% of the average per the following Service Elevator Calculation Data.

Service Elevator Calculation Data		
Function	**One-Way Trips**	
Room Service, up / down (assume 25% rooms served)	75 x 2	150 (up w/ food, down w/ staff only)
Room Service cart pickup (assume 20% of service trips)	20% x 150	30
15 housekeepers, up only		15
4 housekeeping, up / down	4 x 2	8
4 repair persons, up / down	4 x 2	8
8 bellmen, up / down	8 x 2	16
4 supervisors, up / down	4 x 2	8
2 miscellaneous, up / down	2 x 2	4
Total for heavy 60 minutes		239 trips
Heavy 5 minute period		(125% x 239) / 12 = 25 trips
Assume that loading and unloading of staff person or staff person plus their load (cart) averages 6 seconds per trip.		

2. Staff / Cart Movement: Trips shown for staff and cart movement are for heavy hourly service for a 300 room property (for different property sizes, extrapolate the values shown):

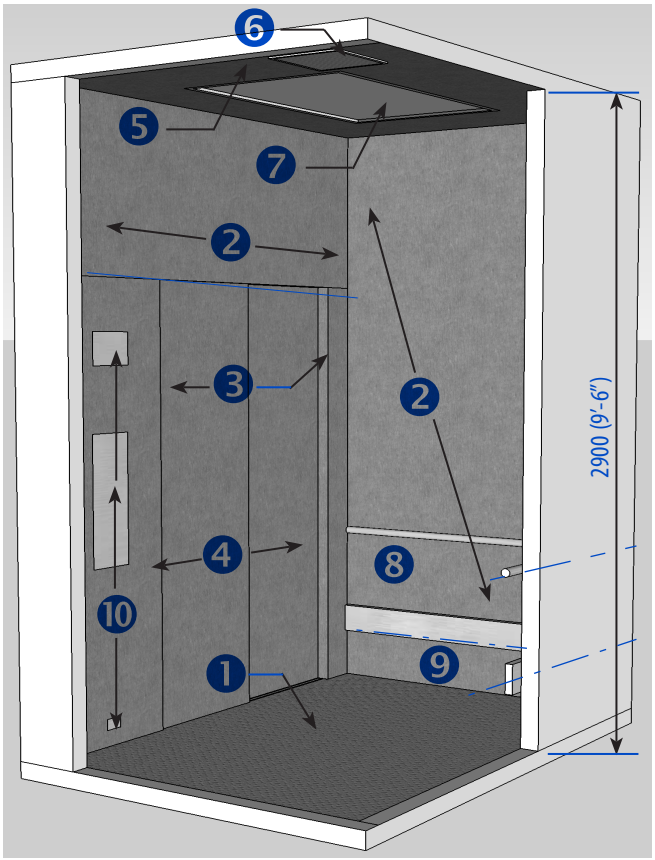
D. Location: Centrally located to guestrooms served.

1. Adjacent to main BOH service corridor near room service, Housekeeping and Engineering.
2. Provide vestibule or foyer prior to opening on guestroom corridor.
3. Consider utilizing passenger elevator (capacity and cab size) with interior cab features for service at secondary locations primarily utilized by service personnel.

E. Sizes: The following is the preferred service elevator minimum sizes.

1. Capacity: 2000 kg (4,500 pounds). Verify with MI the ASME A17.1 Code Class 'C' loading design if required for designated service elevators.
2. Cab Inside Clear: Approximately 1700 width x 2400 mm depth (5'-8" x 8'-0").
3. Cab Height Inside: 2900 mm (9'-6") minimum.
4. Doors: 1220 mm wide x 2400 mm high (4 x 8 ft.), side opening.
5. Convention & Large Hotels: 2260 kg (5,000 lbs.) capacity are preferred to manage large group schedules.

***Figure 2* - Service Elevator Cab - Example Diagram**



Notes: Service Elevator Cab

1. Floor Finish: Aluminum diamond plate, slip resistant.
2. Side Walls & Panels: Rigidized stainless steel, No. 4 brushed finish.
3. Doors: Hoistway and cab side panels; stainless steel, No. 4 brushed finish with stainless steel sill.
4. Door Opening: 122 cm (4 ft.) wide x 240 cm (8 ft.) high.
5. Overhead: Stainless steel (no suspended ceiling).
6. Exhaust Grille: Stainless steel grille with exhaust fan by elevator manufacturer.
7. Lighting: 61 x 122 cm (24 x 48 inch) fluorescent fixture, recessed flush with overhead and protective cover on cab top.
8. Handrail: 3.8 cm (1 ½ inch) diameter stainless steel; mount 82 cm (32.4 inch) above cab floor.
9. Bumper Rail: Stainless steel flat bar; mount 33 cm (13 inch) to center of rail from cab floor.
10. Operating Side Panel: Provide certificate frame, floor indicator, operating panel and power outlet.

12.8 Freight Elevators

A. Program: Provide when required to transport exhibit materials from grade or receiving area to a large ballroom or exhibit space at a different floor.

B. Size: Capacity and platform size determined by project requirements.

1. Load Class: Verify application of ASME Class loading requirements with MI.
2. Platform Size: Approximately 2.4 x 3.6 m (8 x 12 ft.) or as dictated by project requirements.
3. Vehicle Access: When required by project design, provide platform of 2.4 x 6 m (8 x 20 ft.).

C. Doors: Provide the following:

1. Power operated, vertical biparting
2. Overhead cab and door clearance of 3 m (10 ft.) minimum

D. Hydraulic:

1. Unit Protection: Protect buried hydraulic jack units with sealed PVC outer casing.
2. Oil / Electric Line Protection: Avoid locating oil and electric lines underground. If required, enclose in PVC pipe.
3. Fluid: Provide non-petroleum or bio-degradable fluids designed for hydraulic lifts.

12.9 Escalators

A. Program: Consider escalators in combination with stairs and elevators when entrances, lobbies and large ballroom / meeting areas are in high traffic locations, at different floors or located above or below the main property arrival floor, and where stairs alone are not a practical and convenient means for vertical circulation.

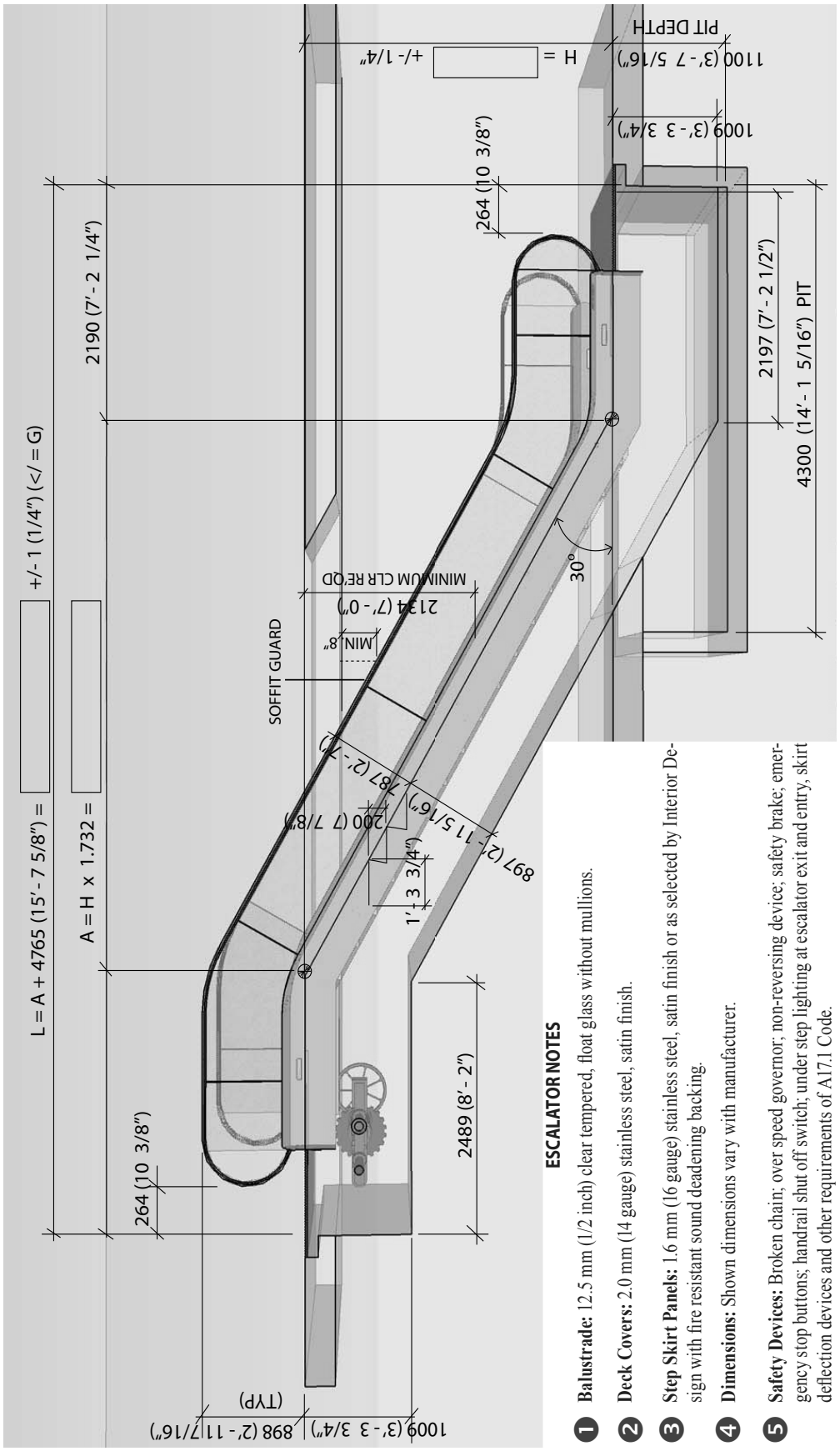
1. Size: 102 cm (40 inch); step (tread) width
2. Speed: 90 to 100 fpm maximum

B. Location: Position escalators in a logical path of travel for guest and public, not as the area focal point, and to avoid a commercial appearance.

C. Features:

1. Balustrades: Transparent for freestanding units
2. Trim / Side Panels: As selected by Interior Design.
3. Finish Material: Stainless steel and bronze
4. Safety: See “Escalator Example” diagram in this Module.

Figure 3 - Escalator Section - Example Diagram



ESCALATOR NOTES

1. **Balustrade:** 12.5 mm (1/2 inch) clear tempered, float glass without mullions.
2. **Deck Covers:** 2.0 mm (14 gauge) stainless steel, satin finish.
3. **Step Skirt Panels:** 1.6 mm (16 gauge) stainless steel, satin finish or as selected by Interior Design with fire resistant sound deadening backing.
4. **Dimensions:** Shown dimensions vary with manufacturer.
5. **Safety Devices:** Broken chain; over speed governor; non-reversing device; safety brake; emergency stop buttons; handrail shut off switch; under step lighting at escalator exit and entry, skirt deflection devices and other requirements of A17.1 Code.

12.10 Systems Coordination

A. Reference: Coordinate with requirements of other Modules including:

- GR General Requirements
- 13A Information Technology Infrastructure
- 13B Telecommunications
- 13C Audio / Visual
- 14 Fire Protection & Life Safety
- 15 Mechanical - Plumbing - Electrical
- 16 Loss Prevention

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STANDARDS

MODULE

13

PROPERTY TECHNOLOGY

13A - IT Infrastructure

13B - Telecommunications

13C - Audio / Visual

May 2014

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STANDARDS

MODULE

13A

INFORMATION TECHNOLOGY INFRASTRUCTURE

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

IT Infrastructure

13A.1 Engagement Process

A. Project Contact: Marriott International (MI) Continental Technology Representatives (CTR) are assigned to projects by the Continental Vice President Information Resources.

1. The CTR is the primary contact regarding technology, providing interpretation and additional information for clarification of the technology design direction.
2. Contact information is located at the end of this Module.

B. Brand Essentials: This Module defines the essential requirements and recommendations for computer based integrated technology required to operate a MI property. Brand Operational Standards provide governance for Brand specific technologies.

C. IR Continental Supplement: In order to concisely address continental conditions, project variables and the fast pace of technology change, an IR Continental Supplement and detailed network requirements document may be provided to define MI requirements for physical infrastructure, cabling, system specifications and related criteria. MI provides the current edition of the IR Continental Supplement and assists with customizing the continental requirements to the project.

D. IR Updates: The technology requirements are current as of the publication date. However, due to the length of project design and construction schedules and the fast pace of technology change, updates are required. Verify that the project conforms to the then current brand and technology standards to avoid procurement of obsolete or inappropriate equipment and systems that are unable to support the property opening.

E. Multi Use Projects: This Module defines systems for a single use, stand alone project such as a hotel or residence. When the project includes more than one building type and ownership, consult with CTR to determine the appropriate degree of technology integration or separation.

F. Design Review: In order to verify compliance with Standards and design intent, establish a review schedule with CTR. Review the proposed cabling, network equipment, power and space planning design documents during the design phases prior to construction contract award in order to minimize changes.

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

MI - Marriott International (includes all Brands)
CTR - Continental Technology Representative
IR - Information Resources
IT - Information Technology

Continental Technology Representative (CTR)

At the initiation of the project design, contact the CTR to outline system requirements based on the project location, site, operations and regional systems.

G. Industry Standards:

1. General: Materials and equipment utilized in the property's cable plant are manufactured, installed and tested as specified in the latest editions of applicable publications, standards, rulings and determinations of the following industry standards.
2. Testing / Labeling: Standards for post-installation inspection and testing of cabling plant, cable labeling standards and documentation are covered in the IR Continental Supplement and the Global Property Network Standards.
3. Standard Priority: If there are conflicts between data in *Tables 1 & 2* and the industry standards, the industry standards govern.
4. Reference Standards:
   a. American National Standards Institute (ANSI)
   b. Telecommunications Industry Association / Electronics Industry Alliance (TIA / EIA)
      - TIA / EIA-568-A-B, Commercial Building Telecommunications Cabling Standard
      - TIA / EIA-568-B.3-1, Optical Fiber Cabling Components Standard: Addendum 1 - Additional Transmission Performance Specifications for 50 / 125 micron Optical Fiber Cables
      - TIA-492AAAC, Detail Specification for 850-nm Laser Optimized, 50-micron Cladding Diameter Class Ia Graded-Index Multimode Optical Fibers
      - TIA / EIA-569-A, Commercial Building Standard for Telecommunications Pathways and Spaces
      - TIA / EIA-606 The Administration Standards for the Telecommunications Infrastructure of Commercial Building
      - TIA / EIA-607 Commercial Building Grounding and Bonding Requirements for Telecommunications
   c. American Society for Testing and Materials (ASTM)
   d. Building Industry Consulting Services International (BICSI)
   e. Federal Communications Commission (FCC)
      - FCC Part 15 (addresses electromagnetic radiation).
      - FCC Part 68 (connection of premise equipment and wiring to the network)

f. Insulated Cable Engineers Association (ICEA)
g. Institute of Electrical and Electronic Engineers (IEEE) 802.3ae, Media Access Control (MAC) Parameters, Physical Layer and Management Parameters for 10Gb / s Operation
h. National Electric Code (NEC)
i. National Electrical Manufacturers Association (NEMA)
j. National Fire Protection Association (NFPA 70) m. Underwriters Lab (UL) n. Governing Building Codes

H. Payment Card Industry (PCI): The PCI Data Security Standard is a mandatory global set of requirements for any organization that stores, processes or transmits credit card data.

For more information about PCI DSS, see the following website:

https://www.pcisecuritystandards.org/security_standards/

Failure to comply may lead to financial penalties. Many of the 200+ requirements dictate the functionality required of infrastructure and how it is installed, configured and maintained and the details pertaining to physical security and access to external networks.

The CTR liaisons with MI Information Security group to ensure that the current requirements are implemented for new projects. When evolving standards impact the ~~Design~~ Standards, the CTR informs the project developer and the MI Project Manager about required amendments to implement the PCI compliant solutions for the new opening.

I. Physical:

1. Future Planning: MI strongly recommends discussing methods of future proofing the property's network installation with CTR to reduce future retrofit cost.
2. As-Built Assessment: CTR reviews "as-built" conditions versus documented design plans and identifies corrective measures necessary if IT requirements are not resolved.

13A.2 Wired LAN

A. Cable Types: Two general cable types are utilized for data and voice networking:

1. Copper
2. Fiber

B. Cable Selection: The commonly used cable types utilized at MI Branded hotels and associated distance limitations are outlined in *Table 1*.

***Table 1* - Characteristics of Copper & Fiber**

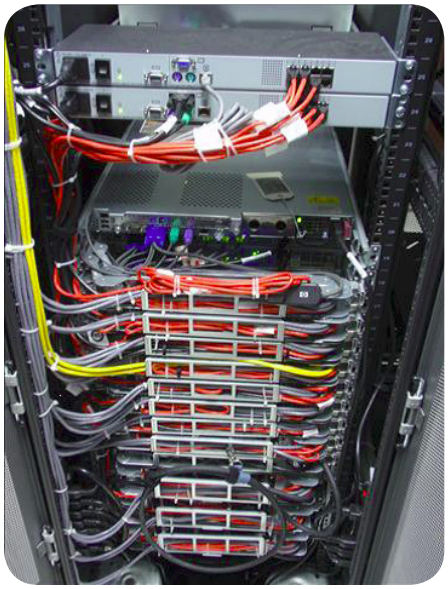
Cable Type	Specification	Distance Limitations	Comments
Copper	Category 5e or higher	90 m (295 feet) from patch panel to outlet	Category 5e is the minimum standard for 10 / 100 Mbps Ethernet unshielded twisted pair (UTP) [8 conductor / 4 pair, 24 gauge] LAN drops and patch cables. Owner may elect to implement UTP cabling of a higher grade such as Category 6 at their discretion or based on product availability in market. Shielded or plenum rated cabling is utilized as dictated by governing code or applicable standards as outlined previously in this Module.
Fiber	Multimode	Distance limitations vary depending upon the light source used, the light source wavelength (850 nm or 1310 nm), the fiber characteristics (50 µm / 125 µm fiber or 62.5 µm /125 µm fiber)* and potentially the speed of the connection (e.g., 100 Mbps, 1 Gbps, 10 Gbps). In general, if there is a difference in the distance limitations for 50 µm / 125 µm vs. 62.5 µm /125 µm multimode fiber, the 50 µm / 125 µm multimode fiber covers a longer distance. Consult specifications for equipment manufacturers devices that are connected to the fibers. * First number specified is the diameter of the core (in micrometers); the second number specified is the diameter of the cladding (in micrometers) for devices connected by the fiber.	Used when distance limitations for copper cabling are exceeded but distance limitations do not warrant use of single mode fiber. The fiber connector type is determined by the connector types supported by the equipment vendor on the connected equipment.
Fiber	Single mode	Distance limitations vary depending upon the light source wavelength (1310 nm or 1550 nm) utilized in the equipment. Light sources that operate at 1310 nm are typically used for short to moderate distance applications, while light sources that operate at 1550 nm wavelength are typically used for long distance applications. Consult equipment manufacturers specifications for devices that are connected to the fiber.	Typically provided when distance limitations for multimode fiber are exceeded. However, single mode fiber is also used in Passive Optical Networks (PON) and DAS Networks without regard to distance. The fiber connector type is determined by the connector types supported by the equipment vendor on the connected equipment.
Cable Length Calculations: When estimating cable lengths and limitations, make certain that the vertical (floor-to-floor) component of the distance is included.			

1. Computers, access points, P.O.S. and other networked equipment are typically supported by copper Ethernet cabling. See Tables 2 & 3.
2. Questions regarding the appropriate use of cable types for horizontal or vertical backbone cabling, etc. are addressed during the design review process.

C. Cable Design & Management

1. Certification: Registered Communications Distribution Designer (RCDD) certifies cabling designs. Proof of design certification is presented to CTR when submitted for design review during the construction document phase.
2. Acceptance: CTR accepts the final design and placement of cable.
3. Provide twisted pair patch cables complying with the same standard as the station cabling.
4. Patch Panels:
   a. At IDF locations, provide a CTR accepted horizontal and vertical wire management system.
   b. Avoid installations with more than two patch panels in succession.
      - Leave room in the rack immediately following the two patch panels for network switches.
      - When provided in twos, provide a wire manager, one on each end, to border both.
   c. Terminate cables at patch panels in an orderly and logical fashion.
   d. Provide cable labeling scheme consistent with the Global Property Network Standard (GPNS).
      - Guest Room Patch Panel Labeling Scheme: (Room #) (Sequential Ethernet port within room) Example: 500 02 (Room 500, 2nd Ethernet port in room).
      - Wall Plate Labeling Scheme: (Floor # and IDF letter) (Sequential Ethernet port in room) Example: 4A 02 (IDF 4A, 2nd Ethernet port in room).
5. Documentation: Place copies of connecting documentation within each distribution closet on wall mounted slot for easy access and protection. Provide master documentation (soft and hard copy) for all locations to CTR for future reference and filing.
6. Cable Management: Provide Velcro type tie wraps (preferred), screws, cross-connect cable, support hardware, etc. and necessary components for complete cable management.
7. Cable Length Calculations: When estimating cable lengths and limitations, make certain that the vertical (floor-to-floor) component of the distance is included.

Figure 1 **- Patch Panel - Examples**



13A.3 Wireless LAN

A. General: Wireless LANs are required to provide guests with Internet access in guestrooms, public areas (Function Areas, F&B, Lobby, Pools, Fitness, etc.) and employees with access to business applications in public and back of house areas required to support business applications. Contact your CTR for project guidance. LAN engineering is required for VoIP access to business applications.

B. Site Surveys:

1. Conduct two mandatory wireless site surveys by a qualified, CTR acceptable, wireless integrator to ensure adequate signal throughout the project coverage area. Depending upon the size of the property, the initial desktop survey can be performed using a passive (application generated) survey of signal and noise statistics. The second physical survey must be conducted following the completion of the wireless installation.
   a. Initial Desktop Survey:
      - Conduct the initial survey by computer modeling based on construction documents.
      - Identify architectural and structural elements that obstruct or diminish wireless signal strength.
      - Conduct survey prior to completion of the low voltage drawing.
   b. Physical Survey:
      - Conduct the second survey on site following substantial completion of the exterior building envelope (roof and walls) and interior partitions to account for the impact of building materials (drywall and windows) and sources of EMI / RFI signal strength.
      - Provide details on items not yet installed involving water and large metal objects.
      - Consider the presence of special coatings or materials (e.g., UV) on windows if the interior wireless access points are intended to provide coverage of exterior areas.
   c. Physical Survey Report: Include the following information:
      - Map of signal, noise and user performance
      - Coverage by SSID
      - Power level by access point
      - The physical survey provides frame data rates, packet retries and error rates.

C. Power Over Ethernet (POE): Power is provided to the wireless access points through the use of POE [IEEE standard 802.3af].

1. The current standard for POE is outlined in the IEEE 802.3at standard.
2. When POE is utilized, there is an impact on the LAN switch models / modules used and therefore on the LAN switch infrastructure cost.
3. The use of POE may impact power and cooling requirements for the IDF / MDF where POE switches are located.

D. Wireless Access Point Antennas: There are many available types of antennas used with wireless access points.

- Ensure the appropriate antenna types are provided for the specific areas (e.g., wireless access points located outside utilize antennas designed for exterior use).
- Ensure the Design Team is aware of the antenna dimensions so they can provide the appropriate space in the design.
- Contact the CTR for specifications of accepted Wireless Access Point Antennas in compliance with the Global Property Network Standards (GPNS).

E. Wireless Standards: Summarized in *Table 2*. Wireless access points at MI properties support 802.11a / b / g / n. Detailed wireless standards are defined in the current version of GPNS 802.11 Wireless Requirements.

F. Wireless Access Points Installation / Configuration:

1. Install wireless coverage on guestroom floors as determined by the Wireless Modeling and Surveys. This typically equates to a ratio of one traditional wireless access point for a maximum of 6 guestrooms assuming a stick frame construction.
2. Where dense construction materials are provided, a ratio of 4 guestrooms or less for each access point may be required. Consult the CTR for site specifics.
3. Ideally, locate access points centered in the guestroom corridors, on ceilings or walls.
4. If providing an access point incorporated into a wallplate network switch (such as *Motorola 6511*, *Ruckus 7025* or equivalent), provide minimum of one device for each guestroom.
5. Secure wireless access points (for example, in locked cabinets or in lockable covers) that carry from physical access by unauthorized personnel.

A Note About Wireless Access Points

In converged networks, all wireless access points are considered capable of carrying associate back office traffic, regardless of their physical location at the property.

G. Wireless Connectivity to Outlying Buildings: Wireless alternatives to wired connections to outlying buildings (golf shops, beach bars, pool side, food outlets, maintenance buildings, etc.) can be explored with CTR on a case by case basis.

H. Acceptable Wireless Vendors: Acceptable vendors are defined in the current version of the Global Property Network Standard (GPNS).

Table 2 **- Wireless LAN Standards**

Wireless Standard	Maximum Speed	Frequency	Range	# Channels / Non-over-lapping	Compatibility	Comments
IEEE 802.11a	54 Mbps	5 GHz	• Shorter range than 802.11b and 802.11g • Signal more likely to be obstructed by walls, floors, etc. than 802.11b and 802.11g	12 / 8	• Incompatible with 802.11b or 802.11g	• Use of regulated frequency band prevents signal interference from other devices • 100 Mbps Ethernet connection between switch and access point adequate
IEEE 802.11b	11 Mbps	2.4 GHz	• Better range than 802.11a	11 / 3	• Incompatible with 802.11a • 802.11b clients compatible with 802.11g access points (at 11 Mbps)	• Use of unregulated frequency band means that appliances (e.g., microwave ovens, cordless phones, etc.) can cause interference • 100 Mbps Ethernet connection between switch and access point adequate
IEEE 802.11g	54 Mbps	2.4 GHz	• Better range than 802.11a	11 / 3	• Incompatible with 802.11a • 802.11b clients compatible with 802.11g access points (at 11 Mbps)	• Use of unregulated frequency band means that appliances (e.g., microwave ovens, cordless phones, etc.) can cause interference • 100 Mbps Ethernet connection between switch and access point adequate
IEEE 802.11n	Over 100 Mbps per frequency band	2.4 GHz & 5 GHz	• Best signal range • Utilizes Multiple Input Multiple Output (MIMO) technology to improve performance and capacity	11 / 3	• Incompatible with 802.11a • 802.11n clients are compatible with 802.11 b/g access points at the relative speed of those standards • 802.11 b/g clients are compatible with most 802.11n access points and any CTR acceptable 802.11n access point	• More resistant to signal interference from outside sources; May interfere with nearby 802.11 b/g based networks • Power injectors for 802.11n access points adhere to 802.3at that requires more power than the 802.3af standard that applies to power injectors for 802.11 a, b, and g access points. This may affect Ethernet switch model / module selection and power

13A.4 Cellular Phone Coverage

A. General: Multi- carrier cellular service with 3G / 4G network coverage is required in all public areas, administrative areas, guestrooms, meeting areas, and residences.
Good cellular phone coverage is frequently a consideration when meeting planners and guests select a property.
Lack of good coverage is costly in terms of lost revenues from discerning guests.

B. Distributed Antenna System (DAS): (or similar alternative) Provide DAS in properties where in-building cellular coverage from one or more of the major cellular carriers servicing the hotel's geographic area is marginal or there is a strong desire to consolidate wireless technology used by property staff (e.g., utilize a single handheld device for two-way radio, paging and cellular).

1. Reference: For a high-level overview of the DAS technology, space / power / HVAC requirements, other considerations, and case studies, consult the Hotel Technology Next Generation document. This document can be obtained from the CTR.
2. Impact of Installation Timing on Cost: The cost to install DAS technology during initial construction is 10 to 15% less than retrofitting an existing building with DAS. Since each property is unique, each property must be assessed by a CTR accepted, qualified wireless integrator to provide accurate capital costs.
3. Head-End Equipment: For DAS installations, provide approximately 28 m^2 (300 sq. ft.) of space per carrier.

A Note About Cellular Phone Coverage Quality

Good external cellular coverage does not in any way guarantee good in-building coverage. While proximity to a carrier's tower is a major factor, a property's size, the building materials used to construct it (e.g., steel, reflective or hurricane glass), and the technology used by the carrier can greatly impact the degree of RF signal penetration into the building.

13A.5 Convergence

A. General: MI's converged network services, GPNS, offers owners an opportunity to implement a more streamlined low voltage cable plant and potentially eliminate various cables.

Technologies that support converged services are changing rapidly and individual network solutions vary from supplier to supplier, and may vary by specific application. MI's Hotel Technical Networking Specification are fully outlined in GPNS documentation available by contacting your CTR.

Only MI certified LAN Service Providers may be utilized to deploy and support a converged LAN. Contact your CTR for a list of the certified LAN Service Providers in your market.

B. Advantages: Deploying converged networks provides:

1. Simplified network and vendor management
2. Improved network security
3. Greater flexibility

C. Implications: The deployment of a converged network impacts the following:

- Switch functionality
- Switch model selection
- Switch module selection
- Switch / switch module quantities
- Switch configuration
- Cabling types and quantities
- Power requirements in computer room / MDF / IDF
- Cooling requirements in computer room / MDF / IDF
- Generator / UPS requirements
- Increased technical knowledge of IT personnel supporting infrastructure

A Note About Converged Network Switches

In a converged network, all switches at the property are considered capable of carrying Associate back office traffic, including those that service guestrooms and public areas.

13A.6 Network Components

A. Router: MI provides a router that meets PCI Data Security Standards and MI Standards.

1. The router provides the property with a connection to MI's data center and is managed by MI or an MI assigned entity.
2. The router is installed in the Computer / Telecom Room.
3. In certain locations, provide a MPLS connection by a MI assigned entity. Consult the CTR for information.

B. Switches: Obtain switch standards from the CTR. The Owner is responsible for purchasing switches that comply with MI specified Standards. Do not procure non-accepted switch models. The approved network provider or property systems manager is responsible for installing, configuring and maintaining switches.

1. LAN Switches: Comply with MI Standards. Discuss switch functionality requirements with the CTR and verify that funds are budgeted in compliance with *Section 13A.5: Convergence*.
2. Source: Purchase network switches through accepted network providers. Obtain an accepted supplier list from the CTR.

13A.7 Cable Termination Points

A. General: *Table 3* provides information on the minimum number of cabling access point or "drops" needed per area to meet current IT infrastructure requirements. This table serves as a guideline based on general IT demand and usage by area. The CTR assists in determining the actual number of points necessary based on projected usage or utilization of each area.

B. Growth: It is extremely important to ensure that sufficient cabling is installed to permit growth, particularly in back-office and administrative areas.

A growth factor of 20% is required for the cabling backbone (MDF to IDF connections). Installing sufficient cabling for growth during initial construction is a minimum of 50% less expensive than installing additional cabling at a later date (the "pay as you go" model).

Locations vary based on project design, construction and equipment layouts. The following are typical cabling locations. Contact the CTR to clarify property specifics and required cabling locations not listed.

Table 3 **- Network Cabling and Power Outlet Termination Points Calculation**			
Location	**Calculation for Minimum # of Termination Points**		**Examples of Equipment Used**
	Network Connections	**Power Outlets**	
Back-of-House			
Administrative Offices	4 per workplace	4 per workplace	Computer, Phone, Printer, Fax
Call Center communication center	6 per desk	6 per desk	Computer, P.O.S., Phone, Printer, Fax, Key Encoder
Commercial Kitchen*	2 additional per counter* (extra to office space)	2 per counter	P.O.S. Printer, Phone
Receiving Area	4 per workplace	4 per workplace	Computer, Phone, Printer, Fax
Engineering*	4 additional in area for networked equipment* (extra to office space)	4 in area	Monitoring Equipment
Housekeeping / Laundry*	4 additional in area for networked equipment* (extra to office space)	4 in area	Uniform Management System
Housekeeping Stores on floor	2 per area	2 per area	Phone
Employee Dining	4 in area for networked equipment	4 in area	Phone, Computer, Time Clock, P.O.S.
Employee Dining Kitchen	2 in area for networked equipment	2 in area	Phone
Training Room	n+4 for the seating capacity of the room	2 each for the seating capacity of the room	Computers, Phone, Printer
Security Office*	6 additional for networked equipment* (extra to office space)	4 additional	IP VSS, Networked Equipment, Encoder
Employee Entrance	4 data per location	4 per location	Time Clock locations
Front of the House			
Front Desk workspace	7 per station	7 per station	Computer, Phone, Printer, Key Encoder, Credit Card Terminal & Printer
Concierge workspace	6 per station	4 per station	Computer, Phone, Printer, Encoder
Bell Man workspace	3 per station	2 per station	Computer, Phone, Printer
Restaurant Hostess	5 per station	5 per station	P.O.S. Terminal Computer, Phone, Printer, Credit Card Terminal
Restaurant P.O.S. Station	5 per station	5 per station	P.O.S. Terminal Computer, Printer, Credit Card Terminal
Bar	5 per work area	4 per work area	P.O.S. Terminal Computer, Phone, Credit Card Terminal, Printer
Service Bars	4 per work area	4 per work area	P.O.S. Terminal Computer, Phone, Printer
Retail Shop	6 per work area (extra to office space) (additional for Bank Card Terminals)	6 per work area (additional for Bank Card Terminals)	P.O.S., Phone, Printer, Gift Card Terminal
Spa*	2 additional per work area* (extra to office space)	2 additional per work area	
Spa Front Desk	6 per station (additional for Bank Card Terminals)	6 per station	
Business Center & Guest Business areas*	Boarding Pass Printing: 1 per PC, 1 per printer Guest Use: 1 per PC, 1 per printer Communal table: 1 per table	2 additional per work area	Computer, Phone, Printer
Guest Floor Lounge Reception*	7 per work area* (extra to office space)	6 per work area	Computer, Phone, Printer, Encoder

Specialty Locations			
Location	**Calculation for Minimum # of Termination Points**		**Examples of Equipment Used**
	Network Connections	**Power Outlets**	
Ballroom, Meeting & Boardrooms	Refer to Event Space Design and CTR		Phone, Computer, Networked Equipment
Guestroom	Minimum 6 per room however may require more pending room features.	Individual quad (4) outlets behind TV stand, desk and bedside table	Wardrobe, Refrigerator, TV, PI. Minimum - One Cat 5e or higher at bedside with RJ45 jack for analog telephone; two Cat 5e or higher at desk with one RJ45 and one locally accepted phone jack (such as RJ45 for PI or phone); One Cat 5e or higher at TV on RJ45; and One coaxial cable behind TV. May require additional cables for suite phones, Energy Management, in Room Control, etc.
Computer Room	4 per work station + as determined by specification	4 per work station	
Wireless Access	Connection as determined during the wireless survey		
Digital Signage	Most digital signage requirements conform with standard Ethernet cabling requirements. However, for some specialty locations there are vendors that still require a low skew cable to carry video. Consult with your digital signage vendor prior to finalizing plans for digital signage cable pulls. Consider requirements for elevator / lift signage data points.		Some digital signage locations require coaxial television feeds in addition to twisted pair. Review digital signage design with your audio visual consultant for cabling requirements.
Closed Circuit Television (CCTV)	Connection as determined by closed-circuit television requirements		See Module 16 for Video Surveillance System (VSS); coordinate requirements with this Module.
Audio Visual (A/V)	Determined during the AV requirements. (many systems use IP for distribution)		See Module 13C; coordinate A/V requirements with this Module.

Phone Only Locations - See Module <13B>			
Guest Elev. Lobby - all floors	Conference Rooms General Area		Storage
Service Elev. Lobby - all floors	Aerobics Room		Purchasing / Receiving
House Telephones	Exercise Room		Fire / Engineering Command Rooms
Lobby Lounge House Telephone	Receiving Area		Elevator Machine Room
Lobby Lounge	Pantries		Men's Lounge Spa (House Telephone)
Guest Floor Lounge House Tel.	Banquet Storage		Women's Lounge Spa (House Tel.)
Pool Telephone	Employee Lounge		Store Rooms
Spa Reception Area	Employee Locker Room		Loading Dock

* Termination points required in addition to the number of ports specified in "Administrative Offices" specified termination points. Identify additional areas based on the building diagrams.

13A.8 Computer / Telecom Room

A. General: The Computer / Telecom Room design revolves around the care and maintenance of the service equipment.

B. Functional Requirements: Provide the following:

1. Safe and secure location for server, PBX, computer and networking devices.
2. Stable and uninterrupted power required to maintain equipment.
3. A temperature and humidity controlled environment within the parameters indicated to operate the equipment.
4. Connectivity to other devices inside and outside of the Computer / Telecom Room.
5. Secure Storage: Provide a safe and secure area, 2.5 m x 3 m (8 x 10 ft) for equipment storage.

C. Location:

1. Avoid locating Computer / Telecom Room against outside wall and exterior windows to avoid unauthorized access.
2. Account for flooding and locate above the flood plain or storm surge level; always above the building ground floor.
3. Avoid locations under housekeeping, kitchens, guestroom water pipes and areas that are prone to water flooding.
4. Avoid locating utility plumbing, heating sources and systems adjacent to this room that present a risk to the normal operations of a Computer / Telecom Room.
5. Avoid locations within 10 m (33 feet) of water pipes, except for fire sprinklers.
6. Locate away from sources of electromagnetic interference (EMI) and radio frequency interference (RFI) such as electrical transformers, copiers, radio transmitters, sources of microwave transmissions, electrical motors, electronic ballasts, etc.

D. Room Design:

1. The preferred design is a single room with two main sections; one section for computer equipment and one section for vendor supported equipment such as MATV, telephone lines, DAS, etc. This arrangement simplifies operational maintenance and provides ease of use in converged networks.
2. Standards listed in this Module apply to Computer / Telecom Room, regardless of room design.
3. The telecom equipment and property computer equipment are secured in the following ways:

Figure 2 **- Computer / Telecom Room - Server Racks**

Figure 3 **- Work Station**

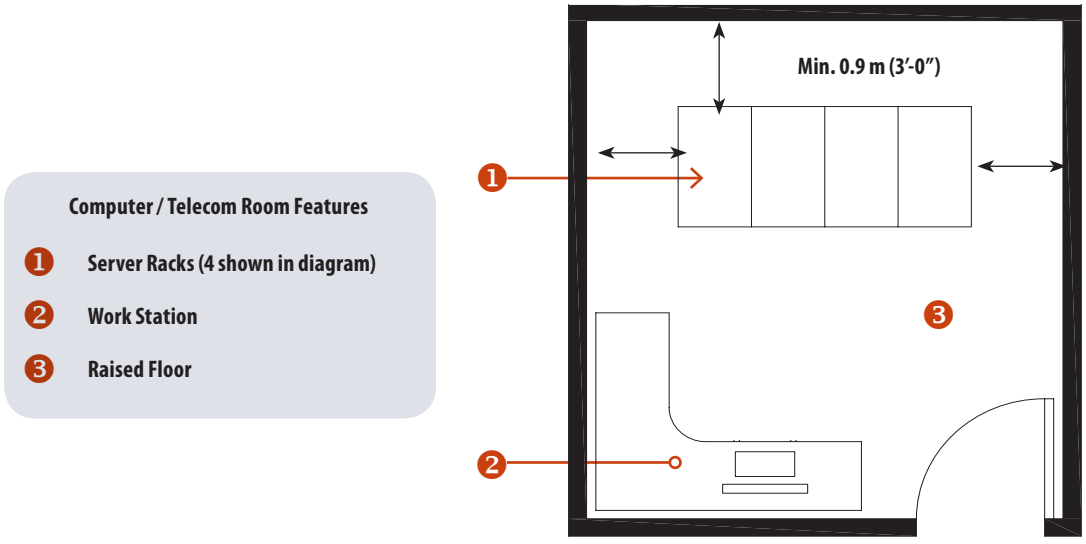
a. Connectivity: If it is not possible to locate the telecom and computer equipment in the same room, provisions for connectivity between the rooms, via conduit, are required. Provide accessible conduit end points of sufficient size to allow for future additional cabling.

b. Separation: Some local jurisdictions require the telecom equipment be separate from the primary guest systems. If the property's computer equipment and telecom equipment are located in the same room contact your CTR for local segregation requirements.

c. Security / Access Control:

- Provide access doors to the Computer / Telecom Rooms with a interrogative lock system (see Module **<16>**) with audit trail (such as magnet stripe or a RFID type lock). PCI standards require audit logs for 90 days. If locks with a 90 day log can not be procured, then purchase locks with audit logs that are downloadable to a PC.
- Provide Video Surveillance System (VSS) camera; Module **<16>**. Place camera such that it has a clear view of individuals accessing and working in the facility. Purchase VSS camera system with 90 days video storage. Position camera so video can clearly identify a person entering and exiting the computer room and install the camera so it is tamper proof.
- Avoid unnecessary ceiling and floor penetrations into the Computer / Telecom Room. When cable runs are complete, firestop penetrations through fire rated wall and floor assemblies and through acoustic rated walls and floors.

Figure 4 **- Computer / Telecom Room for 200 Room Property - Example**



d. Doors:
- Width: Use 1.1 m (3'-6") door to allow for equipment. Do not use split doors.
- Provide with swing action, self closing mechanism, and hinged on the interior.
- Provide with perimeter dust seals to maintain a dust free environment.

e. Floors, Walls & Roof:
- PCI Standard: Provide solid walls, concrete or masonry, on all four perimeter walls extending continuous from floor slab to structure above and sealed to avoid unauthorized access to room. If room includes an exterior wall, an additional wall may be required.
- Do not permit floor and roof openings that could provide computer room access or circumvent security systems and access controls.

f. Window & Wall Openings: No external windows and other openings are permitted within Computer / Telecom Room unless governing codes require natural daylight or ventilation.

g. Ramp: Provide ramp if raised floor grade change is required.

4. System Manager's / Information Resources Field Associate's (IRFA's) Office: Locate external to the Computer / Telecom Room.

a. Work Stations: Provide space for four standard work stations with continuous counter and accessible overhead storage cabinets.

b. System Manager's / IRFA's Office: If adjacent to Computer / Telecom Room, separate from equipment area by soundproof window and door that limits office noise exposure to 90 dBA. Discuss details with the CTR.

E. Size / Area:

1. Raised floor to ceiling requires at least 2.4 m (8 feet) to allow for the standard 42U racks.

2. Provide adequate space and access clearance for equipment and personnel. Verify area and location during design programming phase.

3. The example layout of the Computer / Telecom Room is shown in *Figure 4* and *Figure 8*.

Figure 5 **- Cable Tray - Example**

Figure 6 **- Raised Floor System - Example**

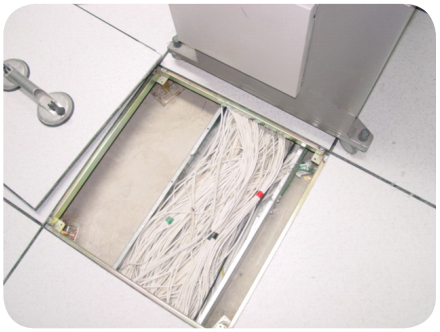
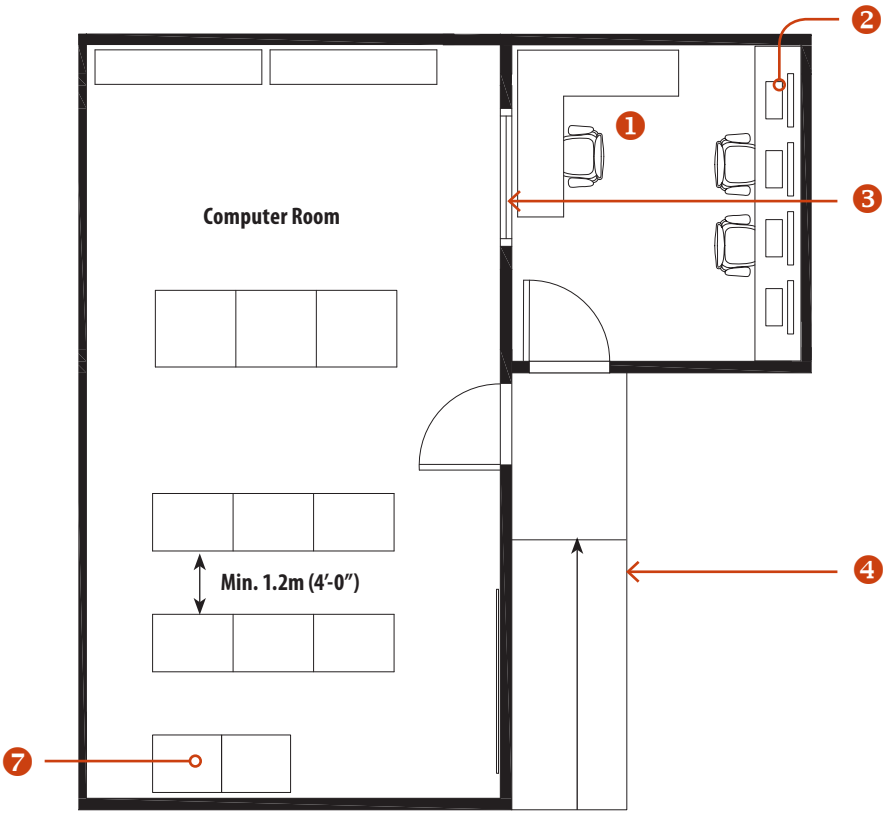


Figure 7 **- Server Racks - Example**

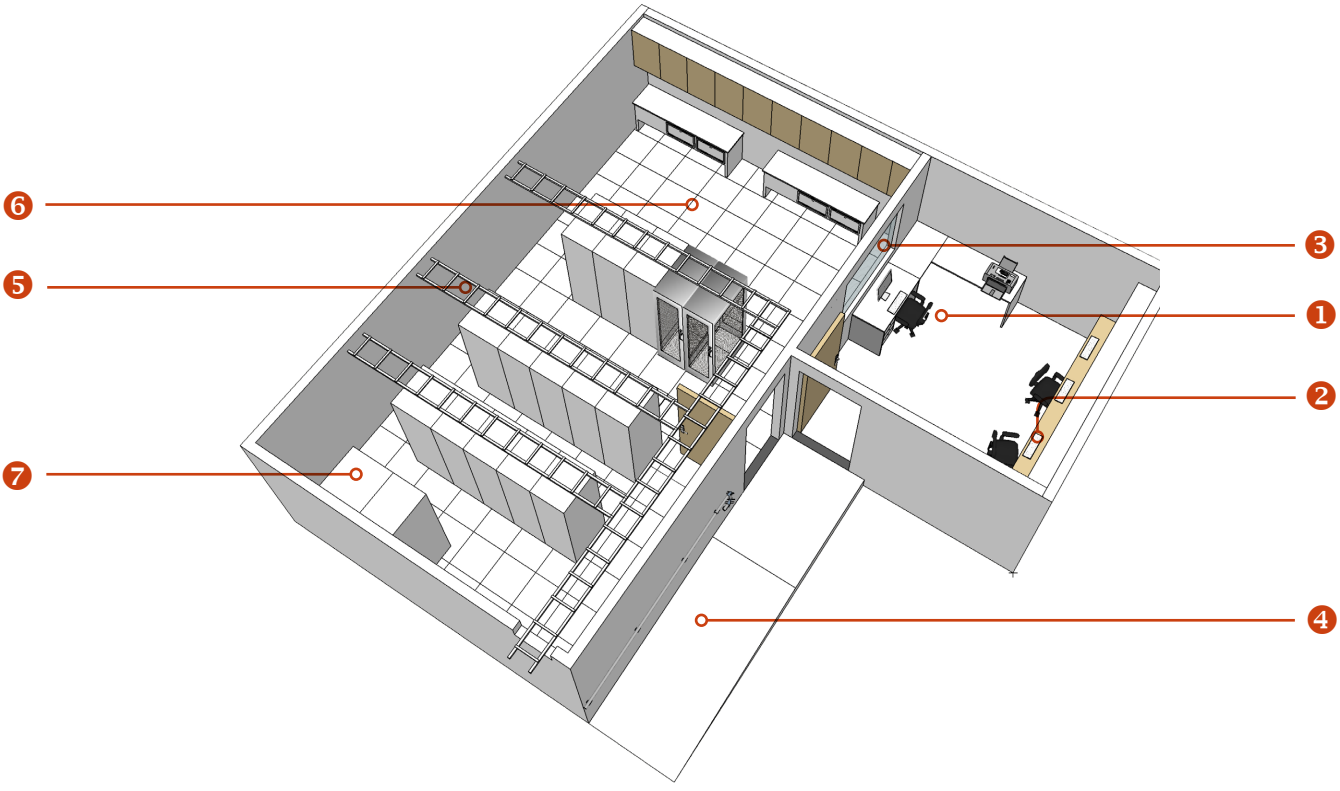
Figure 8 **- Computer / Telecom Room for 300 to 500 Room Property - Example Plan.**



Computer / Telecom Room Features

1. System Manager's / IRFA's Office
2. 4 Standard Work Stations
3. Observation Window
4. Ramp (only for raised floor)
5. Cable Tray
6. Raised Floor
7. HVAC Unit

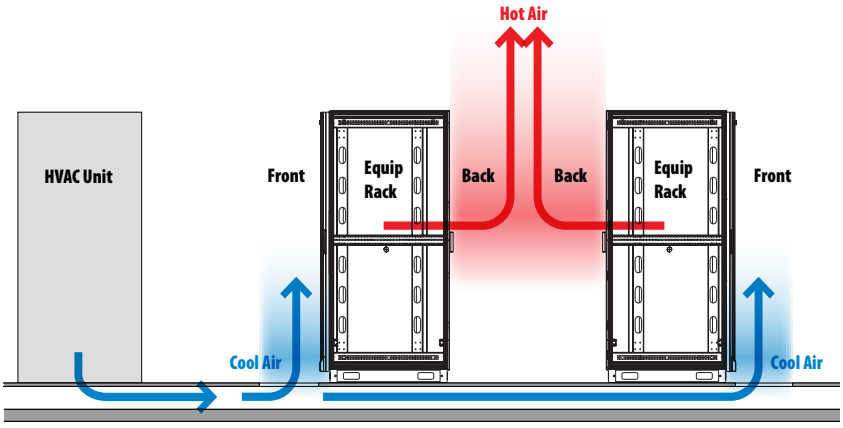
Example floor plan requires adjustment based on property size, equipment requirements, and governing codes.



F. Features:

1. Flooring:
   - a. Provide a raised floor with antistatic removable tiles tightly installed to avoid dust penetration [20 cm (8 inches) above sealed concrete slab].
   - b. Prior to installing the raised floor system, paint the concrete subfloor with epoxy paint or quality deck paint to reduce concrete dusting and flaking.
   - c. If a raised floor is not possible, cover floor with antistatic flooring.
   - d. Provide adequate drains below raised floor and non-raised floor areas. Slope floor to allow proper drainage and avoid standing water.
   - e. Provide grill tiles for air flow at locations designated for racks.
2. Rack Systems:
   - a. Racks securing property systems are locked at all times. Computing equipment is located in lockable racks.
   - b. The minimum distance between rack rows is 1.2 m (4'-0″) and in front and back of doors at least 0.9 m (3'-0″) free space. Racks allow for free-flow of air from front to back.
   - c. Place computer and telecom equipment in separate racks.
   - d. If a raised floor is not possible, install ladder racks for cable management within the room.
   - e. Consult CTR to assist with planning of rack layouts to optimize space and to provide inter-connectivity of racks and systems.
3. Walls:
   - a. Design and provide exterior, above and below grade, wall construction that prevents moisture penetration.
   - b. Paint all interior walls.
   - c. Cover telecom portion of the room with 19 mm (¾ inch) thick fire retardant plywood for:
     - The Telephone Company (Telco) Network / PTT (Post, Telephone, & Telegraph)
     - Minimum Point of Entry (MPOE)
     - Private Branch Exchange (PBX)
     - Main Distribution Frame (MDF)

Figure 9 **- Air Flow Diagram**



Raised floor ventilation concept shown. Solid floor concept is similar.

G. HVAC System Requirements: Room HVAC is designed per Module **<15>**.

1. Provide air conditioning to maintain room at constant temperature of 20° C (70° F) ± and a humidity of 50% or less.
2. Air conditioning system is dedicated to the Computer / Telecom Room and is separate from other building systems.
3. Design: Provide 2 air conditioning units sized to handle 65% of the peak load so that the maintenance or short term failure of one unit will not affect equipment performance.
4. Controls: Provide air conditioning system with a humidity and temperature gauge connected to the Building Automation System (BAS).
5. Air conditioning is designed so the airflow flows from the front of the rack to the back. *See Figure 9*.
6. Detector: Provide moisture detection sensors connected to the BAS.
7. Backup Power: **<15C>** Connect air conditioning system to backup power, separate from Computer / Telecom Room power.

H. Electrical:

1. Provide high and low voltage power for racks. Contact the CTR for specifics.
2. Power for the Computer / Telecom Room is a dedicated feed from the emergency distribution switchboard through one or more UPS units, treating and backing up the feed for 15 to 20 minutes. This feeds a circuit breaker panel board within the Computer / Telecom Room. Optional "whole room" UPS is recommended.
3. Provide a separate power circuit for utility appliances. Provide three to four convenience outlets for appliances (i.e. vacuum cleaners, fans, etc.) and label accordingly.

4. Refer to the IR Continental Supplement and contact the CTR for additional specifications on power receptacle deployment for:
   - Raised floor design
   - Aerial cabling design
5. Provide dedicated power with an isolated ground.
6. Circuit breaker panel for Computer / Telecom Room is dedicated to the room.
7. Provide the Telephone Utility demarcation point with a ground for network facilities. Install an accessible route between the external demarcation point and the Computer / Telecom Room to allow for additions.

I. Grounding:

1. Provide proper grounding in accordance with TIA / EIA-607 Telecommunications Bonding and Grounding Standard, the current National Electrical Code and applicable governing codes.
2. Grounding is required for racks, cabinets, raceways, cable trays and associated hardware that have the potential to act as a current carrying conductor.

J. Lighting: Provide rooms with emergency lighting systems. See Module **<15C>**.

K. Fire Protection & Life Safety:

1. For Fire Protection & Life Safety measures, see Module **<14>**.
2. Provide wire basket guards over fire sprinklers to avoid accidental contact and discharge.
3. At larger Computer / Telecom rooms, consider providing an accepted, dedicated water mist sprinkler system to minimize water damage to equipment.

13A.9 Intermediate Distribution Frame (IDF)

A. General: IDF Closets house the wiring and electronic equipment used to connect user work stations to the MI communications network.

- These closets are designed and intended for the intra-building distribution of centrally managed telephone, data communications and video services and are not used to support other building utilities. Locate closets so station wiring adheres to the distance limitations imposed by the Ethernet standards.
- Locate IDF Closets with direct access from public or back of house areas and not in guestrooms or other areas where access might disturb guests.
- Locate closets away from dust producing areas such as laundry, linen closets and other potential areas of towel lint and fibers.
- Secure room with a mortise interrogative lock system (see Module **<16>**) with audit trail (such as magnet stripe or a RFID type lock) and compatible with the guestroom system. PCI standards require audit logs for 90 days. If locks with a 90 day log are not available, then provide locks with audit logs that are downloadable to a PC.

B. Dimensions:

1. Size: IDF Closets serving up to 100 outlet locations are 1.8 x 2.4 m (6 x 8 ft.) minimum.
2. If more than 100 outlet locations are anticipated, the IDF Closet is sized on a case by case basis.
3. Ceilings: 2.7 m (9 ft.) minimum in height; false ceilings not allowed.
4. Door: 0.9 m (3 ft.) wide and 2 m (6′-8″) high minimum, open outward, with an electronic lock.

C. Interior Finishes:

1. Dust: Provide interior finishes to minimize dust.
2. Light: Provide light colored finishes to enhance lighting.
3. Walls: Solid, concrete or masonry walls are preferred.

D. Lighting:

1. Minimum: 550 Lux (50 foot-candles), measured 0.9 m (3 ft.) above the floor.
2. Location: Install at 2.6 m (8′-6″) above floor at ceiling. Avoid wall mounted fixtures.

E. Electric Power:

1. Power is rack mounted.
2. Electric circuits for network switches are supported by the UPS and property standby generator. Consult with the CTR for local / continental specifics.

3. Labeling: Clearly mark service panel location and breaker positions.
4. Grounding: Provide access to the main building grounding electrode.
5. Backup Power: Supplied by building standby power system. See Module **<15C>**.
6. Additional Electric Power: May be required; determined in the review process.

F. Environment:

1. Temperature and Humidity: Maintain temperature between 10° C and 27° C (50° F and 80° F) with 30% to 75% relative humidity, non condensing.
2. Continuous Operation: The ventilation system for the IDF Closet operates continuously and is monitored by the Building Automation System (BAS).
3. Ventilation: Provide exhaust ventilation to dissipate heat generated by the equipment. An IDF serving 32 guestrooms may produce 5,000 BTU / hr. Actual requirements vary depending on the project. Contact the CTR for specific network design.
4. Capacity: If the IDF Closet serves a large number of rooms, more than one floor or additional equipment, a corresponding increase of ventilation or cooling capacity is required.

Dedicated cabling to all RJ45 jacks is required. No looping or daisy chaining of structured cabling permitted

G. Closet Penetrations:

1. Floor: For vertically stacked closets, provide a minimum of two 100 mm (4 inch) penetrations per closet.
2. Bushed Sleeve: Provide at each penetration. Bushed sleeve extends 25 mm (1 inch) above floor.
3. Location: Penetrations are clustered in the specified closet stack.
4. Conduit: Penetrations for horizontal conduit or cable tray runs that use ceiling pathways are near ceiling level.
5. Additional Penetrations: May be needed depending on the density of network devices required.

H. Closet Linkage:

1. Multiple IDF Closets: Closets are interconnected by horizontal cable pathways when multiple IDF Closets are on a single floor.
2. Drop Ceiling: If used, the IDF Closets are linked using cable ladder that is 300 mm (12 inch) wide and 100 mm (4 inch) deep.
3. Conduit Radius: Conduits entering the closet through a 90 degree bend from either floor or ceiling have a bend radius of 0.46 m (18 inch) for 50 mm (2 inch) inside diameter (ID) or less.

4. Conduits with greater than a 50 mm (2 inch) ID have a radius ten times the conduit ID.
5. Pull Cords: Provide in all conduits.

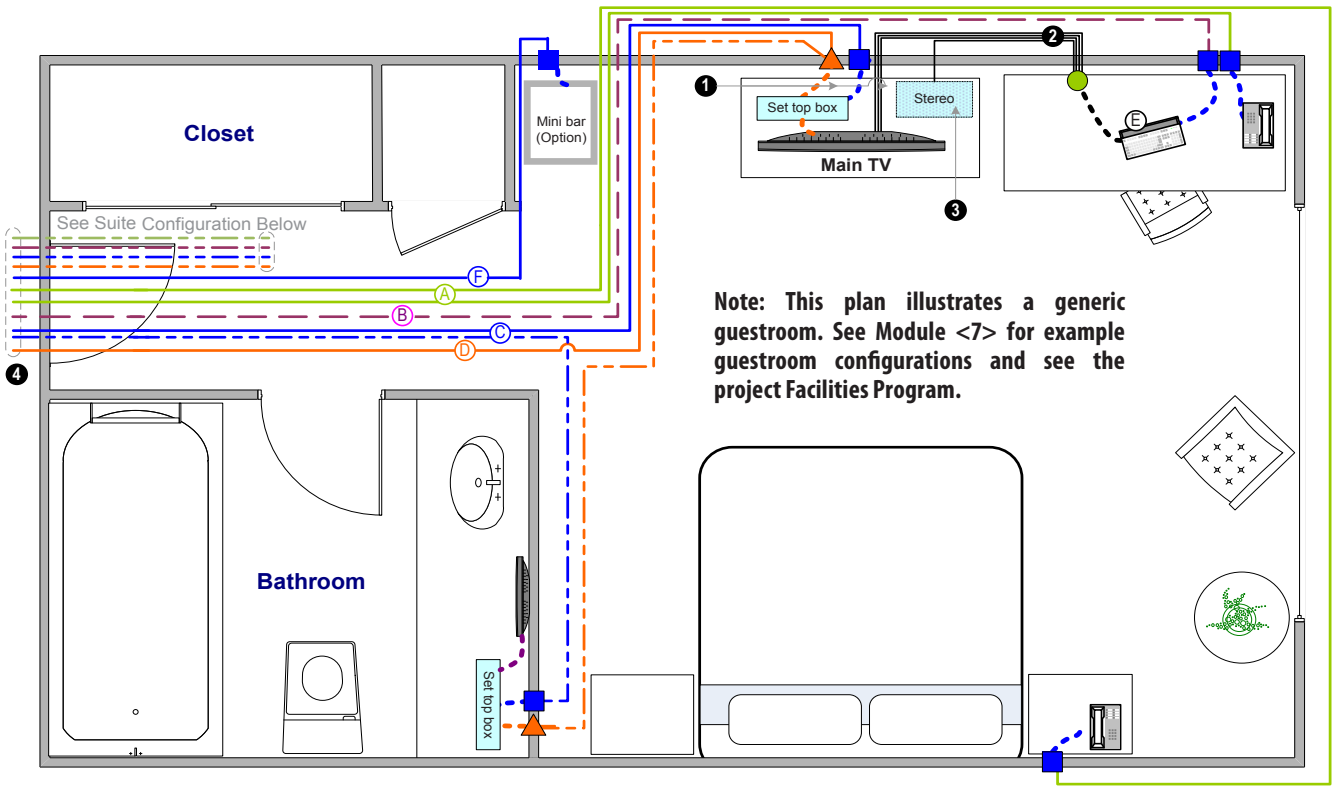
I. **Fire Protection & Life Safety:** See Module **<14>**. Provide wire basket guards over fire sprinklers to avoid accidental contact and discharge.

13A.10 Property Facilities

A. **Main Lobby:** The central meeting area of the property. Based on the design of the space, when the lobby or adjacent lounges have guest seating areas, provide ample power outlets at each seating space for guests to 'plug in' their equipment.
Install power outlets not directly visible to guest, but easily accessible. In addition, provide wireless Property Internet (PI) throughout the entire space.

B. **Guestroom Layout:** A generic guestroom cabling guide follows; contact the CTR for Brand specific requirements.
1. Cabling:
   a. Category 5e or higher cabling supports the following systems:
      - Voice Services - 1 RJ45 termination per telephone (desk, bedside, bathroom, suite living room)
      - PI connectivity - consult CTR for project requirements.
      - Digital TV / IP TV - consult CTR for project requirements.
      - Wireless Internet Access Point
      - Mini bar controls (option)
      - Environmental controls (option)
   b. Provide COAX and Ethernet cable for TV
      - Guestroom
      - Suite
      - Bathroom (option)
   c. Guestroom cable specifications follows the generic building cabling outlined in *Section 13A.2: Wired LAN*.
      - Guestroom Generic Cabling: Class Category 5e or higher.
      - Guestroom outlets home run from the Intermediate Distribution Frame (IDF).
      - Cables terminate in Category 5e or higher RJ45 jacks with connections to follow the TIA / EIA-568-A Standards.

Figure 11 - Guestroom Technology Layout & Desk Mounted Connectivity Panel - Example



RJ45 Socket (Female)

RF connector
Embedded in desk or fixed on wall; coordinate with interior design.

Connectivity Panel

Volume control on the wall (required if bathroom LCD and set top box are not installed)

Ⓐ — **Telephone** ----- **RJ45 Cable (Male)**
1 x Cat 5e or higher cable for each telephone port, back to floor IDF directly.
Second cable for kitchen wall phone in Suites.
See other drawings for detailed cable type and connectors.

Ⓑ — **PC Internet Services**
Consult the CTR for continental / market requirements.
1 x 5e or higher cable, connect directly from port back to floor IDF data patch panel. Use second cable for Suites.

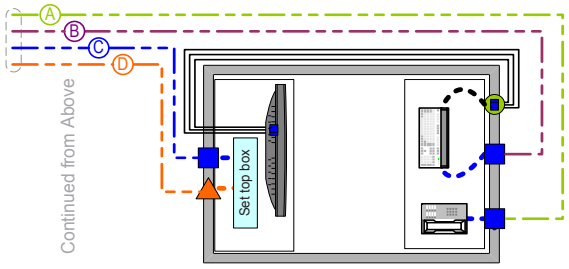
Ⓒ — **Digital / IP TV Services** ----- **RJ45 Cable (Male)**
Consult the CTR for continental / market requirements.
1 x 5e or higher cable, connect directly from port back to floor IDF data patch panel.
Second cable for Suites (in some markets, VOD services may not be legal or available).

Ⓓ — **TV Services** ----- **COAX Cable (Male)**
(only if required locally or by vendor)
1 x COAX back to provider head end from main TV .
1 x COAX from main TV to replication TV .
Continue to Suite if applicable.

Ⓔ — **See other drawings for detailed cable type and connectors**
Wireless Internet Service
1 x 5e or higher cable back to floor IDF data patch panel.
Internet & WiFi Phone Access Point (not shown)
Point (5e or higher for AP and / or antenna) wireless coverage for rooms. Equipment placement point must be outside guestroom with sufficient space around equipment to avoid interference and have easy service access. All cables located away from any in-place electrical or non-ethernet cabling, plumbing or similar piping / conduit.

Ⓕ — **Mini bar (option)** ----- **RJ45 Cable (Male)**
1 x 5e or higher cable, connect directly from port back to floor IDF data patch panel.

Suite Configuration



Required In Wall Cables Standard Room

Option In Wall Cables

Connectivity Cables

1. Interconnecting cables supplied by set top box vendor.
2. See other drawings for detailed cable type and connectors for TV / DVD / Stereo / Connectivity Panel / STB etc.
3. Stereo / DVD per market request.
4. 90 m (295 feet) distance limitation for Cat 5e or higher cable from socket to guestroom IDF data patch panel or to guestroom wallplate switch location.

Notes:
This drawing is limited to the IT requirements. For other power requirements such as housekeeping and decorative lamps, refer to electrical and interior design drawings. Also, refer to interior design for furniture layout.
- Speakers shown in this diagram are for entertainment purposes only. Emergency Announcement speaker for Life Safety not shown.
- See the "Guest Room Writing Desk IT Configuration Diagram" for more details.

Figure 12 **- Connectivity Panel (optional)**

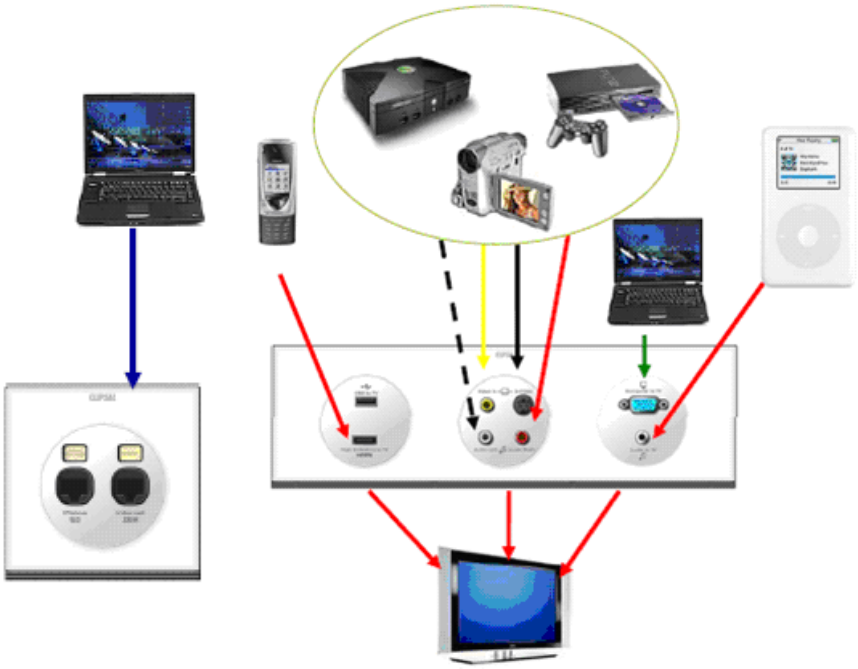
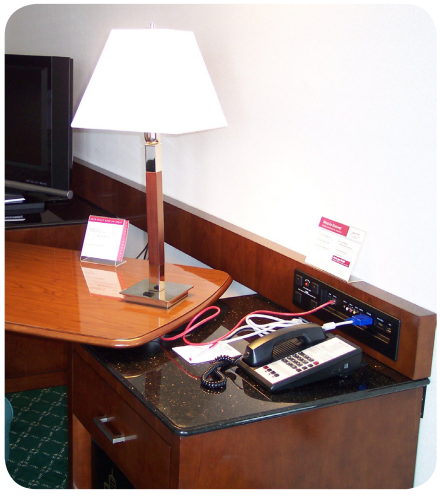


Figure 10 **- Connectivity Panel (optional)**



2. Connectivity Panel (optional): Consult with the CTR and see Module **<7>** to verify the criteria for providing optional guestroom Connectivity Panels as defined by the Brand and property location.
   The Connectivity Panel is easily accessible and convenient, an all-in-one multimedia hub, providing guests with multiple audio / video inputs to interface their personal electronic devices with the in-room technologies (such as the TV).
   a. Connectivity Elements on the Connectivity Panel are:
      - Power (based on individual country laws, provide multi adapter where allowed by law)
      - Audio / Video (A / V): Audio is stereo PC RGB MP3 connectivity (MP3 / 4 / x player, iPod)
      - HDMI (High Definition Multimedia Interface) - enhanced solution: Recommended
      - USB - enhanced solution: Recommended
      - Data: Recommended
      - For availability of some elements, refer to Continental Supplement for specifications.
      - Provide auto-sensing connectivity (such as to automatically enable the TV to switch to the remote device when plugged in).
   b. Location at Desk:
      - Place the Connectivity Panel on the desk or wall in proximity to the desk where the guest has easy access to the Connectivity Panel components.

- Consider placement so that it is not obtrusive, but easily located and usable by guests.

c. Installation:
- Deep flush box required to accommodate the cable and connector with a minimum depth of 5 cm (2 inch).
- Installation must not compromise cable bending radius.
- Wall Rating: Verify and maintain wall fire and acoustical rating at wall penetrations between the TV and desk.
- Specifications: Contact the CTR for installation specifications and details.
- Cable Length: Verify maximum cable length for solutions deployed. Provide 0.61 m (2 ft.) service cable loop at the TV for easy and flexible connections.

d. Cabling Planning:
- Ensure the length does not exceed manufacturer's stated maximum dimensions - especially for USB / HDMI cables.
- Provide the appropriate cable type.
- The conduit in the wall accommodates the cables (in some cases multiple conduits are installed).

e. Connectivity Panel Planning: Configure power outlet access to allow for simultaneous usage of large electronic accessories and transformers.

C. Front Desk, Concierge & Bellstand: Because of the different computer equipment design and constantly changing form factor of computers, printers and peripherals, contact the CTR for the current millwork document for equipment sizes before finalizing dimensions and the desk design.

1. Provide locations for the following technology related components. See Module **<2>**
- Computer
- Keyboard & mouse
- LCD screen monitor
- Printer
- Key encoder
- Credit card terminal
- Credit card printer
- Phone (Depends on PBX hardware vendor. Contact the CTR)
- Other (such as parking equipment)

2. Locate the equipment out of sight from the guest, but easy accessible and in a good workable location for employees.

Figure 13 **- Guest Relations Desk - Example**

3. Monitor: Provide a 45 degree viewing angle for the LCD screen.
4. Ventilation: Provide ample airflow around the following components:
   - LCD screen
   - Printer
   - Computer (most computer designs utilize front to back or side to side equipment cooling).
5. Design: Provide ample, dedicated space (to prevent overheating and to allow for installation) and appropriate locations for the following:
   - Keyboard: Locate with ample adjacent space for left as well as right handed mouse operations.
   - Monitor: Standard LCD (space used accommodates a minimum 19 inch standard LCD screen).
   - Station: One computer per station.
   - Equipment: Space to accommodate CTR specified PC.
   - Cables: Accommodate ample space at the back of the connected equipment. Locate for easy access and connection point that is integrated into millwork.
   - Standby Power: Local UPS connected to the computer, monitor and other critical equipment. Review with CTR for requirement based on country situation.
   - Printer: Large laser printer per station utilizing printers with 2 paper trays added with access to front and back to change paper and toner and clear paper jams.
6. Cable Tube: Provide a cable tube from the top of the desk (monitor, keyboard, mouse) to the computer equipment, UPS location in the lower desk to properly arrange cables.
7. Power: Provide a minimum of 7 power outlets above the work counter of the desk for all devices (monitor, key encoder, credit card terminal and others) and at the computer location (computer, UPS).
8. Dot Matrix Printers: Provide an additional location for dot matrix printers in locations where fiscal facturas / Fapio are a governmental requirement.
9. RJ45 Cable Termination Points: Provide per station as outlined in *Section 13A.7: Cable Termination Points.*
   - Locate termination points at the upper half of the desk, out of guest sight, and located where the cables can be connected to key card encoder, credit card terminals, phones and other devices.
   - Termination points are also located at the lower half of the desk for computer and printer access.

D. P.O.S. Restaurant:

1. Provide location for the following technology related components. Discuss with CTR for details.
   - P.O.S. Terminal
   - LCD Touch Screen
   - P.O.S. Slip Printer
   - P.O.S. Fiscal Printer
   - Credit Card Terminal (option)
   - Cash Drawer (option)
   - Phone
2. Locate the equipment out of guest sight, but easily accessible and in a good workable location for the employees. Locate away from heat and moisture sources.
3. Ensure ample airflow or cooling around the computer. Most computer designs utilize front to back or side to side equipment cooling.
4. Provide ample space for cables at the back of the connected equipment.
5. Provide a cable tube from the top of the desk (monitor, keyboard, mouse) to the computer equipment, UPS location in the lower desk to properly arrange cables.
6. Provide a minimum of 6 power outlets above the work counter of the desk for various devices (monitor, key encoder, credit card terminal, etc.) and at the computer location (computer, UPS).
7. Provide space for a local UPS connected to the computer, monitor and other critical equipment.
8. Provide RJ45 cable termination points per station as outlined in *Section 13A.7: Cable Termination Points*.
9. Locate termination points out of guest sight and at a location where the cables are connected to P.O.S. terminal, credit card terminals, phones and other devices without being visible to the guests.

Figure 14 **- P.O.S. Restaurant - Example**

E. Property Internet (PI):

1. PI: A property system service that provides guests with PI connectivity from their personal computer equipment to access the Internet from the guestroom or public spaces.
   Obtain an MI approved guest PI service provider from the CTR's approved provider list.
2. Network Connections: The CTR provides detailed network documentation for active network components and software, and requirements for wired and wireless connections.

a. Module **<13>** addresses low voltage cabling requirements in order to support the active components.
b. Design low voltage cable plant considering all Ethernet network systems for guests, employees, telephones, wireless access points, cellular signal enhancement equipment and building systems.

3. Standards & Resources:
   a. CTR Representative: Consult with the CTR representative to obtain the IR Design Supplements (Property Internet Brand Strategy Standard) that include relevant project documentation, active networking equipment standards and current accepted vendor list.
      - IR Design Supplements include relevant information specifically for MI's low voltage cabling requirements.
      - The CTR assists with design, budget estimating, and procurement of the active network system components.
   b. Building Industry Consulting Service International, Inc (BICSI): Comply with the design principles, design and implementation for the in-building Ethernet service network.
   c. Consultant: MI recommends engaging a qualified hospitality industry technical design specialist who is a Registered Communications Distribution Designer (RCDD) with BICSI.

F. **Audio / Visual Facilities:** See Module **<13C>**
G. **Loss Prevention:** See Module **<16>**

13A.11 Property Systems

A. Systems Matrix: The following Property Systems Matrix, indicates systems required or recommended for MI properties. Equipment size, location, power requirements and BTUs are current as of the publication of this document. Check with the CTR to ensure information is current and appropriate to meet property IT specifications.

Property Systems Matrix

X = Required

O = Optional

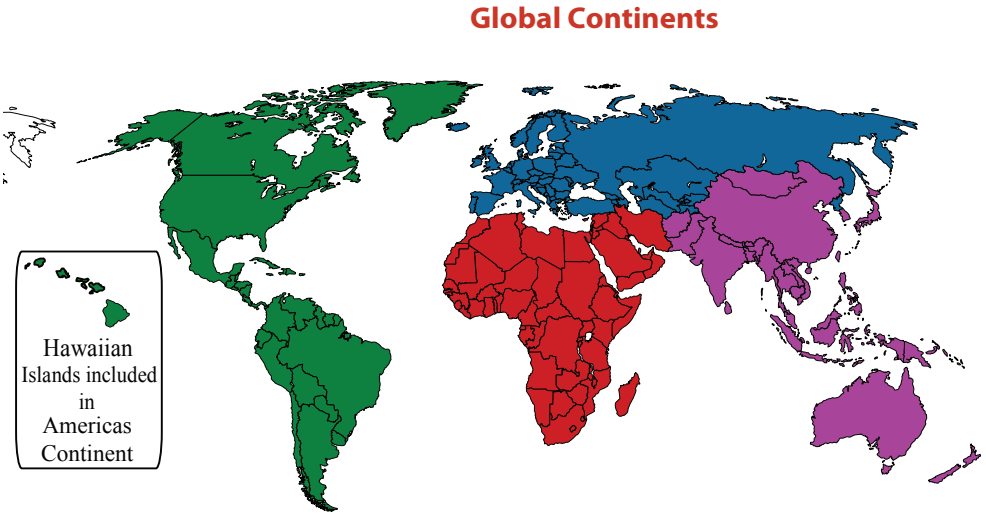
Note: This list is not complete, but shows the most common systems in the property. Contact MI for additional systems.

Function	Applicable		Location					Equipment		Power Va	
			On Property			Above Property					
	Marriott Hotels	"Marriott Residences (non-membership)"	Computer Room	Telecom Room	Other	ASP	Marriott Hosted	High Server	Low End Server	Va	BTU
File & Print Server	x	x	x					x		550	1800
Authentication Server	x	o	x						x	520	1700
Property Management System (PMS)	x	o	x				x	x		1100	3600
Interface Servers	x	o	x						x	1140	3400
Sales & Catering System	x		x				x	x		550	1800
Reservation Systems	x	o					x				
Revenue Management System	x	o					x				
Accounting System	x	x	x			x		x		550	1800
Time Keeping System	x	x	x			x		x		550	1800
Human Resources System	x	x	x			x		x		550	1800
Payroll System	x	x	x			x	x				
Key Card System	x	o	x						x	520	1700
Credit Card Interface System	x	x	x				x		x		
Spa Management System	x		x					x		550	1800
Point of Sale System	x	o	x					x		550	1800
Retail Inventory System	x		x			x			x	520	1700
Food & Beverage Inventory System	o		x			x			x	520	1700
Club Membership System			x					x		550	1800
Engineering Management	x	o	x			x		x		550	1800
Building Management	o	o	x		o	x		Depends on System			
Golf Management System	o		x		o	x		Depends on System			
Guest Recognition / Response System	x	x					x				
Digital Signage	o	o	x						x	520	1700
Music Management System	o	o			x				x	520	1700
On Demand Video System	x			x				Depends on System			
Property Internet (PI)	x	o	x					Depends on System			
Concierge Systems	x		x			x			x	520	1700
Phone System (PBX / Voice Mail)	x	x		x				Depends on System			
Call Accounting System	x	x	x			x			x	520	1700
Document Archiving	x	o	x						x	520	1700

13A.12 Continental Contacts

Marriott International Continental Technology Representatives (CTR) are assigned to projects by the Continental Vice Presidents of Global Information Resources. The contact information for the Continental Vice President of Global Information Resources is as follows:

Figure 15 **- Global Continents**



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STANDARDS

MODULE 13B TELECOMMUNICATIONS

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Telecommunications

13B.1 System Description

A. Telecommunications: MI criteria requirements for telecommunications focus on three functional areas; telephone system, voice mail system and call accounting system.

1. Quality: Each system shall be a "state of the art" processor based system configured and designed for the hospitality industry.
   - PBX System: Provide to support traditional proprietary digital telephones, industry standard analog telephones, proprietary IP telephones and SIP based IP telephones.
   - Telephones: Meet governing regulatory requirements such as those provided by the Federal Communications Commission (FCC) related to hearing aids worn by hearing impaired guests.
2. Coordination: Systems shall be compatible and be able to interface with each other, and with the Property Management System (PMS). **<13A>**
3. Approvals: The PMS and the Telecommunications Systems require MI acceptance for use in the country of installation. The PBX shall also be compatible with the Public Switched Network in the country of installation.

B. Administrative Telephone Guidelines: The telephone system guidelines listed in this Module identify specific telephone station requirements in each functional space within the property.

1. The guidelines define a "typical" system, therefore quantities vary based on the size, design and specific property program.
2. Variations may be required due to operational "customs" in a particular country and the project's competitive marketplace.
3. Customizing the guidelines for a property is performed in consultation with MI Operations and the CTR **<13A>**.

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

Continental Technology Representative (CTR)

At the initiation of the project design, contact the CTR to outline system requirements based on the project location, site, operations and regional systems.

13B.2 PABX Telephone System

A. General: Design system to accommodate property requirements for complete guest, administrative and property operations.

1. CTR confirms availability of adequate telephone service, service connection location, and name and address of telephone operating company representative.
2. The Owner purchases the PABX telephone system.
3. See Module **<13A>**, *Section 13A.7* for additional information.
4. Design Documents: Design Team documents include space, power, conduit and environmental requirements coordinated with equipment suppliers.
5. Requirements: MI provides the Owner's Systems Consultant with detailed telephone system requirements.

B. Telephone Equipment Room: See **<13A>**, *Section 13A.8.* Provide a dedicated space within the Computer Room or a dedicated room for telephone equipment, UPS (uninterrupted power source), and backboard. Consult the CTR for specific Continent requirements and provide the following:

1. Adequate room size for planned and related equipment.
2. Submit to MI for acceptance an equipment room drawing that defines the coordinated equipment plan. A diagram that defines the preferred layout is referenced in Module **<13A>**.

C. Guestroom & Suite Telephones: <7A>

1. Extension Lines: Minimum of one telephone extension line to each Guestroom and Suite. Contact the CTR for other Brand specific telephone line and phone requirements.
2. Guestrooms: Provide a minimum of one telephone at bedside nightstand.
3. Suites: Typically, require more than one phone. Provide handset phone types at the following locations:
   - Bedside: corded phone
   - Desk: cordless phone
   - Pantry: corded wall phone
4. Guest Lounge Level Rooms: Typically, locate another phone (cordless handset) at desk (may include speaker phone features, if required by project).
5. Phone Types: One phone is required to function during power failure.
   a. Corded Handset: Wired to powered phone connection

b. Cordless (or wireless) Handset: Highly recommended. Provide with a powered base station and battery back-up handset or other method so phone functions during power failure.

6. Cellular Phone Coverage: Provide in guestrooms and throughout guestroom and suite areas.
7. Accessibility: For person with disabilities, include the following:
   a. Provide telephones with volume control handsets and text telephones as required by governing accessibility regulations.
   b. Mount accessible phones at required mounting height and clearance.

D. **Public Phones (if available):** Comply with Interior Design, finish requirements, ADA requirements and the following:
1. Conduit and electrical power to each phone and proper back panel housing.
2. Locate one house phone at pay phone enclosure and provide a house phone jack immediately below the counter.
3. Verify phone height for chair operation.
4. See Module **<2>** for "Public Telephones".

E. **Function Spaces:** In meeting facilities and pre-function areas, provide telephone jack outlets.
1. Locate phone jacks in wall base, grouped with other media facility connections.
2. Provide jacks with direct in-line access (to bypass operators), when requested by guests.

13B.3 Telephone Extensions

A. General: The system installer prepares a listing of the property telephone extensions.

1. Contact the CTR **<13A>** for detailed extension plan.
2. Installer walks the property with property pre-opening team and designates room names, staff position for each phone, pager, fax machine and modem connection.

B. Extensions: The following is a representative listing of major extension groups:

- 9 = Outside Line
- 0 = Operator

C. Guestrooms: Use 3 to 4 number guestroom number for the main guestroom phone line.

- Dial 7 or 8 before the number for calling room to room
- Provide direct dial buttons on guestroom phones for various guest services.
- 2000 = House Phones
- 2400 = Lounge
- 2500 = Fitness Center

D. Offices & Services: Use a four digit dialing plan with the actual numbering determined by the individual property design and DID number availability from the Local Exchange Carrier.

- 5000 = Executive Offices
- 5100 = Sales and General Offices
- 5200 = Accounting
- 5300 = Human Resources
- 5400 = Quality / Training
- 5500 = Security Office
- 5555 = Security Hot Line
- 5600 = Front Desk, Concierge, Bell Captain
- 5700 = Retail / Guest Services
- 5800 = Housekeeping / Laundry
- 5900 = Engineering

E. Food & Beverage / Banqueting: Use a four digit dialing plan with the actual numbering determined by the individual property design and DID number availability from the Local Exchange Carrier.

- 6000 = Restaurant Reservations / Business Center
- 6100 = Banquet Services / Pre-function
- 6200 = Stewarding / Pantries
- 6300 = Lobby Lounge & Bars
- 6400 = Restaurants
- 6500 = Exterior F&B
- 6600 = Room Service
- 6700 = Kitchens

13B.4 Other Communication Systems

A. Equipment - General: Provide other communications equipment that may include, but not limited to, the following:

- Radios
- Pagers
- VOIP Wireless telephones **<13A>**
- Cellular Telephones: Commercially available with push to talk capability **<13A>**

B. Radios:

1. System Frequency: UHF, VHF, DCT or other accepted frequency within the country of installation.
2. Control Base Station: Provide desktop microphone and locate in Security Office **<16>**.
3. Channels: Four channels minimum to address the property departments (Security, Engineering, Housekeeping, etc.) and one channel for emergency calls transmitted to all channels at once. At larger properties provide additional channels as needed by other departments.
4. Repeaters: Locate centrally, two or more repeaters, power splitter, two antennas (one on roof, and one in engineering shop) and provide one repeater with paging capabilities. More repeaters may be required based on the property design.

C. Portable Radios: 2-way portable radios.

1. Consult with CTR to determine quantity based on property size and use by Security, Engineering and Housekeeping.
2. Designate for Security, Engineering and Housekeeping and provide departments with pager backup.
3. Provide electrical outlets at each department recharging station.
4. Provide under Operating Supplies & Equipment (OS&E).

D. Pagers / Mobile Handphones: Provide under OS&E.

13B.5 Telephone System Equipment Room

A. Program: See Module **<13A>**, *Section 13A.8* for additional information. Provide for telephone system equipment, voice mail system, call accounting system, (UPS) battery backup system, maintenance terminals, cable / wire terminations for systems and patch panel.

B. Size / Area: The property size determines requirements, for example, room sizes may vary as follows:

Number of Guestrooms	Equipment Room Size
300 Rooms	2.7 x 4.9 m (9 x 16 ft.)
500 Rooms	2.7 x 5.8 m (9 x 19 ft.)
750 Rooms	2.7 x 6.7 m (9 x 22 ft.)

C. Location: No farther than 305 m (1,000 ft.) from attendant consoles and above the water table, flood plain and away from water and moisture sources.

D. Room Environment: Provide a computer room like environment and locate in close proximity to, or within the Computer / Telecom Room **<13A> <15A>**.

1. Design room free from radio frequency interference including x-ray equipment, hand held transceivers, radar, radio, microwave, TV transmitters, electrical transformers etc. unless specifically designed to work in conjunction and proximity of telephone equipment.
2. To prevent interference from electromagnetic or static fields, locate the telephone equipment cable risers and chases away from major electrical equipment such as large motors, elevator equipment rooms, transformers, electronic ballasts, etc.
3. Design space as relatively dust free and moisture proof.
4. Avoid locating water pipes in room. Provide drainage for water cooled air conditioning system properly routed away from the room. Do not locate room at base of, or immediately adjacent to, vertical plumbing risers.
5. If in-room entertainment equipment (such as a movie system) is located in telephone room, provide more space, power and comply with room environmental requirements described above.

E. Main Distribution Frame (MDF): Provide one wall, the length of the room (longer dimension wall, if rectangular), with clear space, unbroken by doors, windows, vents, etc. for placement of MDF.

1. MDF Backboard: 19 mm (¾ inch) plywood (one side finished) with one coat of fire retardant paint or as required by governing code.
2. Mount MDF backboard on clear wall and attach to furring strips offset 10 cm (4 inch) from wall on 60 cm (24 inch) centers.

F. Floor: Provide anti-static, vinyl composition tile to eliminate uncontrolled ground paths and electrostatic charges.

1. Never use carpeting on floor.
2. Prefer, 20 cm (8 inch) high, accessible computer floor. Design access floor system to support 113 kg / 900 cm² (250 lbs. / sq. ft.) minimum load.
3. When access floor is not provided, mount telephone system on 24 cm (9.5 inch) raised concrete pad above the lowest floor level.

G. Fire Protection: See Module **<14>**. Obtain acceptance from Marriott's Fire Protection Department for applicable fire protection requirements in room. Provide wire basket guard on fire sprinklers.

H. Lighting: **<15C>** Provide adequate lighting for illumination of telephone equipment and backboard area.

1. Provide 323 Lux (30 foot-candles) minimum at floor level.
2. Connect power for emergency lighting to standby power.

13B.6 Acronyms / System Criteria & Guidelines

A. Acronyms: The following are typical acronyms used in this Module and others of this ~~Design~~ Standard. **<GR>**

1. ACD (Automatic Call Distributor): Telephone System feature or functionality that allows calls to be automatically answered and routed based on predefined set of instructions. Calls are typically queued and receive delayed announcements informing status of calls and are connected to staff when available.
2. CDR (Call Detail Recording): Feature in the telephone system that keeps track of and reports information on outgoing phone calls. Information such as, “what telephone line originated the call?; what number was dialed?; how long the call took?; what is date and time call was made?”
3. CTR: Continental Technology Representative.
4. DDI (Direct Dialing Inward): Ability to allow callers outside of the property to reach specific internal PABX extension line without being transferred by PABX operator.
5. DID (Direct Inward Dialing): Same feature and meaning as DDI.
6. DTMF (Dual Tone Multi Frequency): Also known as, "Touchtone", a push button method of dialing as opposed to a rotary dial.
7. ISDN (Integrated Services Digital Network): A standard based digital service for both voice and data applications provided by telephone companies throughout the world.
8. RMATS (Remote Maintenance and Testing System): Provides the telephone system maintenance provider with the ability to access the telephone system from a centralized test center via modem or the Internet.
9. SMDR (Station Message Detail Recording): Has the same meaning as CDR.

13B.7 Systems Criteria & Administrative Telephone Guidelines

Table 1 - Systems Criteria Outline	
PABX	
Features / Capabilities:	
Alphanumeric display administrative telephones and console for guest name display	Required
Variable auto wake up with audit trail printer	
ACD with statistical report package and printer	
Acceptable interface to Marriott's Property Based System (or Property Management System) and integration with check-in / check-out, room status, guest name, etc.)	
CD interface for music on hold. Provide interface to support various music sources such as CD, tape, A/V equipment, etc	
Automatic Route Selection	
Integrated Message Waiting via PABX software	
Call Detail Recording output to Call Accounting System and to PMS hospitality interface	
Redundant CPU above 300 lines	
1 hour Battery Backup (when supported by emergency power)	
Single Digit Access to designated guest services	
Call Waiting	
DTMF Dialing (Touchtone)	
Hotel / Motel Software	
Flexible Dialing Plan room number extension number correlation	
Compatible with digital trunking T1, E1, ISDN Basic and Primary rate	
System Announcement Capability - ACD, Attendant Queue, etc.	
Paging System Interface	
6 Party Conference	
Traffic Measurement Capability - trunks & consoles	
System Alarms for fault management	
Power Conditioner.	
Compatible with all network supervisory trunk signaling	
Power failure transfer capability	
DID or DDI for selective administrative telephones.	
Acceptable Systems: Consult your CTR for current accepted systems	

Table 1 - Systems Criteria Outline	
Call Accounting System	
Features / Capabilities:	
Flexible Surcharging - multiple pricing levels (guest / administrative)	Required
Accepted interface to Marriott's Property Management System (PMS) / Call Accounting interface (CDR)	
Administrative reports	
1 hour UPS (when supported by emergency power) **<15C>**	
Duration and distance pricing	
Rate table updates	
Itemized mini-bar posting to PMS or PBS	
Powerful call charge calculation	
Multiple & flexible charging schemes	
Able to handle complex rate structures through "code mapping"	
Multiple and separate rate table per telephone Carrier	
On-line checking of phone calls made (guest & administrative extensions)	
Number of PABX lines supported is software definable to match all PABX extensions	
Customized reports	
Supports "home language" characters	
End of day reports with user selectable call types with re-printing options	
Summary month end reports	
Call record storage - one year	
Auto-scheduling of end of day reports	
Acceptable Systems: Consult your CTR for current accepted Call Accounting Systems	
Voice Mail System	
Features / Capabilities:	
Accepted interface to Marriott's Property Management System (PMS)	Required
Multiple language capability	
Lodging software with a simplified guest interface	
Full featured administrative mailboxes	
Remote access password protected	
Text message notification	
Personalized greetings for guest and administrative mail boxes	
Number of mailboxes in system shall support designated PABX extensions in the system	
Size of mailbox is administered in system software	
Customized voice prompts to instruct guests in voice & text message retrieval	
Software definable limit to length of messages	
Software definable "revert to live person" to escape from voice mail	
Auto Attendant with voice menus	
Acceptable Systems: Consult your CTR for current accepted Voice Mail Systems	
Voice Wiring: See additional requirements in Module **<13A>** and the related supplement.	
Voice Wiring - four twisted pair Cat 5e station wiring to each telephone or device (jack)	Required
Voice Riser and house cable sized to support 2 active pair per guestroom or administrative telephone + 25% growth.	
Voice House cable servicing ballroom sized to support 6 active pairs per jack + 50% growth.	
Patch panels for voice connections in ballroom and meeting rooms.	

Table 1 - Systems Criteria Outline	
Data Wiring: (see additional requirements in Module <13A> and the related Supplement)	
Wiring for Property Internet (PI) - four twisted pair Cat 5e cable (EIA/TIA) installed per the Ethernet Standard to each guestroom and designated meeting spaces. On the device end, terminate the cable in a RJ45 jack per the TIA / EIA-568-B termination spec at the desk location and behind TV locations in each guestroom or in the designated location in meeting spaces and on a patch panel in the IDF closet. Backbone wiring from the IDF to the server location follows the applicable Ethernet standard. See Module **<13A>** and Supplement.	Required
Structured cabling for administrative LAN system to maximize resources and provide flexibility. See Modules **<13A>** and **<13B>** and Supplements for administrative data wiring for the PMS / PBS, P.O.S., & LAN requirements.	Required
Guestroom Lines & Telephones	
One PABX extension line to each Guestroom with one, single line telephone, with the phone at bedside nightstand. Cordless "master and slave" phones are highly recommended where a version is available for the cordless handset model. Consult the CTR for Brand specific requirements. At JW Marriott, the desk phone is cordless.	Required
Guest Lounge Level and Suites only, provide one cordless handset telephone at desk, a telephone with cord at other locations and a corded wall phone at Suite pantry. Suites typically have 3 or more telephones depending on the Suite size.	
Integrated message waiting lamp & speed dial buttons for guest services.	
Guestroom dialing instructions and disclosure information on telephone faceplate as required by governing authority such as the FCC or PUC (Public Utility Commission).	
Guestroom Telephones: Consult your CTR for continental specific list of accepted guestroom telephone models.	

***Table 2*- Administrative Telephone Guidelines** Consult the CTR for property specific locations					
Locations	Equipment or Telephone Type	Typical Scope (Quantity)	Telephone Wiring Cat 5e four pair as a minimum	Required PABX Extension	Private Outside Central Office Line
Front Office Areas					
Lobby House Tels.	Analog Desk Telephone	4	4 pair per device	Yes	
Front Desk	IP / Digital Telephone with Display	1 per station		Yes	
Front Desk	Analog Lines For Credit Card Verification Machine. See CTR for local credit card terminal.	1 per station		Yes	
Concierge/Hospitality Desk	IP / Digital Telephone with Display	1		Yes (DID)	
Concierge/Hospitality Desk	Analog Lines For Credit Card Verification Machine	1		Yes	
Front Office	IP / Digital Telephone with Display	1		Yes (DID)	
Rooms Control	IP / Digital Telephone with Display	2		Yes	
Rooms Control	Analog Lines For Credit Card Verification Machine	2		Yes	
Cashier Office	IP / Digital Telephone with Display	1		Yes	
Counting Room	Analog Single Line Wall Telephone	1		Yes	
Group Coordinator	IP / Digital Telephone with Display	1		Yes	
Group Check in Desk	IP / Digital Telephone with Display	1		Yes	
Front Office Fax	Analog Line for Fax Machine	1		Yes	Yes
Bell Stand	IP / Digital Telephone with Display	2		Yes	
PABX Operator or Guest Services Call Center	IP / Digital PABX Console or ACD terminals as defined per project	Minimum of 2 + 1 per 200 rms	PABX type dependent		
Guest Services Director	IP / Digital Telephone with Display	1	4 pair per device	Yes	
Call Center Office	IP / Digital Telephone with Display	2		Yes	
Hotel Pilot Fax	Analog Line for Fax Machines	2		Yes	Yes
Shift Manager	IP / Digital Telephone with Display	1 per Shift Mgr		Yes	

***Table 2*- Administrative Telephone Guidelines** Consult the CTR for property specific locations					
Locations	Equipment or Telephone Type	Typical Scope (Quantity)	Telephone Wiring Cat 5e four pair as a minimum	Required PABX Extension	Private Outside Central Office Line
Back of House Areas					
Security	IP / Digital Telephone with Display	2	4 pair per device	Yes (DID)	
Service Elevator Lobby	Analog House Telephone	1 per floor		Yes	
Housekeeping	IP / Digital Telephone with Display	3		Yes	
Engineering	Analog Single Line Wall Telephone (Carpenter Shop)	1		Yes	
Engineering	IP / Digital Telephone with Display	3		Yes (DID)	
Human Resources	IP / Digital Telephone with Display	1 per staff member		Yes (DID)	
Parking Office	IP / Digital Telephone with Display	1		Yes	
Ballroom Service Corridors	Analog Wall Telephone	2		Yes	
Banquet Storage	Analog Wall Telephone	1		Yes	
Audio / Visual Storage	Analog Wall Telephone	1		Yes	
Sound Equipment Room	Music On Hold Interface	NA	4 pair	NA	
Fire Command Room	Two Single Line Wall Telephones and outside private lines for digital dialer	2	4 pair per device	Yes	Yes (2)
Purchasing	IP / Digital Telephone with Display	1 per staff member		Yes	
F &B Areas					
Specialty Restaurants	IP / Digital Telephone with Display per Restaurant Maitre "D" stand	1 per Stand	4 pair per device	Yes	
Specialty Restaurants	Analog Line at each P.O.S.Terminal for credit card verification. Consult your CTR for local requirements.	1 per terminal		Yes	
Hostess Stand in all restaurant outlets	In-door Cordless Phone	1 per stand		Yes	
Chef's Office	IP / Digital Telephone with Display	1 per office		Yes (DID)	
Room Service	IP / Digital Telephone with Display	2		Yes	
Kitchen Point of Sale Terminal	Analog Line at each Point of Sale Terminal for credit card verification. Typically required for International sites	1 per terminal		Yes	
Dry Food Storage	Analog House Telephone	1		Yes	
Main Food Production Line	Analog House Telephone	1		Yes	
Service Bar	Analog House Telephone	1		Yes	
Cold Prep	Analog House Telephone	1		Yes	
Kitchen Offices	IP / Digital Telephone with Display	1 per office		Yes	
Bakery	Analog Wall Telephone	1			
Garde Manger	IP / Digital Telephone with Display	1			
Liquor Storage	Analog House Telephone	1		Yes	

***Table 2*- Administrative Telephone Guidelines** Consult the CTR for property specific locations					
Locations	Equipment or Telephone Type	Typical Scope (Quantity)	Telephone Wiring Cat 5e four pair as a minimum	Required PABX Extension	Private Outside Central Office Line
F &B Areas (continued)					
Loading Dock	Analog House Telephone (or pay phone), wall mounted	1	4 pair per device	Yes	
Lobby Bar	IP / Digital Telephone with display.	1		Yes	
Lobby Bar Point of Sale	Analog Line at each Point of Sale Terminal for credit card verification. Consult your CTR for local requirements.	1 per terminal		Yes	
Restaurant s	IP / Digital Telephone with display at Hostess / Cashier per Restaurant. Typically required for international sites.	1		Yes	
Restaurant s	Analog Line at each Point of Sale Terminal for credit card verification. Consult your CTR for local requirements.	1 per terminal		Yes	
Service Bars	Analog Line for credit card verification and Analog Wall Telephone. Consult your CTR for local requirements.	1 per location		Yes	
Public Telephones / House Telephone	Wall Telephones	1 per Restaurant		NA	Yes (Pay Tel Lines)
Administrative Offices					
Accounting	IP / Digital Telephone with display	1 per staff member	4 pair per device	Yes (DID)	
Dir of Revenue Mgmt	IP / Digital Telephone with display	1		Yes (DID)	
Controller / Assistant Controller	IP / Digital Telephone with display	1 per Office		Yes (DID)	
Controller	Analog Line for modem	1		Yes (DID)	
Reservations	IP / Digital ACD Telephones with display	1 per staff member		Yes (DID)	
Reservations Mgr.	IP / Digital Telephone with display, ACD Terminal and Report Printer	1		Yes (DID)	
General Manager	IP / Digital Telephone with display	1		Yes (DID)	
General Manager	Single line Desk House telephone	1		Yes (DID)	
Resident Manager. / Director of Operations	IP / Digital Telephone with display	1		Yes (DID)	
F&B Mgr.	IP / Digital Telephone with display	1		Yes (DID)	
Catering Mgr.'s, Sales Mgr.'s	IP / Digital Telephone with display	1 per Mgr.		Yes (DID)	
Dir. of Marketing	IP / Digital Telephone with display	1		Yes (DID)	
Receptionist	IP / Digital Telephone with display	1		Yes	

***Table 2*- Administrative Telephone Guidelines** Consult the CTR for property specific locations					
Locations	Equipment or Telephone Type	Typical Scope (Quantity)	Telephone Wiring Cat 5e four pair as a minimum	Required PABX Extension	Private Outside Central Office Line
Secretaries / Assistants	IP / Digital Telephone with display	1 per staff member	4 pair per device	Yes (DID)	
Fax Machine	Analog Line for fax machine	1		Yes (DID)	Yes
Convention Sales / Services, Event Management	IP / Digital Telephone with display	1 per Mgr.		Yes (DID)	
Dir of Public Relations	IP / Digital Telephone with display	1 per Mgr.		Yes (DID)	
Guest Recognition Manager	IP / Digital Telephone with display	1 per Mgr.		Yes (DID)	
Dir of Business Travel	IP / Digital Telephone with display	1 per Mgr.		Yes (DID)	
Public Space					
Meeting Rooms	Analog Single Line Wall Telephone and duplex jack per room	1 per room	4 pair per jack	Yes	
Ballroom	Analog Single Line Wall Telephone per divisible area	1 per division	4 pair per device	Yes	
Ballroom	Six multifunction RJ45 jacks per divisible area or Salon to support voice or data connections. Telephone jacks per divisible area	1 per division	25 pair per 6 jacks or (6) 4 pair cables per jack	Yes	
Guest Elevator Foyer	Analog Single Line Wall or Desk House Telephone per floor	1 per floor	4 pair per device	Yes	
Ballroom & Meeting Rooms	Patch panel each telephone cable to terminate in IDF on panel	Patch panel size = 2 x quantity of telephone jacks in ballroom & meeting rooms			
Business Center	IP / Digital Telephone receptionist, office, conference room, boardroom	1 per location	4 pair per device	Yes	
Business Center	Analog Line for fax and PC modems	1 per location		Yes	
Public Telephones	Wall Pay Telephones or House Telephones when public telephones are not available	variable per property size		NA	Yes (Pay Tel. lines)
Assembly & Pre-Function Areas	Analog Desk Telephones	variable per property size		Yes	
Coat Room	Analog Wall Telephone	1		Yes	
Conference Registration	IP / Digital Telephone with display	1		Yes	
Retail Space (Concession)	Requirements vary per contract	variable	conduit only	NA	Yes
Guest Floor Lounge	IP / Digital Telephone with display	1	4 pair per device	Yes	
Guest Floor Lounge, Guest Lounge Level	Indoor Cordless Phone	1		Yes	
Guest Floor Lounge, Guest Lounge Level	House Telephones	2			

***Table 2*- Administrative Telephone Guidelines** Consult the CTR for property specific locations					
Locations	Equipment or Telephone Type	Typical Scope (Quantity)	Telephone Wiring Cat 5e four pair as a minimum	Required PABX Extension	Private Outside Central Office Line
Computer Room					
PBS or PMS Interface	RS232C Interface between Telephone and PBS or PMS	1	4 pair per device	NA	
Call Accounting Interface	RS232C CDR / SMDR Output to Call Accounting System	1		NA	
Voice Mail Interface	Voice Mail system	1		NA	
MI Router	Analog Line (Loop Start Telephone Co Lines)				1
House Telephone	Analog Wall Telephone	1	4 pair per device	Yes	
Miscellaneous Areas					
Housekeeping Room	Analog Wall Telephone	1 per floor	4 pair per outlet	Yes	
Valet	Analog Wall Telephone	1 per location		Yes	
Guest Wing Remote Entry	Analog House Telephone	1 per location	4 pair per device	Yes	
Fitness Center	IP / Digital Telephone with Display Receptionist and Offices	1 per location		Yes	
Telephone Equipment Room	PABX RMATS Line	2			Yes (2)
Elevators	Elevator Telephone	1 per elevator		Yes	
Exercise Room	Analog Single Line Wall Telephone	1		Yes	
Gift Shop & Office	IP / Digital Telephone with display at Point of Sale Terminal and analog line for credit card terminal, if required.	2 per location		Yes	
Pool (Indoor)	Analog Single Line Desk Telephone for Pool Attendant	1		Yes	
Pool (Indoor)	Analog Single Line Wall Telephones	1		Yes	
Pool (Outdoor)	Indoor Cordless Phone	1		Yes	
Pocket Paging System (Beepers)	Analog Line	1		Yes	
In-Room Movie Video System	Analog Line for Modems (Loop Start Telephone Co. Lines)	2			Yes (2)
Golf Pro Shop	IP / Digital Telephone with display at Point of Sale Terminal and analog line for credit card.	1 per location		Yes	
Golf Pro Shop Office	IP / Digital Telephone with display	1 per location		Yes (DID)	
Pool Bar (Outdoor)	Analog Desk Telephone	1		Yes	
Pool Bar (Outdoor)	Analog Line at each Point of Sale Terminal for credit card verification	1 per location		Yes	
Pool Deck (Outdoor)	Weatherproof Phone Jacks	2		Yes	

***Table 2*- Administrative Telephone Guidelines** Consult the CTR for property specific locations					
Locations	Equipment or Telephone Type	Typical Scope (Quantity)	Telephone Wiring Cat 5e four pair as a minimum	Required PABX Extension	Private Outside Central Office Line
Spa Reception	IP / Digital Telephone with display and analog line for credit card terminal, if required.		4 pair per outlet	Yes (DID)	
Spa Reservations	IP / Digital Telephone with display	1 per work station		Yes (DID)	
Spa Offices	IP / Digital Telephone with display	1 per office		Yes (DID)	
Spa Admin Area	IP / Digital Telephone with display	1 per work station		Yes (DID)	
Spa Retail Shop	IP / Digital Telephone with display and analog line for credit card terminal, if required.	2 per location		Yes (DID)	
Spa Juice Bar	IP / Digital Telephone with display	1		Yes	
Spa Prep Kitchen	Analog Wall Telephone	1		Yes	
Spa Dispensary	IP / Digital Telephone with display	1		Yes	
Men's Lounge	Analog Desk House Telephone	1		Yes	
Women's Lounge	Analog Desk House Telephone	1		Yes	
Cardio Room	Analog Wall Telephone	1		Yes	
Exercise Room	Analog Wall Telephone	1		Yes	

AUTOGRAPH
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STANDARDS

MODULE 13C AUDIO / VISUAL

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Audio / Visual

13C.1 Overview

A. Program: Provide audio and visual systems to enhance the sound and information system environs for guests, customers and employees in public, recreation, function, guest accommodations and specific BOH spaces.

B. Standards: Comply with the following industry standards:

1. InfoComm & NSCA: Design sound systems in compliance with accepted best practices published by:
   - InfoComm International (InfoComm)
   - National Systems Contractors Association (NSCA).
2. Cabling: Install infrastructure cabling in compliance with manufacturers' recommendations, NEC, BICSI, NFPA and accepted best practices as published by the International Communications Industries Association (ICIA / InfoComm) and NSCA)

C. Abbreviations & Definitions:

- BICSI: Building Industries Communications Systems Institute
- DRM: Digital Rights Management
- DSP: Digital Signal Processing / Processor
- HD: High Definition (video or television)
- HDMI: High Definition Multimedia Interface
- MATV: Master Antenna Television System
- NAB: National Association of Broadcasters
- NEC: National Electric Code
- NFPA: National Fire Protection Association
- PPV: Pay-per-view System
- SD: Standard Definition (video or television)
- UL: Underwriters Laboratories

D. Coordination: Coordinate requirements of this Module with other Standard Modules relating to:

- Architectural acoustics, Module **<6>**
- Guestroom entertainment, Module **<7A>**
- Computer systems, Module **<13A>**
- Telecommunications, Module **<13B>**
- Electric Power, Module **<15C>**

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

Continental Technology Representative (CTR)

At the initiation of the project design, contact the CTR to outline system requirements based on the project location, site, operations and regional systems.

13C.2 Acoustics

A. Acoustical Planning: Acoustic characteristics and interior design of event spaces are essential to creating successful function spaces and providing guest satisfaction.

1. Noise Criteria (NC): Measure and calculate the background noise levels expressed as NC, a mechanical noise level indicator that only includes the energy or frequency sound pressure levels between 125 Hertz and 4,000 Hertz and ignores noises outside of this range even though they are within hearing range.
2. Background Noise: Reduce excessive background noise, reverberation, echoes and unwanted sound from adjacent spaces that interferes with the guests' ability to decipher the spoken word, comprehend sound delivery and minimize audience stress.
   Maximum Levels of Background Noise:
   - Ballrooms: NC 35
   - Meeting Rooms & Boardrooms: NC 30
3. HVAC Systems: **<15A>** Design HVAC systems to minimize unwanted background noise into event spaces.
   - Do not locate noisy HVAC devices in ceiling spaces and on event space roofs.
   - Select quiet supply diffusers in compliance with ASHRAE guidelines for noise control.

B. Reverberation Times:

1. Sound Energy: Measure in seconds (RT60) for sound energy to decay 60 dB from its original energy level.
2. Average Reverberation Time - Maximums:
   a. Ballrooms: RT 60 = 1.2 seconds, with combined salons and average between 500 Hz and 4,000 Hz.
   b. Meeting Rooms: RT 60 = 0.8 seconds.
3. Cause: Interior space volume effects reverberation. Large rooms with high reverberation create potential problems.
4. Acoustical Treatment: Control reverberation with the proper balance of absorptive, diffusive and reflective surface treatments. Provide on wall surfaces from chair rail to 3.6 m (12 ft.) AFF or higher. Coordinate wall finishes with the project's acoustical consultant and Interior Design.

C. **Echoes:** Large, acoustically reflective (hard) surfaces, particularly in event spaces, create echoes.
   1. Properties: When the distance between the sound source and the reflective surface increases, the echo becomes more distinct.
      - Large rooms are susceptible to echo problems.
      - Live bands and productions with staging and high-level portable sound systems exacerbate echo problems because speakers direct much of the sound energy toward side and rear walls.
   2. Absorptive Surfaces: Provide wall surfaces that are properly designed with diffusive and absorptive elements to reduce or eliminate echoes.

D. **Acoustic Isolation:** See Module **<6>**. Isolate the acoustically controlled area from adjacent spaces such as public and service corridors, and other adjacent noise producing event spaces. Provide a high sense of privacy for guests attending meetings in function spaces.
   1. Sound Transmission Class (STC): Determine sound isolation quality of architectural elements (walls, doors, operable partitions, etc.) by STC rating.
      - Design conditions, such as large architectural elements require high STC to compensate for vibro-acoustic element behavior.
      - Large operable partitions require higher STC than smaller partitions for the same installed performance.
   2. Noise Isolation Class (NIC): Provide NIC field tests to evaluate and document completed project spaces and the effectiveness of architectural elements, demising fixed walls and partitions, and operable partitions.
   3. Pass Doors: Not permitted in operable partitions, due to acoustical seal compromises and door maintenance and operation issues.

13C.3 A / V Systems - General

A. Audio:

1. Background Music: Audible instrumental music (no words or lyrics), played at low-level, to provide auditory cues and subtle accompaniment to guests throughout public spaces such as lobby, circulation, assembly, activity areas, hallways and corridors, but not in guestroom corridors.
2. Foreground Music: More dynamic in character and entertainment quality than background music and may include music with lyrics. Typically played at higher audible levels in food and beverage venues, event spaces and activity areas.
3. Customized Music Services: Or "music styling", offering the following:
   - customized programming or music channel playlists
   - a means of changing tempo and / or genre of music according to different times in the day - also known as "day-parting"
4. Sound Reinforcement: Provides amplification system for voice and music sources and from A/V programs such as computers, video, audio tapes, etc. Provide in event spaces and entertainment areas and designated activity areas.

B. Digital Signage & Way-Finding: An "electronic reader board" or "visual information system".

1. Digital Signage: Provide to manage and display information relating to events, food and beverage, and property activities through various visual displays in public circulation and assembly / event spaces.
   Utilize to provide flight information at airport properties, for general property and local area information, and to promote food and beverage venues and special amenities (spa, golf, club and public events, etc.) at resorts.
2. Way-finding: Provide to assist guests with event space locations, schedules and information.
   - Locate larger flat-panel displays at entries and decision points along the guests' journey to event spaces.
   - Provide small door-side displays at or near event space entry doors.

C. Guestroom Entertainment Systems: Provide television programming (local, satellite and premium cable channels), music, property information (events, F&B, information and local "barker" channel), interactive games and pay-per-view programming.
If required by the property, provide programming from related facilities (convention centers, airports, universities), etc.

13C.4 Systems Infrastructure

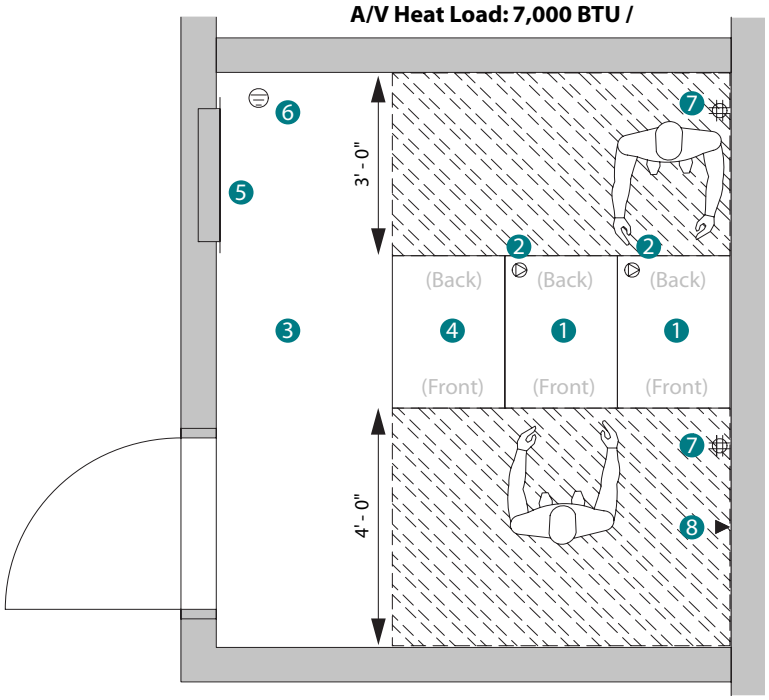
A. Equipment Rooms: Provide dedicated, secure rooms to accommodate sound system equipment.

1. Sound System: Locate in a dedicated space on same event space floor with primary door opening to the service corridor. See example *Figure 1* for room plan.
   - **a.** Except for property LAN and telecommunications service IDFs, do not locate other system equipment in the sound system equipment rooms.
   - **b.** Contain sound and telecommunications equipment in totally enclosed and lockable steel equipment cabinets.
   - **c.** If equipment room serves A/V and telecommunications equipment, separate the equipment with a fence and lockable door to protect the telecommunications equipment while maintaining access to A/V equipment.

Figure 1 **- Sound System Equipment Room - Example Plan**

Notes: A/V Telecom

1. **Floor standing equipment racks for main A/V systems**
2. **Electrical contractor provides three, 20A isolated ground circuits for each rack. Flex into top of each rack using liquid-tight non-metallic conduit without compromising integrity of isolated ground.**
3. **Exact location of A/V equipment racks shall be coordinated with field conditions.**
4. **Data / Telecom rack furnished by A/V contractor. Data / Telecom wiring, patch panels and other equipment by Data / Telecom contractor.**
5. **A / C power panel**
6. **Chemically charged ground rod**
7. **Convenience quadraplex power outlet**
8. **House phone**



d. Do not allow equipment in ceiling space that requires maintenance, adjustment, service and may leak or produce condensation.

e. When event spaces are remote from the equipment room, provide a large touch screen control panel in a secure enclosure in the service corridor associated with the equipment rooms.

f. Not intended for portable A/V equipment storage, but may serve as department offices.

g. Features: Provide the following:

- Sealed floor
- Painted walls
- Fluorescent lights
- Lay-in ceiling

h. HVAC: Provide an enclosed air conditioned, secure room. Design to maintain a temperature between 10˚ to 27˚ C (50˚ to 80˚ F) with 30% to 75% relative humidity, non-condensing; see Module **<15A>**.

2. MATV System Rooms: Provide headend equipment in an enclosed, air conditioned, secure room.

a. Room Locations: Coordinate the following with Modules **<13A> <13B>**.

- When the property utilizes antennas to receive the off-air programming, locate the headend equipment room within a 61 m (200 ft.) run of cable from the equipment to antennas.
- If the property utilizes local cable for the off-air local programming, locate the headend equipment room near the A/V equipment room or near / in the property's computer equipment room.
- Co-locating the MATV headend with the property computer and / or telephone equipment is acceptable.
- If the headend is not located in the Communications Room, provide ethernet links from the MATV to the Communications Room.

b. HVAC: Design to maintain a temperature between 10˚ to 27˚ C (50˚ to 80˚ F) with 30% to 75% relative humidity, non-condensing; see Module **<15A>**.

3. Control Room: Provide an A/V control room above the pre-function guest entry (mezzanine floor) to accommodate technicians operating the systems for events as follows:

a. In high end projects that anticipate a high volume of social activities.

b. Where a ballroom is small for the anticipated programmed events.

c. Provide operable windows to the ballroom space so technicians may hear the event.

B. Systems Distribution:

1. Raceways: Provide pathways, including conduit, pull boxes and cable trays to contain and manage the A/V and telecommunications cabling. See *Figure 2* example A/V Infrastructure Diagram.
   a. Accessible Raceway: Provide to permit maintenance and cabling infrastructure upgrades to accommodate future requirements.
   b. Protection: Provide raceway elements to physically protect cables, accommodate servicing and replacement, and provide electromagnetic shielding to minimize system interference.
2. Conduit:
   a. Location: Provide conduit from sound system input and control devices. Extend conduit from the device backbox above the cable tray so the cable is continuously protected.
   b. Flexible Conduit: Not permitted. Provide ferrous and thin wall or rigid conduit.
   c. Sweep Bends: Provide conduit serving network cabling with "sweep bends" to permit ready maintenance and installation of future fiber optic cabling.

***Figure 2* - A / V Infrastructure Diagram**

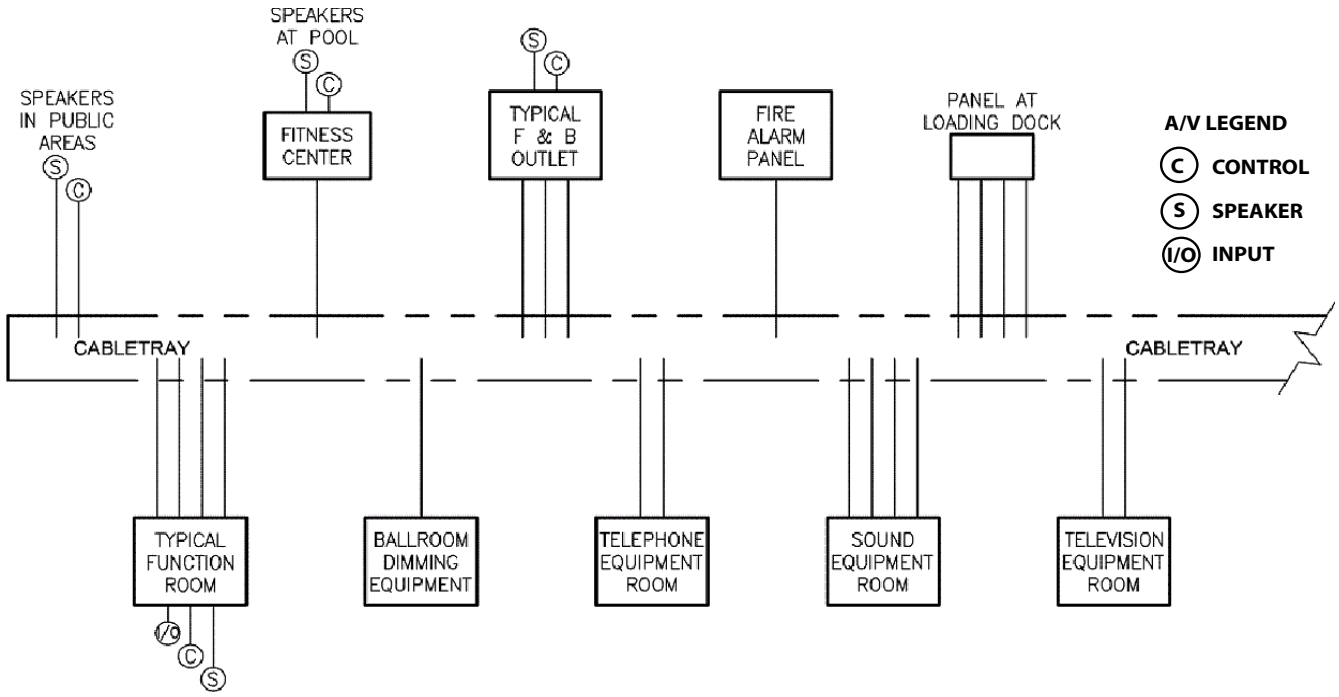
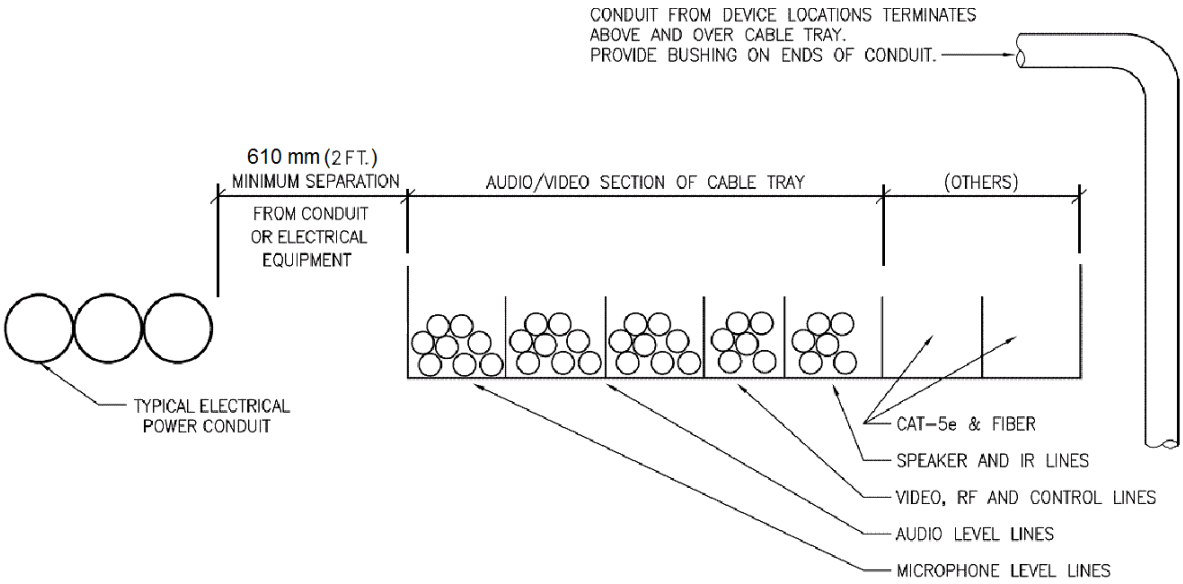


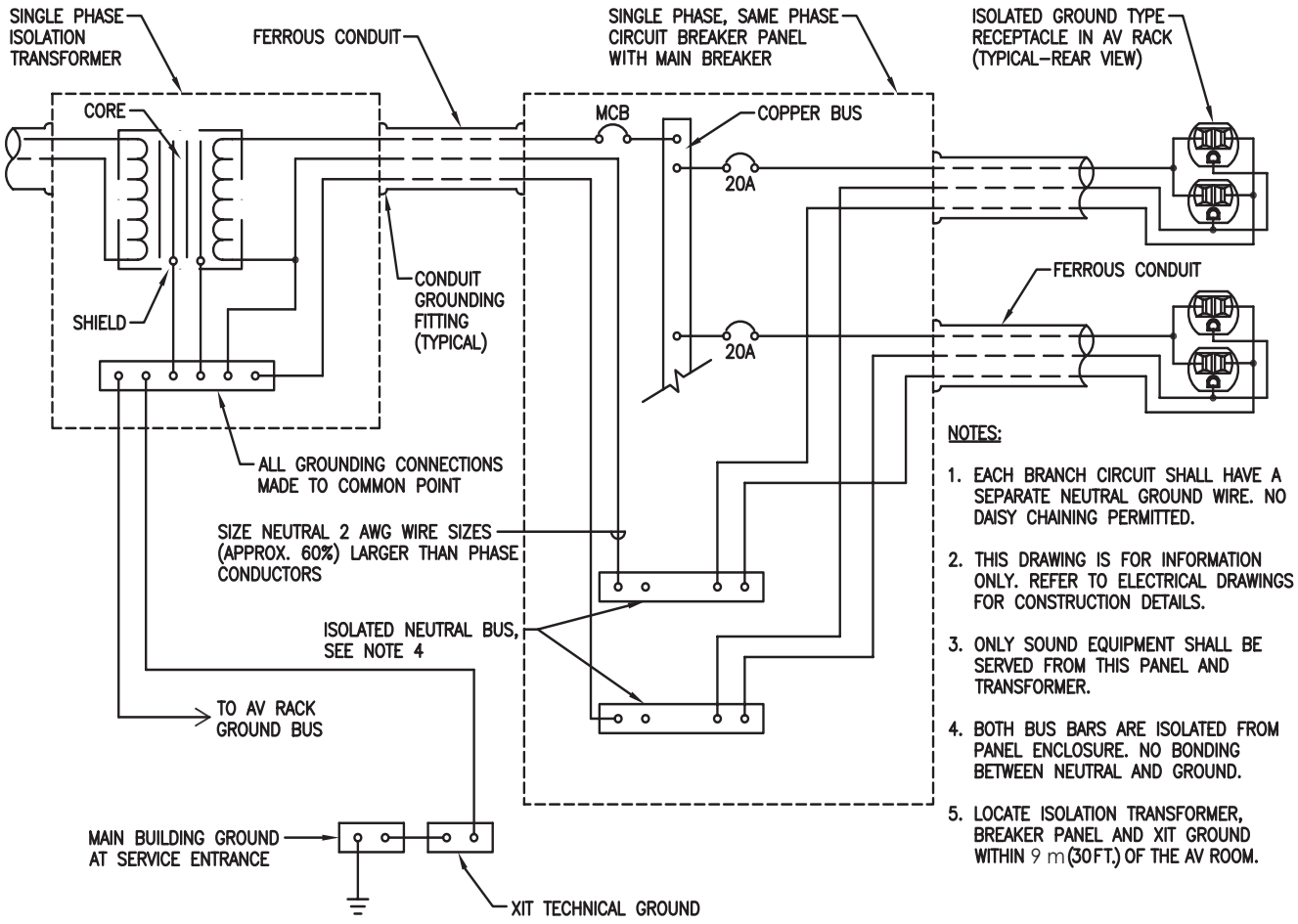
Figure 3 **- Cable Tray Wiring Distribution - Example Detail**



3. Cable Trays: Provide cable trays to collect cables from input, control devices and from speakers. Route cable trays to equipment room.
   a. Location: Attach cable trays to wall or center support to permit easy system cable maintenance, additions and upgrading
   b. Dividers: Provide cable trays with ferrous dividers to separate circuit levels.
   c. Example: See *Figure 3* Cable Tray Wiring Distribution - Example Detail.
4. Open Wiring: Utilize accessible ceiling space for speaker and control circuits only. Support open wiring with "J" hooks at 1.5 m (5 ft.) on center maximum.

C. **Power & Grounding Service:** Provide power for the sound system A/V equipment racks and electric outlets in the Sound Equipment Room from a dedicated single phase, same phase isolated ground panel (the "Technical Systems Power Panel").
1. Power Panel: Equip with an isolation transformer and a Faraday shield, derived neutral and isolated ground tied back to the main building ground grid with a dedicated, large gauge cable. See *Figure 4* Technical Systems Power and Grounding Diagram - Example.
2. Main Sound System Audio Ground: Provide a dedicated high quality, chemically charged, non-sacrificial technical ground to provide an impedance to earth of less than 5 ohms (such as *Lyncole Industries XIT* ground rod). Equivalent grounding schemes may be considered if performance is a proven equivalent for the required system.

Figure 4 **- Technical Systems Power and Grounding Diagram - Example**



3. UPS (Uninterruptible Power Supply: Equip the sound system with a UPS to protect the programming and control and the DSP systems settings. Amplifiers are not connected to UPS.
4. Electric Power Outlets: Provide adjacent to sound system input plates and A / V network connector panels in event spaces.

D. Fire & Life Safety Alarms: <14>

1. Coordination: Sound systems can produce high sound levels that may prevent guests from hearing fire and life safety system announcements. The sound system is a completely independent system not associated with nor connected to the fire alarm and life safety systems, and does not transmit fire and life safety alarms and messages.
2. System Shut Off: In the event of a fire or life safety alarm, design the sound system to deactivate, utilizing shunt-trip breakers or latching power contactors in the equipment rack.

E. Telecommunications: **<13B>**

1. System Interconnections: Provide connections to telephone services, tie lines and A/V network patchbays.
2. Property Internet (PI): Provide PI connections and a variety of telecommunications services (house phone, DID, POTS, T-1, ISDN etc.). Patch the services into the A/V network to serve guests' requirements.
3. Adapters: Provide for network RJ45 connections as four phone circuits.
4. Internet (PI) Connection: **<13A>** Provide to control system for remote monitoring, operation and maintenance.

13C.5 Background Music (BGM)

A. System - General: Distribute music to public spaces such as lobby, circulation, event / assembly and activity areas.

1. Location: Co-locate equipment with the main event space equipment, where possible.
   Where impractical to completely centralize the systems, interconnect the remote equipment with the central equipment to accommodate centralizing the BGM sources to centralize the systems master control.
2. Quality: Provide commercial quality equipment, materials and components designed for continuous use. Consumer quality components are not acceptable.
3. Standards: Comply with manufacturers' recommendations and accepted industry standards as published by ICIA / InfoComm and NSCA.

B. Features & Functions:

1. Music Sources: Originate BGM for public circulation and assembly spaces from a subscription service.
   a. Deliver subscription music services through telephone, PI, cable, or satellite. On-site BGM sources utilizing media such as cassettes, tapes and CDs are not permitted.
   b. Provide "day-parting" BGM programming so property management can pre-arrange music changes according to time of day. Programming changes occur automatically and do not require operator intervention or action.
   c. Provide BGM systems dedicated for event spaces from a minimum of three, independently selectable, music channel subscription services so each event space, salon or room may select from the sources. Also, provide a line-level input on the patch panel to permit accepted auxiliary music sources.

d. Provide BGM systems for food and beverage areas. Include one independent, dedicated music channel from the subscription service. Each F&B area can select from the primary property background music sources.

2. Controls: Provide independent music volume controls for each distinct property area.
   a. Location: Provide controls at the primary equipment rack or locally. Where local control is appropriate, conceal controls from public view.
   b. Example: Front desk area local control to permit staff to adjust the volume at night. Controls are automatically reset to a pre-defined volume level and music source before morning activities begin.
3. Speakers:
   a. Types: Speaker types vary according to the architecture and interior space design. Interior spaces may utilize an array of ceiling speakers, self-contained speakers, planter speakers, etc.
   b. Conceal speakers wherever possible while providing consistent, low-level BGM coverage.

C. **Areas Served by BGM:** Provide a continuum of low-level BGM as an aural cue for guests throughout the public assembly and circulation spaces.
1. Acoustic Zones: As a design principle, ensure that guests are not able to hear more than one music source at any time, in public spaces.
2. "Buffer" Zones: Provide quiet areas or water feature sounds to acoustically isolate an area to accomplish the buffer effect. Example areas are food and beverage venue entrances and courtyard / outdoor activity areas.
3. Locations: Provide low-level BGM to the following areas:
   a. Public assembly and circulation areas - not guestroom corridors.
   b. Lobby and front desk areas with independent volume control behind front desk.
   c. Porte Cochere: Same programming as lobby area.
      - At busy urban sites, where traffic noise is significant, no BGM is required.
      - In porte cochere less than 6.1 m (20 ft.) high, provide speakers or conceal in planters or adjacent landscaping.
   d. Public Restrooms: Same programming as adjacent areas. Typically, speakers are tapped to provide a lower volume than speakers in adjacent circulation area.

e. Elevator Lobbies:
- Main Floors: Same programming as adjacent lobby and circulation areas.
- Guestroom Floors: Provide only in high-rise projects. Do not locate speakers within 12.2 m (40 ft.) of guestroom entrance doors.

f. Retail Areas: Same programming as adjacent lobby and circulation areas.
- Provide each retail space with an independent volume control.
- In themed retail areas (example golf shops, spa shops), provide program selections from a dedicated subscription music source in addition to volume control.

g. Pre-function Areas: Same programming as the adjacent lobby and circulation areas. See Event Spaces, below for other requirements.

h. Courtyards – Indoor: Conceal speakers in planters or landscape areas.
- When a functional part of an adjacent food and beverage or activity venue is provided, design and connect system speakers to the venue's BGM / foreground music sound system with independent volume controls.
- Guests are not to hear more than one music source at any time in public areas. Provide through interconnecting program switches or through control system programming. Utilize buffer zones to accomplish this effect.

i. Courtyards - Outdoor: Conceal speakers in landscape areas.
- When a functional part of an adjacent food and beverage or activity venue is provided, design and connect system speakers to the venue's BGM / foreground music sound system.
- Provide a local input to feed the courtyard sound system with tie lines to the central sound system room.

j. Outdoor Circulation Areas: Conceal speakers in landscape areas.

k. Bridges or Walkways to Adjacent Facilities: Conceal speakers in landscape areas, under bridges and in overhead covered structures.

13C.6 Digital Signage & Displays

A. System - General: Provide an "electronic reader board" or "visual information system" or "electronic way-finding system" to manage and visually display event information, food and beverage, and property activities.

Design the electronic way-finding system display specific and unique to each property and distinct from the digital signage displays, where provided, to promote property services and activities.

1. Headend: Provide a "headend" system component that accepts and manages information, various visual displays throughout public circulation and assembly areas to present information.
2. Flat Panel Screen Displays: Provide large, flat panel system displays with non-glare or anti-glare viewing at key guest circulation junctures.
3. Door Side Graphic Displays: Provide small flat panel, door side, graphic system displays, integrated with the signage and locate at entrances to each event space room.
4. Property Information: Provide at least one channel for general property information and distribute only to guestroom televisions. Consult with the CTR for property specific requirements.

B. Features & Functions: Display information relating to meetings and events including name, time and event location. Large displays show meetings occurring or currently scheduled for each day. Door side displays show meeting information specific to the related event space.

1. Advanced Features: If required, provide features that may include graphics displays, client logos and full motion video on large and door side displays.
2. Property LAN: Connect the system to the property LAN so programming and control is performed from a designated computer in the administration area.
3. PMS: Provide an interface with the digital signage and displays to the property management system (PMS) to permit automated posting of events and interconnect to the property television distribution system to provide meeting information to guestroom televisions. Consult the CTR for specific interface requirements and available.

C. Displays:

1. Locations: Provide large displays for directional information at each public area floor for anticipated guest traffic from elevators and to and from main property entrances and event spaces. Locate displays to minimize traffic retracing and backtracking.
2. Large Displays: Provide commercial quality flat panel LCD displays with frames or bezels with non-glare or anti-glare protective glass.
   a. Determine large displays quantities through analysis of property configurations. Provide sufficient displays so the 19 mm (¾ inch) minimum character height, a dwell time of 10 seconds for each information "page", and a full day's event information display, the maximum wait time to view the event information does not exceed 30 seconds.
   b. Recess displays in a wall shadow box detail, or provide displays with a decorative bezel to integrate with the interior architecture and adjoining finish. Provide adequate display device ventilation, and maintain the wall fire rating where mounting the display.
   c. Decorative framing or enclosure provides flexibility in display size to accommodate future displays with slightly different overall dimensions.
   d. Provide independent control of overhead speakers near large displays so programming that includes an audio signal is transmitted to the display area without interference from other local sound system programming.
3. Door Side Displays: Provide door side, flat panel graphic displays at each public entrance to each event space.
   a. LCD: Provide 38 cm (15 inch) (diagonal measure) displays. Provide frames or bezels with non-glare or anti-glare protective glass.
   b. Mount displays on walls in the same or similar manner as required for large displays including accommodating different display sizes.

13C.7 Master Antenna Television System

A. System - General: Provide an RF television distribution system throughout the property public spaces and guestrooms for delivery of television programming.

1. Programming: Coordinate with **<13A>** and **<13B>** for cable and broadcast television programming delivery systems for guestroom entertainment.
2. Infrastructure for MATV: Provide analog and digital RF and digital IP network infrastructure for guestroom and public area entertainment.
   - Does not include data service or high-speed internet access for guests.
   - Design for digital television (DTV) and high definition television (HDTV) programming.
3. Distribution System: Design MATV to receive and deliver local, satellite, premium and locally originated television programming.

B. Features & Functions:

1. Television Channel Sources: Provide programming from multiple signal sources to provide programming redundancy to minimize single source failure and the impact to guests. Contact the CTR for specific channel requirements for the property location.
   a. Provide for reception of local broadcast programming from major networks such as CBS, NBC, ABC, FOX, PBS and other significant regional channels.
   b. Provide reception of premium channels such as HBO, CNN, ESPN, Disney, etc. Programming may be from local cable, from satellite or from the pay-per-view programming vendor.
   c. Provide pay-per-view programming, video information system programming, special channel programming (Spa, Golf, etc.), interactive gaming and local programming.
   d. Contact the CTR for Pay-Per-View criteria for specifics and other MATV system infrastructure requirements.
   e. Provide equipment and modulation for a minimum of 3 in-house property channels and distribute channel content in full HD resolution.
2. Headend Processing: Design a relatively fail safe headend.
   a. Combine individual, active single channel and pass band components through a passive combiner to prevent failure of the active component affecting other components in the system.

   b. Provide single channel processors that accommodate digital high-definition for off air channels.
   c. Design for adjacent channel cable operation with 100 active channels.
   d. Provide frequency-agile adjacent channel modulators for locally originated video channels.
3. Distribute MATV signals to the following areas:
   a. In public areas, electronically block premium and pay-per-view channels.
   b. Business center
   c. Food and beverage areas (including executive lounge)
   d. Recreation spaces (and spa when applicable)
   e. Retail areas
   f. Event space equipment rooms (coordinate with A/V systems)
   g. Guestrooms (salons and bedrooms in suites)
   h. Executive / Sales offices
   i. Employee dining
   j. Engineering (for television service)
4. Public Area Distribution: Home-run to MATV distribution equipment located in central Sound Equipment room.
5. Guestroom MATV Distribution: Provide broadband (not split-band) distribution system with 1 GHz bandwidth, capacity for 100 active channels and provisions for future channel capacity. Consult with the CTR for property specific criteria.
   a. Signal Level: + 5dBmv (+/-3 dBmv) minimum, at any tap, on any channel.
   b. Amplifiers: Provide system with no more than one amplifier between MATV headend's passive channel combiner and any guestroom tap. Design amplifiers for digital signal distribution and equip with sub-return amplifiers.
   c. Protection: Provide system with trunks, drops and risers so failure of any single active device does not affect more than 20% of guestrooms.
   d. Distribution: Daisy-chain the system up to 16 rooms (maximum) on any single riser, or configure the system with homeruns to each guestroom tap.
   e. Cable: Provide double shielded cable with 100% bonded foil shield, 60% aluminum or tinned copper braid over foil and rated for digital signal distribution.
   f. Connectors: Full-cycle hex-crimp type
   g. Splitters & Taps: Fully shielded, directional and designed to pass sub-channel return signals. Tap value is 7 dB minimum. Self-terminating or resistive taps are not permitted.

13C.8 Food & Beverage (F&B) Systems

A. Sound (Audio) - General: Provide background and foreground music entertainment in F&B **<3>** areas to complement the atmosphere developed by interior design and operator.

1. Local Controls: Provide in each area and in each venue.
2. Location: Where practical, co-locate equipment for background music with the main event space sound systems.
3. Controls: In each area with BGM, provide local controls for staff access only and conceal controls from public view.
   - Locate controls in the controlled space so staff can hear sound adjustments.
   - Provide program control selection and volume control.
4. Background Music (BGM): Provide dedicated BGM channel from the subscription music service for themed entertainment and F&B areas. Do not provide local music inputs, such as CD or iPod/MP3 players.
5. Other Requirements: Consider more advanced A/V entertainment requirements. See the applicable Brand Food & Beverage Concept Report for specifics.

B. Features & Functions: Coordinate with Module **<3>**.

1. Three Meal a Day & Fine Dining Restaurants: Provide BGM throughout seating areas.
2. Private Dining: If a seating section is designated for Private Dining, provide a local speaker level volume control for that area.
3. Lobby Lounge / Bars: Provide BGM and foreground music throughout the seating areas.
   a. Provide zoned local volume controls and a music source selection control behind the bar.
   b. If television entertainment is required, provide sufficient televisions to permit most of the seated patrons to view a video display without having to turn away from their table guests.
      Provide current technology, professional quality displays with non-glare or anti-glare viewing surfaces and third-party RS232 and Ethernet (cable) control.
   c. Provide a digital media server and control system with satellite / television tuners behind the bar and connect to sound system.
   d. Locate a touch screen control panel behind bar and at host stand.

4. Piano Bars: When a piano is included in a lounge or bar area concept, provide a contact microphone in the piano to provide live sound to the system.
   a. Control Panel: Provide a small control panel located at, on, or near the piano that includes a switch to turn on / off the local background or foreground music and a volume control to adjust the level of piano music.
      - Control activation causes the music to ramp up or down over a 10 second period, not simply to switch on and off.
      - Provide an identical panel as described above behind the bar to permit bartender to control volumes from piano and BGM and foreground music sources.
   b. Piano, Vocalist & Combo: When piano entertainment is anticipated to include a vocalist or small combo, provide one or two more microphone jacks for the piano microphone.
      - Provide a small, portable sub-mixer located at the piano to permit the combo musicians to sub-mix their instruments.
      - Provide bartender panel with three volume controls; one for the piano, one for the vocalist and one for other instruments.
      - When a piano is located near a F&B venue, provide the piano as a music selection for each venue.
      - Provide the piano with a digitally controlled player piano.
5. Snack Bars: Provide BGM and / or foreground music from the central control room. Provide same programming as adjacent activity or circulation spaces with local volume controls.
6. Pool Bars: Provide BGM and / or foreground music with the main programming source located at the central control room. Provide zoned local volume controls and source selection controls behind the bar.
   a. When the pool complex is significant, provide a dedicated feed and channel from the central music server with a local control panel to permit adjusting the music server for this area.
      When this feature is included, interconnect adjacent activity area sound systems so the same music programming is played throughout the pool area.
   b. Locate and contain A/V equipment serving pool areas in an enclosed, air conditioned, clean, dry and secure space or provide a self contained, environmentally sealed and conditioned equipment rack for the system equipment.

13C.9 Entertainment Lounge Systems

A. Sound & Video - General: See Modules **<3>**, **<6>** and specific property Food & Beverage Concept report for requirements.

13C.10 Fitness Center Systems

A. Sound & Video - General: Provide BGM (background music) and foreground music to complement the guest activities in various Fitness Center **<4>** areas.

1. Volume Controls: Provide for each activity area.
2. Location: When practical, co-locate the BGM equipment with the main event space sound systems. Alternately, locate BGM equipment in a staff lounge, telecom equipment closet or administrative office associated with the Fitness Center areas.
3. Controls: Provide each activity area with music with local controls accessed only by staff and conceal controls from public view.
   - Locate controls within the controlled space so staff can hear sound adjustments.
   - Provide controls for music program selections and volume control.

B. Features & Functions: Coordinate with Module **<4>**.

1. BGM Locations: Provide low-level BGM in the following Fitness Center areas:
   a. Entry Areas & Circulation Corridors: Provide to welcome the guest to the fitness area. If a reception desk is included, volume controls for pool, reception and locker rooms are located behind the desk.
   b. Locker Rooms: Provide on the same channel as the entry area and locate controls at the Fitness Center reception desk.
   c. Indoor Pool Areas: Provide locate controls at the area reception desk.
   d. Outdoor Pool Areas: Conceal speakers in surrounding plants. If a pool snack bar is provided, connect speakers system to pool snack bar sound system and locate controls behind the reception area desk.
2. Aerobics & Weight Rooms: Provide BGM and foreground music and televisions. Provide foreground music as an independent, selectable music channel from the subscription service.
   a. Provide wall mounted volume and source controls to permit music selections by guests.

b. Provide three to six, easily viewable by guests, current technology, flat screen television monitors for guests utilizing aerobic machines and exercise area.
Equip televisions with a non-glare or anti-glare viewing surface and an FM radio transmitter for sound.

c. Equip aerobic exercise equipment (elliptical machines, treadmills, steppers, etc.) with individual television monitors and personal head / ear phone jacks.

d. Connect exercise equipment monitors and area flat panel televisions to the MATV system.

13C.11 Spa Systems

A. Sound & Video - General: See Module **<4>** and the Spa ~~Design~~ Standard for specific spa information and design criteria.

1. Background Music (BGM) & Foreground Music: Provide to complement guest activities in various spa areas.
2. Volume Controls: When practical, co-locate the equipment for BGM in each activity area with the main event space sound systems.
3. Controls: Provide each activity area with music with local controls accessed only by staff and conceal controls from public view.
   - Locate controls within the controlled space so staff can hear sound adjustments.
   - Provide controls for music program selection and volume control.
4. Dedicated Television Information Channel: If the property is equipped with a Spa, provide a dedicated television information channel distributed to guestrooms via the guestroom entertainment system.
   Provide channel programming that originates from the Spa Manager's office.
5. Other Requirements: If the Spa Programming Report requires expanded A/V technologies for the A/V system then, for example, provide digital art distributed throughout the Spa areas, personal listening pods, etc.

B. Features & Functions: Coordinate with Module **<4>**.

1. BGM Locations: Provide programming source from a commercial music subscription service for the low-level BGM in the following Spa areas:
   a. Entry Area & Circulation Corridors: Provide to welcome guests to the Spa and reinforce the environmental quality.

- Locate volume controls for the entry, circulation corridors, pool and locker rooms behind the Spa reception desk.
- Locate throughout guest circulation corridors to mask sounds from treatment rooms.
- Alternately, provide low-level "nature or organic" sounds from a digital music source.

b. Meditation Areas: Provide with a dedicated music source. Alternately, provide low-level "nature or organic" sounds from a digital music source.

c. Outdoor Areas: Conceal speakers in surrounding planting. Locate controls behind the reception desk or in a nearby service area.

d. Locker Rooms: Provide from the entry area music channel and locate volume controls at the reception desk.

e. Wet Areas: Locate throughout the wet activity areas including whirlpool, plunge, indoor pool and wet treatment rooms. Provide self contained, water and weather resistant speakers.

f. Retail Areas: Locate volume controls at the cashier area. Provide from the adjacent entry or corridor music channel.

g. Juice Bar Area: Locate music volume controls behind the bar service area. Provide from the adjacent activity or corridor music channel.

2. Treatment Rooms: Provide BGM from a commercial music subscription service with stereo ceiling speakers and wall mounted music controls in each treatment room.

a. Provide music volume control and music selection from at least six channels of stereo BGM. Include auxiliary music input to permit music input from personal devices.

b. Alternately, provide a six channel, low-power FM transmission or WiFi system designed to provide wireless music service throughout the Spa.

- Provide each treatment room with a MP3 / CD-radio or WiFi receiver having presets adjusted to the Spa music channels.
- Provide the radio with input to accept signals from personal players such as an iPod or similar devices.

13C.12 Event Space Systems

A. A / V - General: Provide sound reinforcement systems that accept signals from microphones and A/V program sources to evenly distribute high fidelity, high-level, full frequency response sound throughout an audience and listening area.

1. Sound Systems: Provide built-in sound reinforcement systems for spoken word and reproduction of recorded audio program for each event space (such as ballroom section or salon and meeting room) with over 93 m² (1,000 sq. ft.) of floor space or when combined with an adjacent spaces is equal to or larger than 93 m² (1,000 sq. ft.). Provide input plates, controls and an array of ceiling speakers for event spaces.
2. Passive A/V Network Tie Line Connections: Provide for event spaces that do not require built-in sound systems.
3. Control Systems: Digitally programmable with an exclusive user interface for sound system functions.
   a. Provide a system interface with the property's management system that allows staff to monitor and control A/V systems through computers and mobile devices on the management network.
   b. Locate system control panels at main equipment rack and in each event space.
4. Processing (for sound systems): DSP based (digital signal processing) that provides mixing, routing, equalization, leveling, combining and other sound processing functions.

B. Pre-function Areas: Provide system capacity to play background and foreground music throughout during reception events.

1. Provide interconnection to adjacent areas for event spaces with overflow functions.
2. Locate system controls in adjacent event spaces.
3. Zone the systems to permit assigning program sources for any of the adjacent event spaces.

C. Ballrooms:

1. Sound Reinforcement: Provide independent, high-level, high intelligibility sound reinforcement systems in each Ballroom and Salon.
   a. Voice Reinforcement: The primary purpose of reinforcement system is to amplify the spoken word.
   b. Music System: The secondary purpose is to provide foreground music and playback of recorded A/V programs and for background music.

c. Live Music: The system is not intended as the primary sound reinforcement for live musical entertainment.

2. Input / Output Plates: Provide in-room controls, A/V network connectivity and ceiling speakers.
3. Projector Mounts: Provide in each center salon a ceiling mounted, manually retractable, projector mount, to accommodate portable projectors, and position to serve the primary object wall. Built-in projectors and projection screens are not required.
   a. Extend connectors from projector mount to the front of the room's A/V input plate.
   b. Include connections for power and video signals to the retractable projector mount and extend the connections to the input plate located on the salon object wall.
   c. Provide input connections for AVNet tie lines utilized with portable transmitter / receiver pairs to route analog or digital signals to the projector. The transmitter provides audio program signal break-out to feed the built-in room sound system.
   d. Provide multiple retractable projector mounts in salons that have multiple object walls. Projector mounts may serve as hang points and retractable feature lighting supports, when properly specified and labeled for live equipment loads.
4. Recording Facilities: Provide at equipment racks on a recording panel equipped with XLR-3M jacks (one per Ballroom, Salon or Meeting Room) and on the patchbay. Provide recording outputs that are transformer isolated from the DSP output and not equalized.

D. **Meeting Rooms:** Equip with built-in sound systems and tie line plates as required for Ballrooms.
1. Projection Screens: Provide built-in, electrically operated projection screens and manually retractable projector mounts and position to serve the primary object wall.
   a. Type: At a minimum, provide HD aspect ratio, and where practical, may be dual-aspect ratio screens.
   b. Connectors: Extend connectors from the projector mount to front of the room's A/V input plate.
      - Where cable distances from wall plates to projector mounts or displays are less than 10.7 m (35 ft.), input connections include digital video and audio program signal break-out to feed the built-in room sound systems.
      - For longer distances, provide AVNet tie lines with portable transmitter / receiver pairs as required above for Ballroom projector mounts.

2. Built-in Projectors: Not required.
3. Power, Data & Phone: If room design requires, provide floor pockets for electric power, data and telecommunications connections. Contact the MI Representative for project requirements.

E. Breakout Rooms: Typically, rooms smaller than 93 m² (1,000 sq. ft.) with fixed walls (no operable partitions). Provide each room with a tie line plate as required for Ballrooms and Salons.

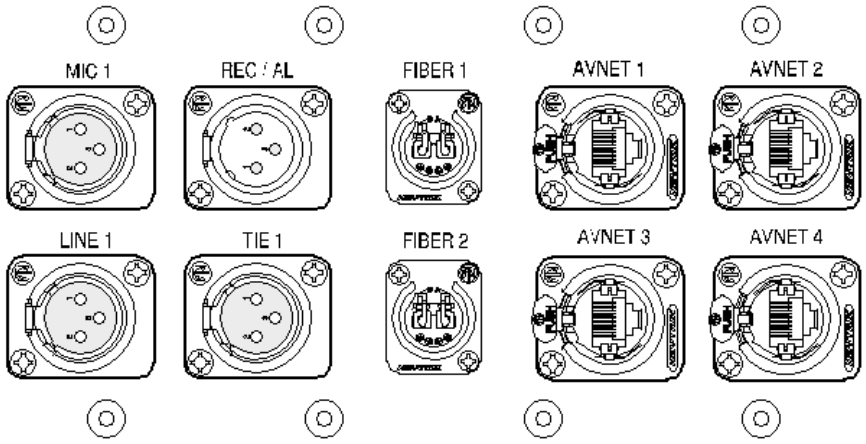
F. Boardrooms: Typically, with fixed walls (no operable partitions) and a fixed table. One end wall is designated as the "object wall" or front of the room.

1. Technology: Provide "HD video teleconference ready" with interconnections with telecommunication services, and pre-wire for multiple microphones at the table.
2. Projection Screen: Provide built-in, electrically operated screen with aspect ratio of 16:9 at the object wall and a corresponding manually retractable projector mount.
3. Connectors: Extend connectors from the projector mount to front of the room's A/V input plate.
   a. Where cable distances from wall plates to projector mounts or displays are less than 10.7 m (35 ft.), input connections include digital video and audio program signal break-out to feed the built-in room sound systems.
   b. For longer distances, provide AVNet tie lines with portable transmitter / receiver pairs as required above for Ballroom projector mounts.
4. Built-in Projectors: Not required.
5. Sound: Provide a built-in sound system with features and functions required for Ballroom and Salons.
6. Inputs: Provide inputs for digital video, audio, network, telecommunications and convenience outlets built into the table. Provide sound system inputs for flat panel display at the front of the room and built into the table.
7. Visual Display: Provide a concealed large flat panel display and locate at the front wall of the room.
   a. Equip with upgraded front-firing built-in speakers and multiple inputs. Extend inputs to the Boardroom table and to the front wall of the room.
   b. Provide with non-glare or anti-glare viewing surface.
   c. Conceal the display utilizing one of the following methods; retractable millwork doors, "art-screen" frames, or lifts that retract display into credenza or millwork.

G. A / V Features & Functions: Provide event space A/V (sound and visual) display systems to fully support effective meeting activities. Provide a robust built-in system to deliver high-level sound reinforcement, program signals distribution and to integrate with and complement portable equipment and systems.

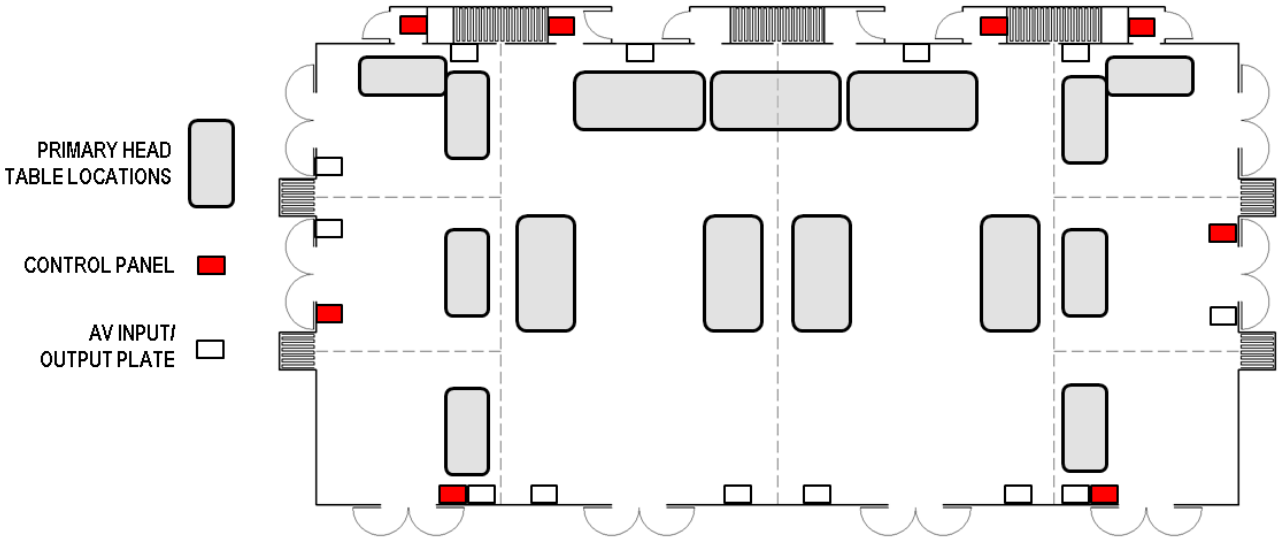
1. Inputs - General: See *Figure 5*.
   - **a.** Equip with two active microphone level inputs (XLR-3FD connectors), one passive audio tie line (XLR-3FD connector), an MATV jack ("F" connector).
   - **b.** Terminate active microphone inputs with a 1.6 K ohm resistor on the back of the input plate jack to minimize input noise.
   - **c.** Integrate input plates with A/V network features described below.
   - **d.** Provide input plates designed to conceal and protect connectors when not in use. Typically, utilize a millwork panel or wall-box enclosure.

***Figure 5* - A/V Input Plate with Integrated A/V Network Connections**



2. Input / Output Plates & Tie Line Plates: See *Figure 6*.
   - **a.** Location: Locate at the "object walls" and at various locations on the peripheral of fixed walls.
     Position to serve cables to the most commonly used head table, podium, stage, platform and lectern locations without placing cables past, or over public or service entrance doors.
   - **b.** Quantity: Equip each event space with at least one input / output and A/V network connectivity plate.
     - Equip large salons with tie line plates in the room's front and rear to minimize, wherever possible, A/V cabling runs in front of doorways and guest traffic areas to minimize tripping and aesthetic issues.
     - See "A/V Network & Tie Lines" and *Figure 5*.

Figure 6 **- Ballroom A/V Device Layout - Floor Plan**

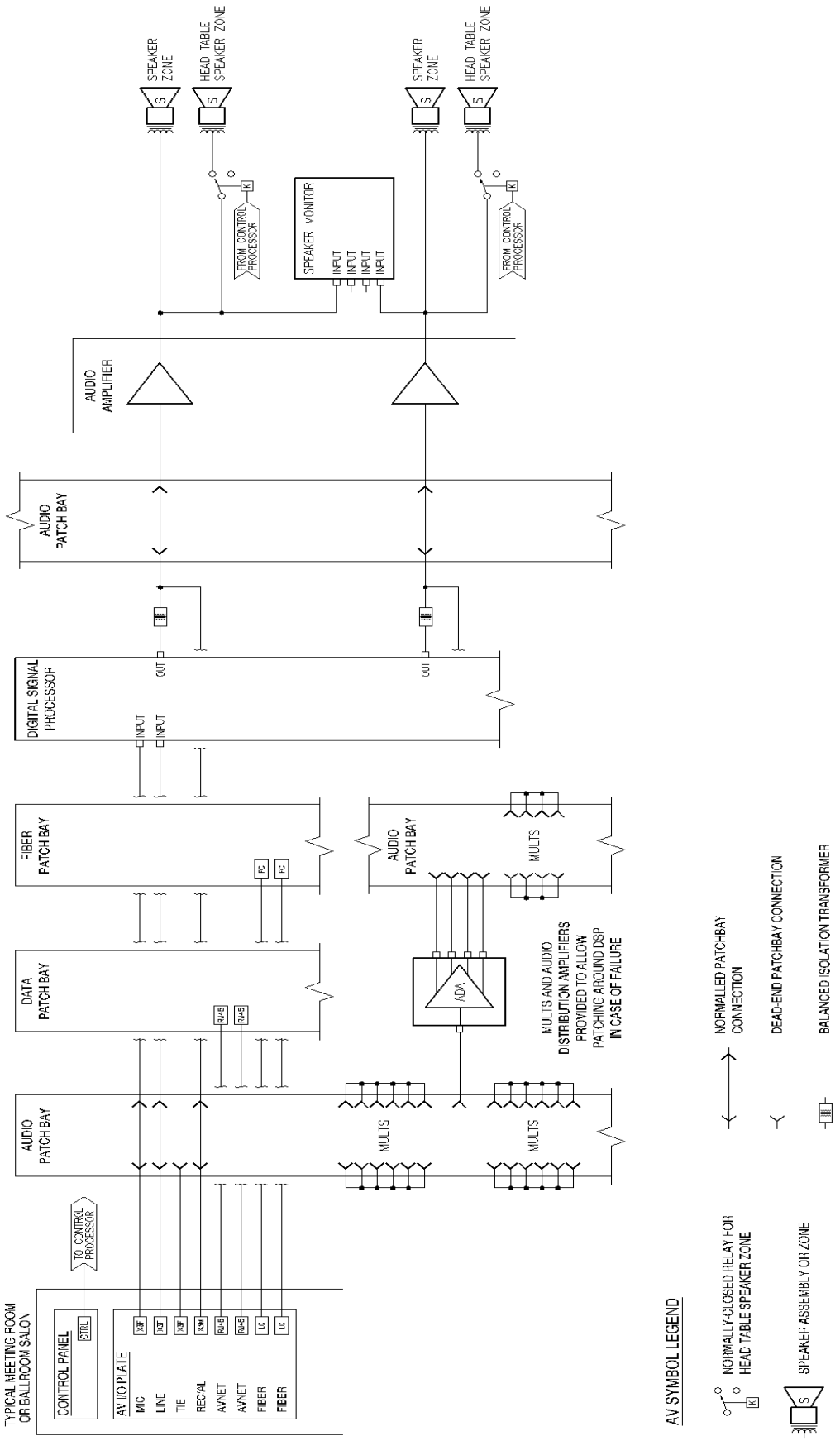


3. Accessibility: Ensure that the input / output plates and controls are located on the wall to meet ADA compliance and are accessible when portable platforms are utilized.
4. Processing: Provide management and manipulation methods for sound system signals utilizing input jacks in event space salons and from auxiliary sources (such as music sources) to the ceiling speakers. Processing elements include patchbays, digital signal processing, monitoring and amplification.
5. Patchbays: Provide for event space sound systems. Active input circuits are "normalled" through the patchbays to the DSP inputs. Normalled jacks also intermediate between the DSP outputs and following amplifier inputs. Tie lines "dead-end" on patchbays.
    a. Provide commercial duty, Mil spec, 6 mm (¼ inch) TRS type or "Bantam TT" type patchbays with mechanical or solder connections. Insulation displacement or "punch-down" connections are not acceptable.
    b. Equip active DSP system inputs that appear on the patchbay (normalled through input circuits and inputs from auxiliary sources) with protective isolation transformers between the patchbay and the DSP inputs. Phantom power is not provided by the DSP systems and assume phantom power is external to the built-in systems.
    c. Provide normalled amplifier inputs through the patchbay. Associated DSP outputs do not appear on the patchbay.

d. Equip patchbays with internal accessories including phase reversers, line-to-mic pads, isolation transformers, ground lifts and sufficient mults to allow by-passing processing components from the input circuits to the amplifier inputs.
e. Provide a means to bypass failed DSP or control systems, a patchbay design requirment.
   - Provide sufficient patchpoints, mult jacks, and patchcords to permit bypassing the DSP and restore full sound system performance by patching from an in-room input, through the mults, and into the amplifier inputs.
   - Design the system to minimize the number of patch-cords required to perform this control function.
f. Provide patchbays with bussed shields that serve as the Uni-Point ground for the sound system processing. See *Figure 4* Power and Grounding Diagram.
g. See example *Figure 7* A/V Signal Flow Diagram.

6. Digital Signal Processing (DSP): Provide commercial duty, programmable DSP components with single central device or distributed processing device functions.
   a. Performs mixing signal functions from input panels and auxiliary signal source including signals from the background music service.
   b. Provides level control for system inputs and outputs.
   c. Combines channels of associated Ballroom salons, meeting rooms and / or Pre-function areas.
   d. Electronically disable or secure front DSP panel controls behind mechanical covers. Does not require and does not permit user interface or direct DSP unit manipulation.
   e. Provide bandpass equalization of sound signals from the inputs and equalization of signals to speakers.
   f. Provide music signal leveling from BGM sources.
   g. Programming does not include automatic mixing or gating functions.
7. Amplification: Provide sound reinforcement for each channel.
   a. Provide commercial duty, convection cooled and design to drive 70 Volt constant voltage speaker circuits.
   b. Provide single or multi channel devices.
8. Monitoring: Provide auditory monitoring at the equipment rack for each amplifier channel speaker level output.
   a. Provide one line level monitoring channel with its input on the patchbay.
   b. Design for a headphone to monitor signals.

Figure 7 **- A / V Signal Flow Diagram**



9. Output Controls: Wire the speakers in zones relating to event space head table areas.
   a. Individual speaker zones may be turned on or off using the control system. Provide this function through the DSP control system and multiple amplifier channels.
   b. Alternately, when the controlled zone quantities exceeds three, provide relays to turn off speaker zones and minimize the patchcord quantities to restore performance in the event of DSP or control system failure as indicated above.
   c. See "Fire & Life Safety Alarms".
10. Programming: See "Document Submittal" requirements below.
11. Control System: Equip event space sound systems with an overall control that provides local and central control of the sound systems basic functions.
   a. Design for exclusive staff and guest interface with the processing equipment. Direct access to the processing is not required, accommodated or permitted.
   b. Provide browser based IP access via the internal property network and via property internet (PI) access. Include monitoring and sound systems control functions.
   c. Develop and design user the interface screens, system functionality and logic through an iterative process involving the project's design consultant. Anticipate a DSP control system programming revision three months following the property opening.
12. Central Control Panel:
   a. Provide a large 30 cm (12 inch) diagonal measure, minimum, color LCD touch screen control panel for overall system functions.
   b. Provide system functions on a touch screen. Interface does not require the user to provide a pointing device or keyboard for system operational functions.
   c. When event spaces are remote from the equipment room, provide a large touch screen control panel in a rugged protective enclosure in the service corridor associated with these rooms.
13. In-room Local Controls: Equip each event room, ballroom area or salon with a dedicated sound system and provide with an in-room control panel near the entrance from the service corridor.
   a. Location: When a service vestibule is included, provide the control panel in the vestibule within a protective enclosure not visible to guests in Ballroom, Salons and Meeting Rooms.

Where a salon or Meeting Room does not have a service vestibule, locate the in-room control panel behind a protective and concealing millwork detail.

b. Control Features:
- Design controls to give access to specific system functions to staff and to meeting planners (as desired by the staff), but with a means to secure controls to prevent access or operation by unauthorized persons.
- Provide security control by electronic, electro-mechanical or only mechanical means.
- Provide micro-processor based user interface to the digital signal processing system. Also, provide extended functions including selection of lighting presets.
- Provide intrinsically rugged units with installation that is relatively impervious to damage from physical contact from carts, chairs, etc., typically utilized in event spaces.
- Provide an illuminated, programmable LCD display, push button and / or rotary controls to provide user interface and system status information.
- Accommodate mobile technology to provide staff with system control.

c. Programming: See "Document Submittal" requirements below. See the project *A/V Supplement* for specific, parametric control system functional and programming requirements.

14. Speakers: Provide an array of flush, high quality ceiling speakers, evenly spaced to provide high intelligibility, low distortion, wide frequency response, wide dynamic range and even direct sound coverage (+/- 2dB @ 4kHz) throughout the event spaces seating and audience areas.

a. Sizes: Ceiling speakers sizes vary according to ceiling height. Typically, provide smaller speakers in low ceilings and larger speakers in high ceilings.
- Ceilings up to 3 m (10 ft.) high, provide 10 to 15 cm (4 to 6 inch) full range speaker assemblies.
- Ceilings between 3 and 5 m (10 and 16 ft.), provide 20 cm (8 inch) coaxial two-way speaker assemblies.
- Ceilings between 5 and 7 m (16 and 20 ft.), provide 30 cm (12 inch) coaxial two-way ceiling speakers and equip with 60 to 75 degree constant directivity high frequency transducers.

- Ceilings above 6 m (20 ft.) high, provide special electro acoustical modeling and high power speakers having a high degree of dispersion pattern control.

b. Power: Provide constant voltage system (70.7 or 100 Volts) signal distribution to speakers. Provide high quality transformers with 6 dB headroom allowance in component sizing.

c. Protection: Equip speaker assemblies with non-resonant backboxes and / or enclosures to protect each speaker.

d. Grills: Provide speaker grills with minimum of 66% open area and 24 mm (3/32 inch) minimum perforation holes.

e. Support: Attach speakers to building structure and not from suspended ceiling system.

f. Quantity: Determine speaker quantities by the spacing requirements above. Evenly space ceiling speakers for each event space, meeting room, or ballroom and salon based on the overall area, divided by (floor-to-ceiling dimension), squared.

g. Spacing: Space speakers to average 0.8 times the floor to ceiling height dimension with the ratio of the closest and furthest spacing between any two adjacent speakers not exceeding 1:1.5.

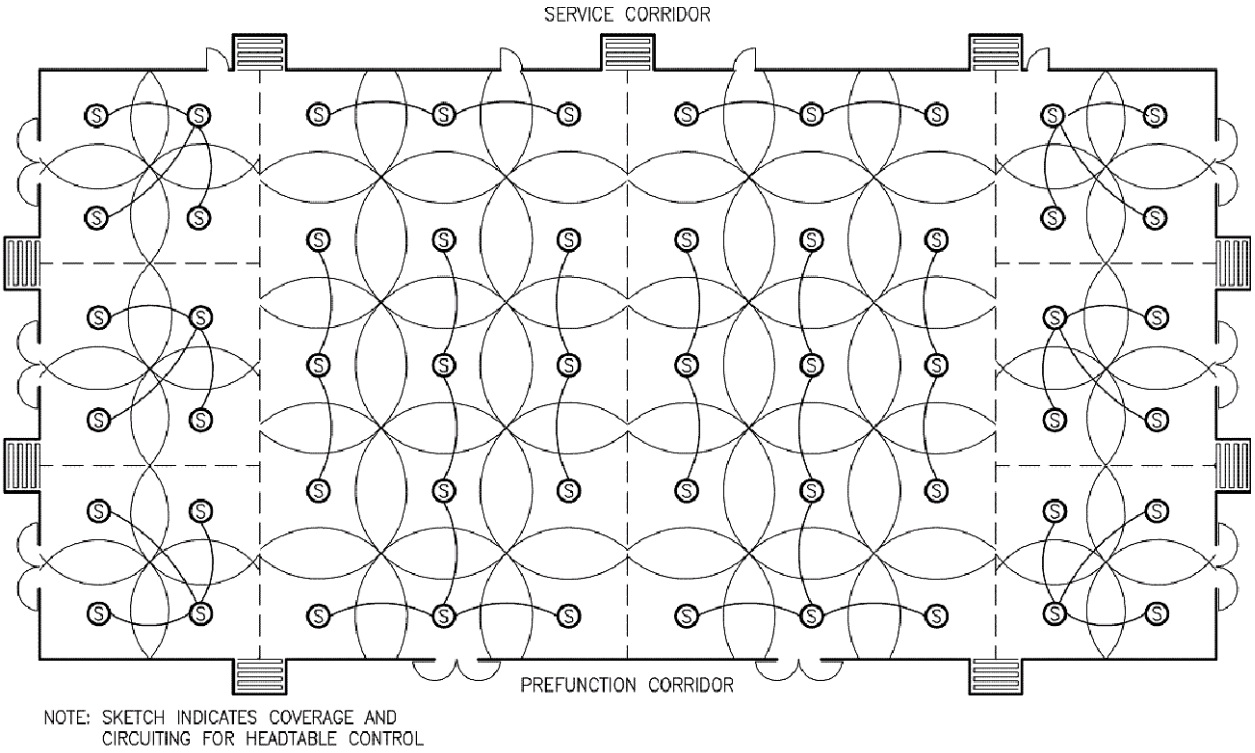
h. Zoning for Control: Provide individual zones of speaker control to permit turning off speakers above head tables and platforms, when necessary. This controls feedback and improves system gain. See *Figure 8* Ballroom Speaker Layout and Zone Circuiting - Example Ceiling Plan.

15. A/V Networks (A/V Net) & Tie Lines: Provide interconnecting cabling between and among the event spaces, associated Pre-function, activity areas and appropriate communication "points of presence" in the facility such as television headend rooms, telephone equipment rooms, computer rooms, the loading dock, business center, A/V department operations office, etc.

a. Provide multi-mode fiber and shielded Category 6 network cabling.

- Provide minimum of four A/V optimized Ethernet circuits, terminated on RJ45 connectors and two multi-mode fiber interconnecting cables terminated on specialized A/V connectors (*Neutrik FiberCon*).
- Certify tie line performance to meet BICSI standards for design and performance for the required cabling type.

Figure 8 **- Ballroom Speaker Layout and Zone Circuiting - Example Ceiling Plan**



b. Land tie lines on plates in each event space.
- Equip with at least one plate and provide large spaces with at least two plates.
- Integrate connections with the A/V input / output plates.
- See *Figure 5* Example A/V Input Plate detail.

c. Provide tie line plates adjacent to hang points in the ceiling or integrate with retractable hang points. Provide at least one ceiling tie line plate in each small salon and at least two in each large salon.

d. Provide two AVNet Category 6 tie line plates in floor pockets (when provided).

e. Run tie lines back to primary A/V equipment room serving the associated event spaces. Land on patchbays located in equipment racks.

f. Verify with the MI Representative to determine if Ballroom, Salons and Meeting Rooms require floor pockets for power, data and telecommunications connections.

g. Design the network to serve event spaces including breakout rooms and areas that are not equipped with built-in A/V or sound systems.

h. Design connectors on plates and protect from damage from physical contact from carts, chairs, feet, etc.

i. Provide a stainless steel, lockable, and weather tight media connection panel at the property receiving area for interconnectivity to local and national television production vehicles for special events. Provide the following features:
- Six RJ45 Ethernet jacks for A/V tie lines
- Six fiber optic jacks for multi-mode fiber
- Two fiber jacks for single mode fiber
- Two SMPTE Fiber tie lines for large Ballrooms more than 930 m^2 (10,000 sq ft)
- Ten balanced audio jacks

16. Portable A/V Equipment: Provide a complement of portable equipment that supports the built-in systems.
   a. Include microphones, cables, projectors, flip charts, theatrical lighting systems, portable high-level sound systems, projection screens, production mixers for audio and video, cameras, adapters, video graphics displays, computers, etc.
   b. Develop a project specific list for portable A/V and lighting equipment requirements. Include interfaces, receivers and transmitters required for analog and digital video and audio sources to work with the AVNet system.

H. **Document Submittals:** Upon project completion and acceptance, submit the following to the property management.
   1. Technical Manuals: Provide documentation as follows:
      a. Block Diagrams: Detailed functional block diagrams that illustrate as-built conditions.
         - Identify each equipment item by manufacturer and model number, label alpha numerically contractor furnished controls, relays, patch panel jacks, and similar devices.
         - Reference the designations on fabrication drawings, patch panel details and related instruments.
      b. Fabrications: Detailed as-built drawings of contractor fabrications. Illustrate the mechanical and electrical construction, with manufacturer's part numbers and values for components.
      c. Rack Elevations: Final rack elevation drawings.
      d. Manufacturer's Literature: Descriptive literature and performance specifications, operating manuals, and servicing information.
      e. Control Settings: Schedule of nominal control settings for proper system operation.
      f. Test & Measurements: Documented data gathered during systems tests and commissioning.

g. Systems Operating Instructions: Describe the functions, operation and maintenance for each installed system. Write the instructions in full detail in language sufficiently clear for comprehension by non technical persons.
h. Troubleshooting Guide: System operator's procedures to follow in the event of an apparent equipment failure, written in logical outline format.
i. Terms & Conditions: Restatement of the systems warranty terms and conditions and schedule of manufacturer's warranties covering parts and labor for the provided equipment.
j. Programming: Submit to the property management, a legal copy of the authoring software and unrestricted license and an archival electronic copy of the uncompiled operating code when submitting the record (as-built) documents for system programs.

2. User's Manuals: Provide documentation as follows:
   a. Systems Operating Instructions: Describe each provided system, specifically the functions, operation, and maintenance. Write the instructions in full detail and in language sufficiently clear for comprehension by non technical persons.
   b. Control Settings: Schedule of nominal control settings for proper system operation.
   c. Troubleshooting Guide: Operator's procedures to follow in the event of an apparent equipment failure, written in logical outline form.
   d. Block Diagrams: Simplified as-built block diagrams with alpha numeric references to controls, relays, patch panel jacks and other similar devices.
   e. Terms & Conditions: A restatement of the system warranty terms and conditions. Describe the terms of manufacturers' warranties, that extend beyond the one year provisions of the system warranty.
   f. Document Revisions: Submit within four weeks of final system acceptance, four complete sets of corrected and revised pages and drawings to update the operating and maintenance manuals described above to reflect adjustments and changes to the system during the final testing and acceptance.

I. **Warranties:** Provide complete systems, products and materials warranties to include the following:
   1. Product Replacement: Guarantee to repair and replace defects in products, materials, workmanship and performance of provided systems and the defective and comprising elements at no additional cost.
   2. Temporary Replacement: Provide temporary replacement equipment when repairs to defective equipment and products cannot be completed within 24 hours.
      a. Provide temporary labels matching original labeling nomenclature.
      b. Replace temporary items with original product following repair.
      c. Replace equipment and product items that exhibit similar failures three times within the warranty period.
      d. Replace equipment and products that exhibit failures three times within the warranty period with new equipment and product at no cost.
   3. Remedy Response: Respond with remedy to requests for service within 24 hours of the request.
      a. Provide the property management with a telephone number and an e-mail address to request services at any time.
      b. Response requirement applies from the date of the A/V consultant's recommendation of the system acceptance and continues for the following 365 consecutive days.
      c. Warranty remains in effect for a period of one year from the date of system acceptance, except for equipment and products under manufacturer's warranties that exceed the one year warranty period to remain in effect beyond the one year system warranty period.

13C.13 Systems Coordination

A. Reference: Coordinate with requirements of other Modules including:

- 1 Site / Building Exteriors
- 2 Public Spaces
- 3 Food & Beverage
- 4 Recreation Facilities
- 5 Retail Spaces
- 6 Function Spaces
- 7A Guestrooms & Suites
- 7B Guestroom Corridors / Support
- 8 Administration & Employee Facilities
- 12 Elevators & Escalators
- 13A Information Technology Infrastructure
- 13B Telecommunications
- 14 Fire Protection & Life Safety
- 15 Mechanical - Plumbing - Electrical
- 16 Loss Prevention

AUTOGRAPH COLLECTION

MODULE

14

FIRE PROTECTION & LIFE SAFETY

DESIGN STANDARDS

English

June 2014

Contents

Revised: **June 2014**

Supersedes previous editions

Vertical line in page margin indicates revised text or change.

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Fire Protection & Life Safety

14.1 General Requirements

A. Application:

1. Marriott International (MI) Fire Protection and Life Safety (FLS) Design Standards govern MI owned, managed and franchised Brand properties.
2. The FLS Design Standards include design standards, performance criteria, reference standards and life safety process verification that define a comprehensive fire protection program. Coordinate requirements with other Modules and in particular **<10>, <12>** and **<15>**.
3. Application of these Standards to a specific project requires a design analysis. For example, a project's qualification as either a low-rise or high-rise building will significantly affect the elements of a project's fire protection and life safety program.
4. When a MI property is integrated with or interconnected with another building, the building shall provide protection equal to the fire protection and life safety standards required for the MI property, as defined by FLS on a case-by-case evaluation.

B. Systems: Provide the following functional systems in compliance with the listed performance criteria:

- Automatic Sprinkler / Standpipe System
- Fire Alarm System
- Mechanical Smoke Control
- Type 1 - Grease Hood & Duct Fire Suppression
- Emergency Electric Systems
- Elevator Recall & Firefighters' Operation
- Central Control Station (Fire Command Room)
- Means of Egress & Facility Requirements

14.2 Definitions

A. Low-Rise Building: A building that does not qualify as a High-Rise Building as defined below. (C)

B. High-Rise Building: A building where the floor of an occupiable story is greater than 23 m (75 ft.) above the lowest level of fire department access.

C. Back-of-House (BOH): Includes areas such as employee spaces, employee restrooms, laundry, offices, work areas, commercial kitchens, storage areas, shops, etc.

D. Guestroom: The term "guestroom" includes suites, residences, serviced apartments, interval ownership, etc.

14.3 Codes, References & Standards

A. Application: Current edition of associated references are the basis for FLS Design Standards and are applicable to all MI managed, owned and franchised properties.

B. National Fire Protection Association (NFPA) Standards: The Life Safety Code - NFPA 101 is the basis for FLS Design Standards. Compliance with NFPA 101 is required in addition to the codes required by the governing authority. Comply with the following:

NFPA 101	Life Safety Code (except Chapter 43 and "horizontal exits" are not permitted)
NFPA 13	Standards for the Installation of Sprinkler Systems
NFPA 14	Standpipe Systems
NFPA 17A	Wet Chemical Extinguishing Systems
NFPA 20	Centrifugal Fire Pumps
NFPA 24	Private Fire Service Mains
NFPA 30	Flammable and Combustible Liquids Code
NFPA 70	National Electric Code
NFPA 72	National Fire Alarm Code
NFPA 80	Fire Doors and Fire Windows
NFPA 82	Incinerators, Waste and Linen Handling Systems and Equipment
NFPA 88A	Parking Structures
NFPA 90A	Installation of Air-Conditioning and Ventilation Systems
NFPA 92	Smoke Control Systems
NFPA 96	Ventilation and Fire Protection of Commercial Cooking Operations
NFPA 110	Emergency and Standby Power Systems
NFPA 750	Standard on Water Mist Fire Protection Systems
NFPA 1142	Water Supplies for Suburban and Rural Fire Fighting

E. Elevator & Escalator Safety Code: Current ASME A17.1 edition and supplements.

F. Underwriters Laboratories (UL) Listing: Provide UL listed materials, appliances and equipment.

G. Governing Regulations: Comply with governing laws, codes, regulations and MI Design Standards, including MI requirements that exceed or are more stringent than governing laws, codes and regulations. If governing requirements conflict with MI's Design Standards, contact FLS for resolution.

H. Tents & Temporary Structures: Comply with MI's policy titled "Tents and Temporary Structures" as published on the Marriott Global Source.

14.4 Systems Testing

A. Application: Before a property is occupied, the fire protection and life safety systems shall be fully operational, contractor tested and acceptance obtained from FLS.
In order to obtain MI's acceptance, the fire protection and life safety systems shall be operated by the contractor under simulated emergency conditions in the presence of FLS personnel and the contractor shall demonstrate compliance with MI's Standards.

B. Automatic Sprinkler, Water Mist & Standpipe System (Section 14.6):

1. Contractor shall flush and pressure test system.
2. Contractor shall demonstrate compliance by testing water flow and tamper switches.
3. Fire pump shall be tested and certified by the manufacturer.
4. Underground mains flushed and tested.

C. Fire Alarm (Section 14.7):

1. Contractor shall pretest and operate system without trouble lights exhibited.
2. Contractor shall demonstrate compliance by testing all devices and appliances, auxiliary functions, initiating alarms, and verifying that proper point address and supervision appear on alarm panel.

D. Mechanical Smoke Control (Section 14.8):

1. Balance Report: Prior to testing smoke control systems, HVAC systems shall be contractor tested and balanced. Test and balance report shall be available.
2. Smoke Exhaust: Public area, atrium and guestroom corridor smoke exhaust systems shall be operational and tested to clear "cold smoke" so that exit signs are visible within 10 minutes of activation without smoke migration to other areas.

3. Stair Pressurization: Test and operate the system, concurrently with the smoke exhaust system, to confirm design pressures and door opening force.

E. Type 1 - Grease Hood & Duct Fire Suppression (Section 14.9):

1. Contractor shall pretest all coordinated components by activation of hood and duct suppression system control unit.
2. Contractor shall demonstrate compliance by operating initiating devices, activating coordinated alarms, gas, electric and hood supply air fan shut off.

F. Emergency Electrical Systems (Section 14.10):

1. Generator shall be operational and tested to automatically activate upon loss of normal incoming power and to provide standby and emergency service to operate emergency lighting and specified systems.
2. Battery standby power and UPS systems providing emergency power and lighting shall be fully operational.

G. Elevator Recall & Firefighters' Operation (Section 14.11): Elevator Phase 1 Designated Level and Alternate Level Recall and Phase 2 Firefighters' In-Car Operation Features shall be fully tested in compliance with ASME A17.1.

H. Central Control Station (Fire Command Room) (Section 14.12): Panels, indicators, controls and systems shall be operational, tested and accepted.

I. Means of Egress (Section 14.13): Facilities for means of egress shall be operational and unobstructed.

14.5 Submittals

A. Submittal Requirements: Prior to system installation or modification, submit one hard-copy of drawings, accompanying materials and documentation of the following for review and acceptance to:

1. Marriott Fire Protection & Life Safety:
   - a. Drawings Scale: Not less than the following:
     - International Projects: 1:100 scale.
     - Domestic (U.S. / Canada): ⅛ inch = 1 ft. scale.
   - b. Floor Plans: Show floor areas (m^2 or sq. ft.) and rooms exiting, exit capacity, occupant load diagrams, door hardware and fire resistance ratings.
   - c. Fire Alarm: System diagrams, shop drawings, equipment product sheets, voltage drop and battery calculations and sequence of operation matrix.
   - d. Automatic Sprinkler & Standpipe: System shop drawings, hydraulic calculations, and equipment product sheets, fire pump test curve, and controller and transfer switch equipment sheet.
   - e. Type 1 Grease Hood & Duct Fire Suppression: **<10>** Equipment product sheets and drawings (plan and side views) indicating cooking equipment, hood and suppression system.
   - f. Emergency Power: Plans for emergency lighting and exit signs, and information on the emergency power provided.
   - g. Smoke Control: System shop drawings, sequence of operations, riser diagrams and calculations (space volumes, air changes, make-up and exhaust air flow rates, fan and equipment flow capacities, name and locations).
2. Zurich Services Corporation - MI Managed Properties Only:
   - a. Automatic Sprinkler & Standpipe: System shop drawings, hydraulic calculations and equipment product sheets.
   - b. Construction Drawings: Set of construction (contract) drawings.

B. Mailing Addresses:

1. Marriott International, Inc.; Marriott Fire Protection & Life Safety, Dept. 52/924.36; 10400 Fernwood Road; Bethesda, MD 20817
2. Zurich Services Corporation, Mr. Dale Seemans, 611 Nemours Ln., Woods of Louviers, Newark, DE 19711.

14.6 Automatic Sprinkler, Water Mist & Standpipe System

A. System Application: Provide MI properties with a complete hydraulically designed combination, automatic sprinkler and Type 1 standpipe system or *HI-FOG* water mist system or *Minimax Minifog EconAqua* and Type 1 standpipe system, zoned by floor.

1. Building Footprint: Sprinkler building areas within building "footprint", including canopies required by NFPA 13.
2. Parking Structures: Provide sprinkler protection, unless greater than 50% of perimeter is open to exterior air and not under any portion of the building.
3. Ballrooms & Exhibit Halls: Design the sprinkler system in compliance with Ordinary Hazard Group 1.
4. Ancillary Buildings: Provide sprinkler protection for ancillary buildings that are occupied, have a significant content value or have a significant impact on business interruption if damaged as determined by FLS review. Examples include:
   - Golf Clubhouse
   - Golf Maintenance Building
   - Golf Car Storage Building
   - Occupied thatched roof buildings
   - Pool buildings with lockers or F&B

   Small structures (less than 9.3 m^2 (100 sq. ft.)) located more than 9 m (30 ft.) from other buildings do not require sprinkler protection. Examples include:
   - Gazebos
   - Golf Comfort Stations
   - Golf Weather Protection Stations
   - Beach Shade Structures
5. Utility Spaces: Provide complete sprinkler protection in electrical, mechanical, telephone and computer rooms.
6. Loading Docks and Truck Bays: Provide sprinkler protection. If subject to freezing, provide dry pipe system.
7. Freezer & Cooler Boxes: Protect with dry type sprinklers supplied from area wet pipe sprinkler system.
8. Guestroom Closets & Pantries: Sprinklers are not required in clothes closets, linen closets and pantries within hotel guestrooms where the area does not exceed 2.2 m^2 (24 sq. ft.) and where the least dimension does not exceed 0.9 m (3 ft.) or within Residences where the area does not exceed 1.1 m^2 (12 sq. ft.). Closets and pantries with washer, dryer, water heater, mechanical or electrical equipment require sprinklers.

9. Guestroom & Residence Bathrooms: Sprinklers are not required if bathroom is less than 5.10 m^2 (55 sq. ft.). Regardless of bathroom area, sprinklers are required when combustible tubs, or shower and tub surrounds (plastic / fiberglass) enclosures are provided.
10. Coastal Areas: If the project is within 16 km (10 miles) of the coastline, provide exterior galvanized pipe and fittings with corrosion resistant sprinklers for wet pipe and dry pipe sprinkler systems in exterior unconditioned spaces.

B. Design Requirements:

1. Standards: NFPA 13 (not NFPA 13R), 14, 1142 and 20.
2. Water Source: Perform flow tests and document. Provide dependable source of water quantity and pressure from municipal water main or from on site cistern or tanks if municipal water is not available.
3. Safety Factor: Provide a 10% hydraulic safety factor up to a maximum of 0.7 bar (10 psi) for automatic sprinkler system and water mist system.
4. Pressure Reducing Valves:
   a. In order to minimize adjustment and maintenance, design system within maximum pressure of 12 bar (175 psi) without use of pressure reducing valves. If pressure reducing valves are necessary, obtain acceptance and specific design requirements from FLS.
   b. Pressure reducing valves shall be pressure reducing not flow restricting. Static and residual pressures shall not exceed 12 bar (175 psi).
5. Control Valves: Provide the following:
   a. Supervisory Signal Initiating Device (tamper switch): Provide for each control valve.
   b. Security: Secure valves in the open position with the applicable methods in the following areas:
      - Public Areas: Within public view or access, secure with chains or wire cables and provide keyed-alike locks.
      - Back of House: Behind locked doors or access panels, under control of the building engineer, secure with plastic or wire seals.
   c. Access: Visible and readily accessible in back-of-house area or stairwell.
6. Check Valves: Provide check valves at floor control valves as required to eliminate false activation of sprinkler waterflow alarms on other floors.

7. Water Flow Switches: Provide retardant type. Initiate alarm signal between 30 and 60 seconds.
8. CPVC Pipe & Fittings: If provided, install in compliance with manufacturer's specifications. Use chemically compatible materials that contact pipes and fittings.
9. Water Reservoir:
   a. Where fire protection and domestic water systems share a common water reservoir (tank, cistern, etc.), locate the domestic water connection at the reservoir above the water level reserved for the fire system to avoid depleting the fire system by domestic use.
   b. Meet requirements for NFPA 22 Water Tank installation and monitoring by the fire alarm control panel (FACP).
10. Fire Pumps: Locate fire pump drivers, fire pumps, fire pump controllers and fire pump power supplies (normal and standby) above the 100 year flood elevation and above the maximum anticipated hurricane storm surge elevations. Comply with NFPA 20 for design and installation.
11. Zoning: Zone each floor / story separately at a minimum. See section 14.15 for example diagrams.
    a. Low-Rise Buildings: Provide each zone with a control valve, flow switch and tamper switch monitored by the fire alarm system.
    b. High-Rise Buildings: Connect guestroom and residential zone sprinkler piping to 2 risers at each floor interconnected with a control valve, check valve, flow switch and tamper switch at each riser.
    c. Attic Spaces: Provide dedicated zone for attic spaces, separate from floor below.
12. Microbiologically Influenced Corrosion (MIC): Refer to NFPA 13 for requirements.

C. **Wet Pipe Sprinkler Systems:** Provide for habitable spaces such as guestrooms, guestroom corridors, restaurants, ballrooms, meeting rooms, public and back-of-house areas. Route wet pipes in heated spaces.
   1. Heat tape and insulation is not considered "freeze protected" and is not acceptable.
   2. Antifreeze (liquid) systems are not permitted.

D. **Dry Pipe Sprinkler Systems:** Provide in attic and unheated areas to avoid the possibility of freezing.
   1. Dry type sprinklers supplied from the wet pipe sprinkler system may be provided in small unheated areas.
   2. Antifreeze (liquid) systems are not permitted.

3. Use steel schedule 40 pipe. Include grooved fittings with cut grooves with sealing type gaskets. Install piping with a pitch, including heated areas.
4. Design for dry valve trip test that provides water to the remote inspector test and drain assembly within 60 seconds after activation of inspector's test valve.
5. Provide system with valve, trim, tank mounted compressor with a secured switch, control and test valves, gauges, pressure and high / low air pressure switches and appropriate drains.

E. Inspector's Test & Drain Assembly: See section 14.15 for example diagrams.

1. Drain Pipe: Provide continuous hard pipe (steel or CPVC) to exterior at ground level in a location where discharge will not damage exterior pavement or landscaping.
2. Access: Visible and readily accessible in back-of-house area or stairwell.
3. Location: Do not locate in finished areas (guestroom, guest corridor, etc.).
4. Low Rise Buildings: Locate at farthest (remote) end of zone (not in guestrooms) with continuous hard pipe drain to exterior.
   Sprinkler zones with dead end mains or more than one remote end, provide inspector's tests and drains at each dead end main and remote end.
5. High Rise Buildings:
   a. Guestroom & Residential Floors: Locate at each riser (interconnected system), continuous hard pipe drain to exterior.
   b. Non-guestroom Floors: With one control valve, locate at remote end of zone, continuous hard pipe drain to exterior.
   c. Sprinkler zones with dead end mains or more than one remote end, provide inspector's tests and drain assembly at each dead end main and remote end.

F. Sprinklers: Fast response / quick response 57° to 77° C (135° to 170° F) throughout guest and public areas. Concealed (cover plate) sprinklers are not permitted. Regardless of sprinkler type or listing, provide 0.10 gpm / sq. ft. minimum discharge density for light hazard areas. Exceptions where listed for a particular application are as follows:

Room / Space	Sprinkler Type	Temp. Rating
Attic Systems	Quick Response - ventilated Quick Response - unventilated	100° C (212° F) 141° C (286° F)
Dry Pipe Systems	Quick Response - ventilated (unoccupied spaces) Quick Response - unventilated	100° C (212° F) 141° C (286° F)
Mechanical / Electrical	Quick Response	68° to 77° C (155° to 170° F)
Balcony (combustible)	Quick Response - corrosion resistant, dry, side wall	100° C (212° F)
Porches	Quick Response - corrosion resistant, dry, side wall	100° C (212° F)
Parking Structures	Quick Response	68° to 77° C (155° to 170° F)
Elevator Machinery	Quick Response	100° C (212° F)
Swimming Pools (indoor)	Quick Response - corrosion resistant	68° to 77° C (155° to 170° F)
Sauna / Steam Rooms Laundry Dryer Plenum	Quick Response - corrosion resistant	141° C (286° F)
Walk-in Coolers / Freezers	Quick Response - dry pendant	74° C (165° F)
Commercial Kitchens	Quick Response	79° to 107° C (175° to 225° F)
Storage	Quick Response	68° to 77° C (155° to 170° F)

G. Sprinkler Coordination:

1. Install sprinklers with the manufacturer's minimum allowable projection from the wall or ceiling.
2. Coordinate locations of sprinklers at guestrooms and public areas to avoid location conflicts (such as crown moldings, HVAC grilles, ceiling fans).
3. In corridor ceilings, generally, position sprinklers along centerline of corridor width.
4. In ceilings with acoustical tiles, position sprinklers in center of tiles.

14.7 Fire Alarm System

A. Requirements: Provide entire building with a central fire alarm system from MI's qualified equipment vendors. See section 14.16 for the Fire Alarm System Sequence Matrix. Coordinate with **<15>**.

1. Standard: NFPA 72.
2. System: Provide a fully point addressable intelligent system (all alarm initiating and supervisory devices individually addressable) in all buildings.
3. Supervising Station Service: Provide a remote supervising station service for Marriott properties that receives and records operation signals of the circuits and devices, and notifies the local fire department when a general alarm is activated.
4. Campus Style Sites: Provide point addressable intelligent networking that reports to the continuously attended property location.
5. Testing: Provide the following at the Fire Alarm Control Panel (FACP) for MI Managed Properties Only.
   a. Individual disconnect buttons for testing purposes:
      - Audible appliances and visual strobes (sounder base and guestroom hearing impaired strobe shall function upon guestroom smoke sensor activation)
      - Door hold open mechanisms
      - Elevator recall
      - Air handlers
   b. Alarm sensitivity testing capability at FACP.
6. Exterior & Unconditioned Areas: Within 16 km (10 miles) of a coastline, provide NEMA weatherproof box, rated devices and appliances (weatherproof, corrosion resistant) listed for exterior exposure.

B. System Smoke Sensors (Detectors):

1. Guestrooms, Suite Rooms and other Sleeping Units: Provide 24 Volt system smoke sensors with sounder bases to meet the following:
   a. Photoelectric type sensor.
   b. Sounder Base: Provide minimum audible alarm of 85 dBA at 3 m (10 ft.); minimum of 75 dBA "at the pillow".
   c. Activation of room system smoke sensor to immediately and automatically sound an alarm (three pulse temporal pattern) within the room of incident and annunciate as a supervisory signal.
   d. System smoke sensor normal and emergency power is provided by the FACP.

e. In suites and other mixed sleeping spaces, provide the following:
   - System smoke sensors in each separate sleeping room, living rooms convertible to sleeping and areas providing access to the corridor doorway.
   - Simultaneously activate multiple smoke sensor sounder bases located within the same suite or unit.

f. To minimize unwanted alarms, avoid locating smoke sensors near the kitchen or bathrooms.

g. Locate smoke sensors at the highest ceiling area in the room.

2. Public Areas, Corridor & BOH Areas: Provide system smoke sensors where:
   a. Required by governing code.
   b. Smoke exhaust is required in compliance with the other requirements of this Module.
   c. In assembly areas in high rise buildings.
3. Duct System Smoke Sensors:
   a. Provide remote test switch and indicator light accessible from floor level.
   b. Location: Provide downstream of air handling units over 945 l/s (2,000 cfm).
   c. Operation: Smoke sensor shuts down AHU upon sensing smoke and annunciates at fire alarm panel, but does not activate smoke exhaust system.

C. **Carbon Monoxide (CO) Detectors:** Install CO detectors with sounders. Connect to the FACP and annunciate as a supervisory signal.
1. General: Provide in rooms and areas containing fuel burning appliances and equipment.
2. Fireplaces: Provide detector in areas containing fuel burning (including wood) fireplaces.

D. **Manual Pull Stations:** At Reception Desk only, unless required in other locations by applicable codes.

E. **Firefighter Communication Systems:** Comply with governing code requirements.

F. **Alarm Notification Appliances:** Provide audible notification appliances (speakers, mini-horns, horns, or sounder bases of system smoke sensors listed for general and local evacuation) and visual notification strobe lights in locations according to the following:
1. Guestroom, Suite Rooms & other Sleeping Units: Provide audible appliances in each sleeping room. In properties with separate multiple sleeping spaces, such as suites and apartments, provide in each sleeping room.

2. Hearing Accessible Designated Guestrooms, Suites, or Residential Units: Provide audible alarm appliances and visual alarm strobes.
   a. Arrange strobes to flash in each room or area, within direct line of sight from bed pillows, and bathroom when the following occurs:
      - System smoke sensors and (CO) detectors in rooms or units activate.
      - Building fire alarm notification alarms activate.
   b. Strobe Light Rating:
      - 177 candela - within 61 cm (24 inch) from the ceiling.
      - 110 candela - more than 61 cm (24 inch) from the ceiling.
3. Public Areas, Corridors & BOH: Provide audible and visual notification appliances.

G. Emergency Occupant Notification:

1. Low-Rise Buildings: Automatic alert tone (three pulse temporal pattern).
2. Assembly Spaces Over 300 Occupants: Continuous cycle alert tone and automatic prerecorded voice message with manual voice communication override.
3. High-Rise Buildings: Continuous cycle alert tone and automatic prerecorded voice message with manual voice communication override.

H. Annunciator: Provide point address to indicate floor, specific location, device and type of alarm. Provide annunciators in areas monitored 24 hours by property employees (Security, AYS, PABX room, Reception Desk) in locations acceptable to Marriott and governing authority.

I. Door Hold Open Mechanism: Automatically release doors in affected zone when an alarm is activated. See "Means of Egress" section in this Module.

14.8 Mechanical Smoke Control Systems

A. Application: Provide an engineered mechanical smoke control system including public area smoke exhaust and stair pressurization for egress stairs. Coordinate smoke control system requirements with Module **<15>**.

B. Systems & Locations: Design for the following mechanical smoke control systems:

- Smoke exhaust - public areas exit access
- Smoke exhaust - guestroom corridors
- Pressurization - egress stairs (including transfer enclosures)

C. Standards: NFPA 92

D. Building Configuration:

1. High-Rise Buildings: Mechanical smoke control is required.
2. Atrium: Consult FLS for atrium smoke control requirements.

E. Acceptance: Obtain FLS acceptance for entire smoke control systems design, sequences of operation and air quantities.

F. Smoke Exhaust System Configurations:

1. Zones: Each space is treated as an individual fire / smoke zone.
2. Capacity: In spaces requiring smoke exhaust, provide a minimum of 10 to 12 air changes per hour.
   a. In larger spaces such as atriums and exhibit halls, increase the air change rates.
   b. Consult with FLS on project specific criteria.
   c. Calculate zone volumes using slab to slab heights.
3. Makeup Air: Provide makeup air for each smoke exhaust zone. Provide mechanical supply air no less than 70% of exhaust rate.
4. Ducted System: Provide hard ducted smoke exhaust from each smoke zone. Return air plenums and slot diffusers are not permitted for smoke exhaust systems.
5. Dampers: Provide motor operated, low leakage, automatic reset, dampers for smoke exhaust systems. Manual reset dampers are not allowed.
6. Configuration: Separate supply grill from exhaust grill to promote sweeping of the smoke. Locate supply adjacent to exits so smoke is moving against the direction of egress. Provide adequate make-up air and exhaust points to eliminate dead spots and prevent excessive air velocities.

G. Public Areas Exit Access: Provide hard ducted, mechanical smoke exhaust from each smoke zone in lobby, atriums, pre-function areas, corridors and other exit access in the front-of-house.

1. Sequence of Operation - Public Areas:
   a. Signal: The smoke exhaust system is initiated automatically by a signal from the fire alarm panel when an area smoke sensor is activated.
   b. Smoke Exhaust Fan: Discharge damper fully opens. The fan starts and provides 100% exhaust to exterior.
   c. HVAC System - Confined Areas: In zones where makeup air is not readily available (ballroom, meeting room, etc.), the return damper of the HVAC system serving the smoke zone closes and the supply fan reduces to 50% outside air.
   d. Other Zones: Supply, return and exhaust fans for HVAC systems in other zones remain in normal operating mode.

H. Guestroom Corridors: Centrally locate on each floor a dedicated mechanical smoke exhaust riser with normally closed smoke dampers on each floor.

1. Capacity: Size each roof mounted smoke exhaust fan to serve corridors of one floor.
2. Distance: 30 m (100 ft.) maximum horizontal distance between supply grilles and exhaust grilles.
3. Zones: If smoke doors divide corridor into two or more sections, provide independent exhaust inlet in each section.
4. Sequence of Operation - Guestroom Corridors:
   a. Activate automatically by area smoke sensors and by floor water flow switches (independent of each other).
   b. Upon activation, normally closed smoke exhaust damper on floor of incidence opens and dampers are closed on remaining non-incidence floors.
   c. Discharge damper fully opens and the smoke exhaust fan starts.
   d. Guest corridor and guestroom DOAS (Dedicated Outside Air System) continues to operate in normal mode.
   e. If applicable, secondary guest corridor pressurization fans start (sized for a minimum capacity of 6 air changes per hour supply air to each floor) and guest corridor and guestroom DOAS is turned off.
   f. Guest Room Floors: Exhaust fans, including those serving vending rooms and electrical rooms and guestroom bathrooms, continue to operate in normal mode.

I. **Stair Pressurization / Smoke-proof Enclosure:** Maintain a smoke free stair through one of the following in compliance with NFPA 101.
   1. Natural Ventilation:
      a. Open stairwells
      b. Open balcony or vestibule
   2. Mechanical Vestibule Ventilation: Ventilate vestibule with not less than one air change per minute and provide exhaust at 150% of the supply.
   3. Mechanical Pressurization:
      a. System Configurations: The following are approximate stair enclosure heights and typical design arrangements for fans and ducts:
         - 10 Stories: Single induction point
         - 10 to 20 Stories: One fan at top and one at bottom
         - 20 or More Stories: One or more supply fans ducted through stair with supply registers located every third floor.
      b. Fan:
         - Type: Provide fan with variable frequency drive. Determine a single set point during commissioning with all doors closed.
         - Capacity: Size fans to provide a balanced 1,700 m^3 / hour (1,000 cfm) per door.
         - Supply Damper: Motor operated, low leakage
      c. Design Pressure: Provide pressure differential across doors of not less than 2.5 N m^2 (0.05 inch w.c.).
   4. Other Criteria:
      a. Doors: 13.50 kg (30 lbs.) maximum opening force across doors into egress stairs.
      b. Sequence of Operation:
         - Initiation: System is automatically initiated by a signal from the fire alarm panel due to activation of either a public space (excluding guestrooms) smoke sensor or sprinkler flow switch.
         - Dedicated Smoke Sensor: In areas without full area smoke detection, provide smoke sensor within 3 m (10 ft.) of stair enclosure exit doors to activate system.
         - Supply Damper: Upon activation, supply damper fully opens and stairwell pressurization fans start.

J. **Back-of-House Areas:** Provide smoke control only where required by governing authorities having jurisdiction.

K. Smoke Control Panel: Provide a smoke control panel for manual control of equipment that is part of the smoke control system with Hand-Off-Automatic (HOA) and pilot lights (one switch and lights for each zone).

1. Location: Position the smoke control panel at the location of the main fire alarm panel.
2. Power: Provide internal power source for manual operation of all equipment. Provide voltage same as fire alarm system.
3. 'Hand' Position: Manually activates all equipment into smoke control mode.
4. 'Off' Position: Shuts down the equipment and returns all dampers to their normal mode.
5. 'Automatic' Position: Allows system to operate in normal building mode, or in smoke control mode upon receipt of a signal from the fire alarm panel.

L. Fire Alarm Matrix: See "Fire Alarm System Sequence Matrix" at end of this Module for sequence of operation.

14.9 Type 1 - Grease Hood & Duct Fire Suppression

A. Application: Provide fire suppression system for hoods and ducts at food production cooking locations that produce grease laden vapors. Coordinate fire suppression system function and design with Modules **<10>**, **<15B>** and **<15C>**.

1. Suppression System: Provide Ansul "Piranha" or "CaptiveAire Core" dual agent suppression system.

B. Sequence of Operation: The hood and duct fire suppression system control units initiate the following:

1. Alarm Signal: Send fire alarm signal to FACP.
2. Gas: Automatically activate solenoid to turn off gas to affected cooking lines.
3. Power: Automatically turn off power to cooking appliances, lighting and hood makeup air handler, except exhaust fan continues to operate.

14.10 Emergency Electrical Systems <15>

A. Standards: NFPA 110, NFPA 70 (NEC), NFPA 101

B. System Requirements: Provide standby power for emergency power and lighting in the event of loss of normal incoming electrical service.

- Transfer from one power source to another must take no longer than 10 seconds.
- See Module **<15>** for backup operational power loads to maintain property operations.

C. Emergency Lighting: Provide emergency lighting for code required egress, property operations and safety, as follows:

- Exit signs
- Egress paths and stairs
- Exterior exit door discharge
- Meeting Rooms, Ballrooms, Exhibit Halls
- Restaurants, Lounges
- Public stairs and steps
- Telephone Equipment Room
- Mechanical, electrical and elevator rooms
- Public toilets
- Fire Pump / Sprinkler Riser Room
- Kitchens (commercial F&B preparation areas)
- Laundry
- Reception Desk
- Employee Cafeteria / Breakroom
- Employees lockers and toilets
- Fitness Center
- Engineering / Maintenance Office
- Administrative Office area
- PABX & AYS Room
- Security Office
- Parking Structure
- Indoor Pool room
- Spa Treatment Rooms
- Fire Command Room (high-rise building)

14.11 Elevator Recall & Firefighters' Operation <12>

A. ASME A17.1: Provide Elevator Phase 1 Designated Level and Alternate Level Recall, Shunt Trip and Phase 2 Firefighters' In-Car Operations in compliance with ASME A17.1; see Module **<12>**.

14.12 Central Control Station (Fire Command Room)

A. High-Rise Buildings: Provide at a location acceptable to the governing authority. **<15>**

14.13 Means of Egress

A. Standards: Comply with NFPA 101, The Life Safety Code, except "horizontal exits" are not permitted.

B. Guestroom Areas Corridors: **<7>** Comply with the following:

1. Exits: 2 or more remote exits
2. Dead-End Corridor Limit: 15.24 m (50 ft.)
3. Common Path Limit: 15.24 m (50 ft.)

C. Assembly Spaces: **<3> <6>**

1. Occupant Load Factors:
   - **a.** Ballrooms, Meeting Rooms & Exhibit Halls: 0.65 m² (7 sq. ft.) per occupant
   - **b.** Restaurant, Lounges & Boardrooms: 1.4 m² (15 sq. ft.) per occupant
2. Design Requirements:
   - **a.** Dead-End Corridor Limit: 6.10 m (20 ft.)
   - **b.** Common Path Limit: 6.10 m (20 ft.)
   - **c.** Panic & Fire Exit Hardware: Provide hardware on assembly occupancy doors where occupant loads are greater than 99 persons and on doors in the paths of travel to the exterior exit discharge.
   - **d.** Remote Exits: Occupant loads greater than 49 persons, using the above occupant load factors, requires two or more remote exits. Distance between the nearest edges of remote exits is a minimum of one third the greatest diagonal dimension of the space.
   - **e.** Door Hold Open Mechanism: Required on entry doors from public areas to assembly rooms **<6>** greater than 65 m² (700 sq. ft.). Provide electromagnetic door hold open mechanism connected to the fire alarm system and electrical service **<15>** to hold doors open and to automatically release doors when an alarm is activated.
   - **f.** Operable Partitions: Doors in operable partitions do not qualify as exits, unless a door opens directly into an exit access corridor.
   - **g.** Commercial Kitchen Areas: Egress paths through Kitchens do not qualify as exits.

h. Banquet Chairs: Provide a fastening device on banquet chairs to connect chairs to each other in rows to prevent individual chair displacement from blocking rows and aisles during emergency egress from assembly occupancies with more than 200 persons.

D. Egress Capacity:

1. Stairways:

a. 7.6 mm (0.3 inch) width per person

b. For stairways wider than 1120 mm (44 inch), the capacity may be increased using the following equation:

$$C = 146.7 + \left(\frac{Wn - 44}{0.218}\right)$$

C = capacity, in persons

Wn = nominal width of the stair

2. Doors, Level Components & Ramps: 5 mm (0.2 inch) width per person

E. Multi-Use Exits: Avoid sharing stairs and exit corridors with other properties (office, retail, residence, etc.). If unavoidable, submit and obtain acceptance from FLS of alternate facilities that safeguard the property operational and security integrity. **<1>**

F. Exterior Exit Path: Provide the required width for the exit capacity but not less than 90 cm (3 ft.), hard surfaced walkway leading to a public way.

G. Evacuation Signage: **<GR>** Provide in guestrooms **<7>** and other rooms and spaces as directed by FLS.

H. Stair Signage: In stairs at each landing, include stair designation, floor level, if roof access is available and direction to exit discharge.

I. Exit Discharge: Discharge one half of all exits directly to the building exterior.

J. Means of Egress Signage: Provide egress and exit sign quantities and locations as follows:

1. Provide a minimum of two remote exit signs or directional exit signs, visible from locations in a corridor and in spaces with more than 49 occupants.

2. Position exit signs to indicate available exits and exit directions, regardless of the exit distance from the sign to the exit.

3. Place exit signs perpendicular to the occupant's line of sight.

K. Doors: Do not lock stair doors and exit doors from either side. Doors to the exterior must allow for exit discharge but may be designed to prevent entry from the exterior.

L. Stair Handrails: At a minimum, provide handrails on both sides of stairways. See Module **<16>**.

14.14 Facility Requirements

A. Fire Resistance Ratings: Fire resistance ratings of walls, doors, shafts, stair enclosures, floor / ceiling assemblies and flammability ratings of furnishing, carpeting, curtains and wall finishes shall comply with NFPA 101.

B. Fireplaces: Obtain FLS acceptance of custom fireplaces.

C. Linen & Trash Chutes: **<7>** Comply with NFPA 82, NFPA 101 and NFPA 13.

1. Chute Vent: Extend (full size) a minimum of 90 cm (3 ft.) above the roof line.
2. Construction: Provide metal, prefabricated, manufactured chute within a fire rated shaft.
3. Loading Door: Protect chute openings with a fire rated loading door, located within a service opening room (vestibule).
4. Room Enclosure: Construct the service opening room (vestibule) with fire rated enclosure and door.
5. Sprinkler: Install a sprinkler above the top service opening of the chute, above the lowest service opening, and above service openings at alternate levels in buildings over two stories in height.

14.15 Example Diagrams

A. General: The following schematic diagrams are provided to illustrate the systems described in this Module.

- *Figure 1*: Isometric of Typical Zoned Low-Rise Sprinkler System
- *Figure 2*: Detail: Inspector's Test & Drain Assembly
- *Figure 3*: Isometric of Typical Interconnected High-Rise Sprinkler System
- *Figure 4*: Floor Control Valve, Inspector's Test Assembly & Fire Hose Station
- *Figure 5*: Typical Interconnected High-Rise Sprinkler Riser Diagram

Figure 1 - Isometric of Typical Zoned Low-Rise Sprinkler System

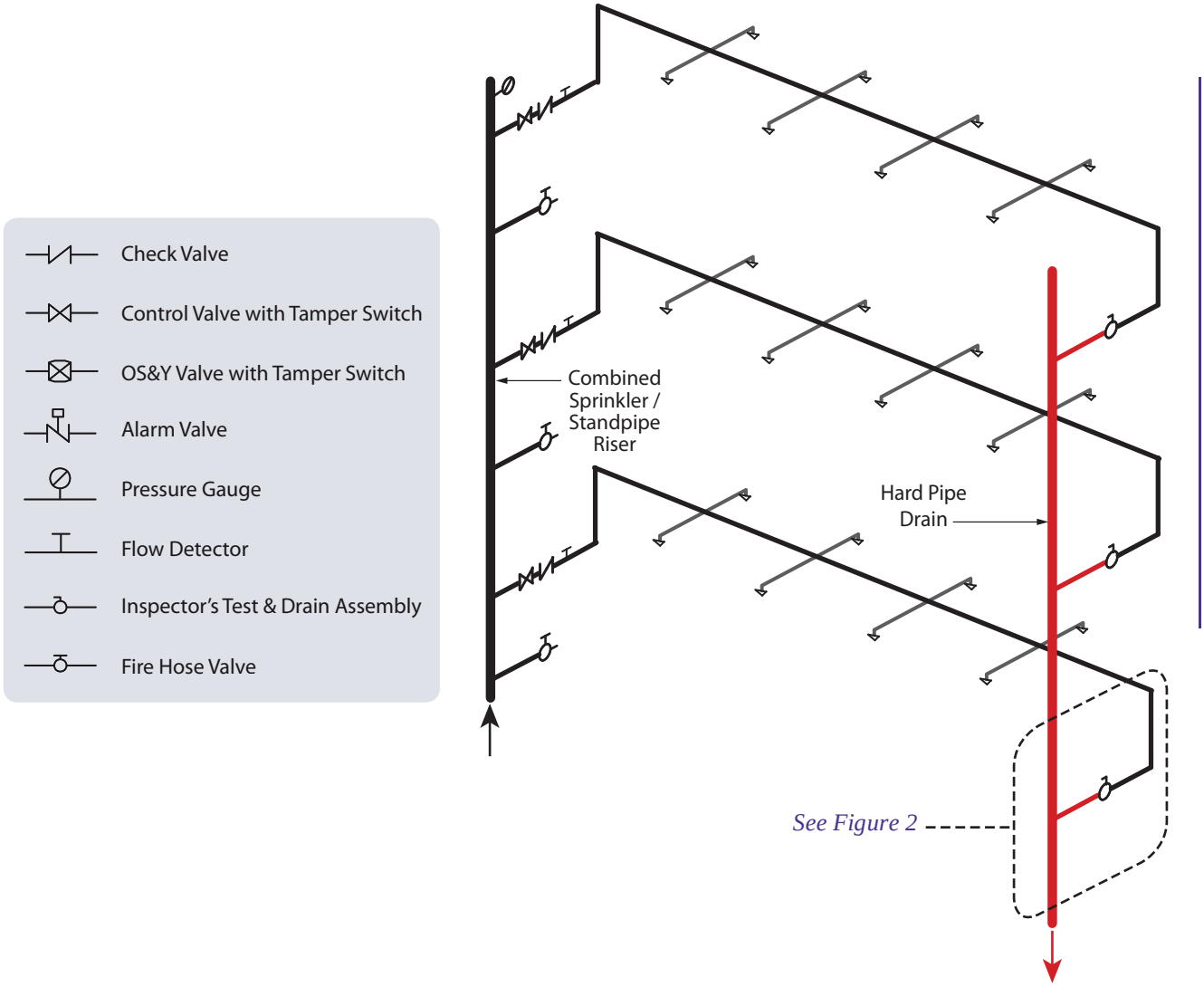


Figure 2 - Detail: Inspector's Test & Drain Assembly

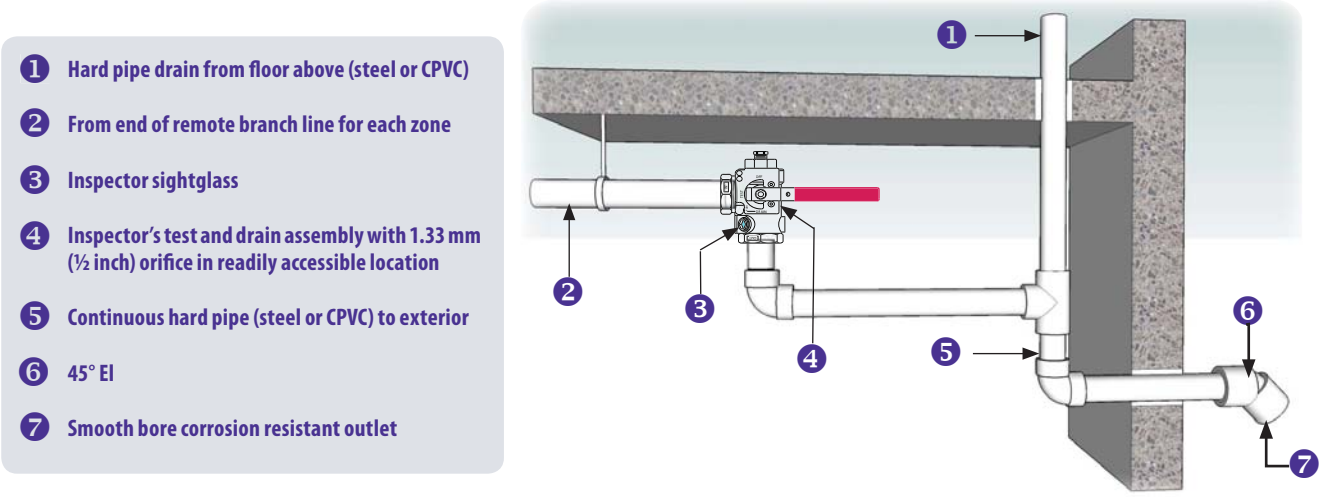


Figure 3 - Isometric of Typical Interconnected High-Rise Sprinkler System

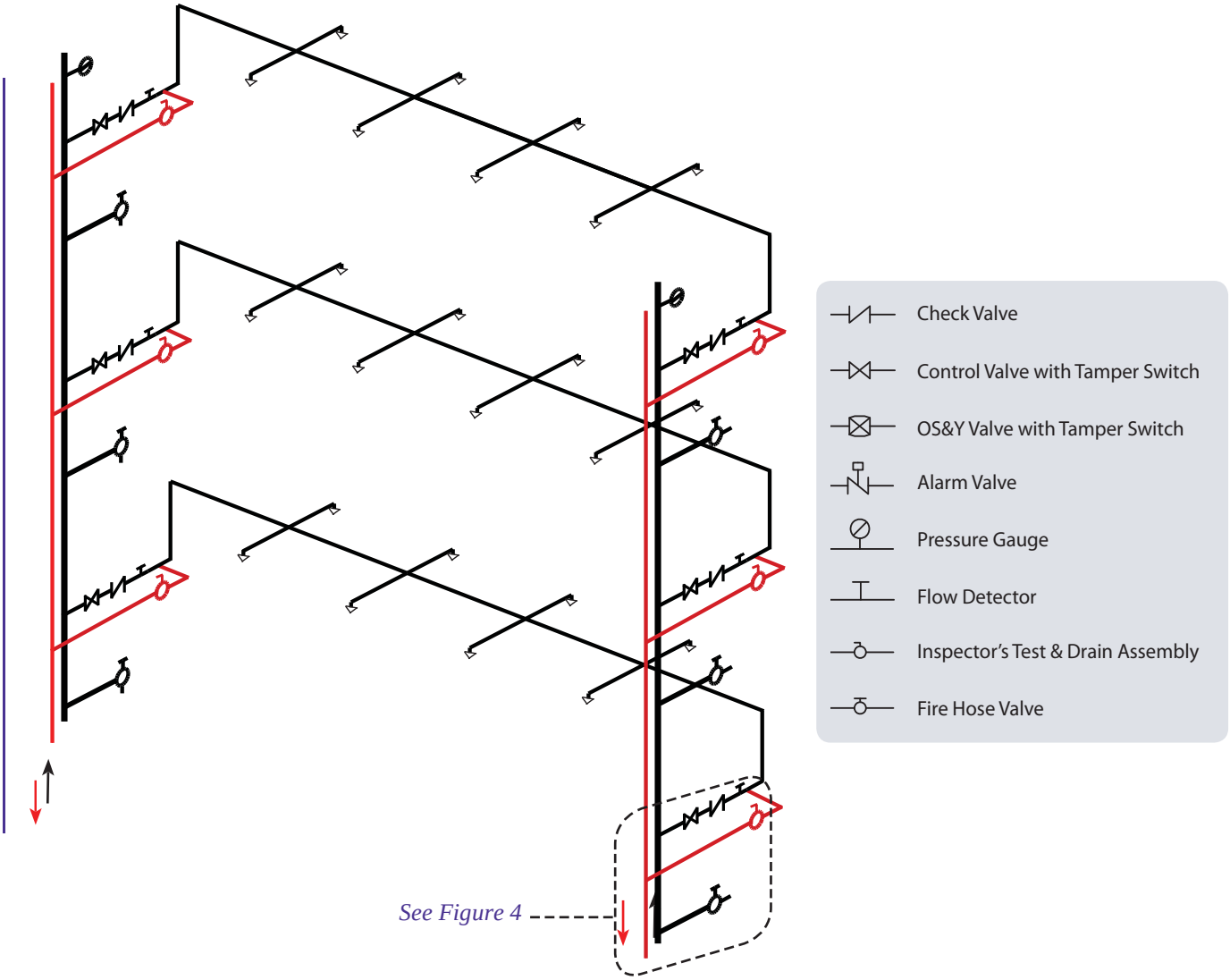


Figure 4 - Floor Control Valve, Inspector's Test Assembly & Fire Hose Station

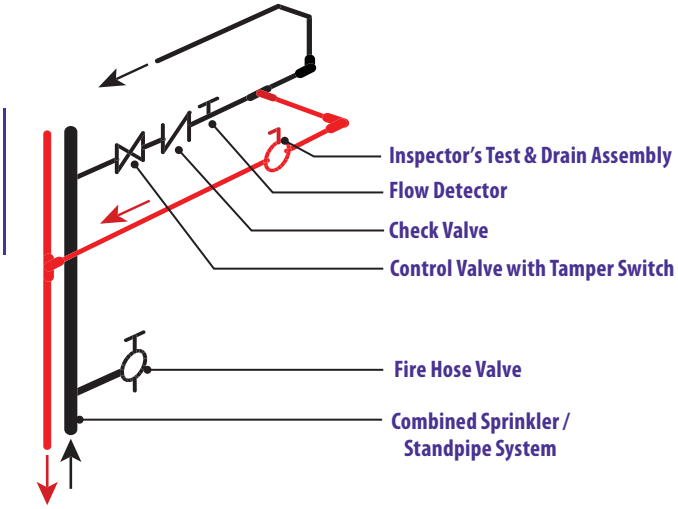
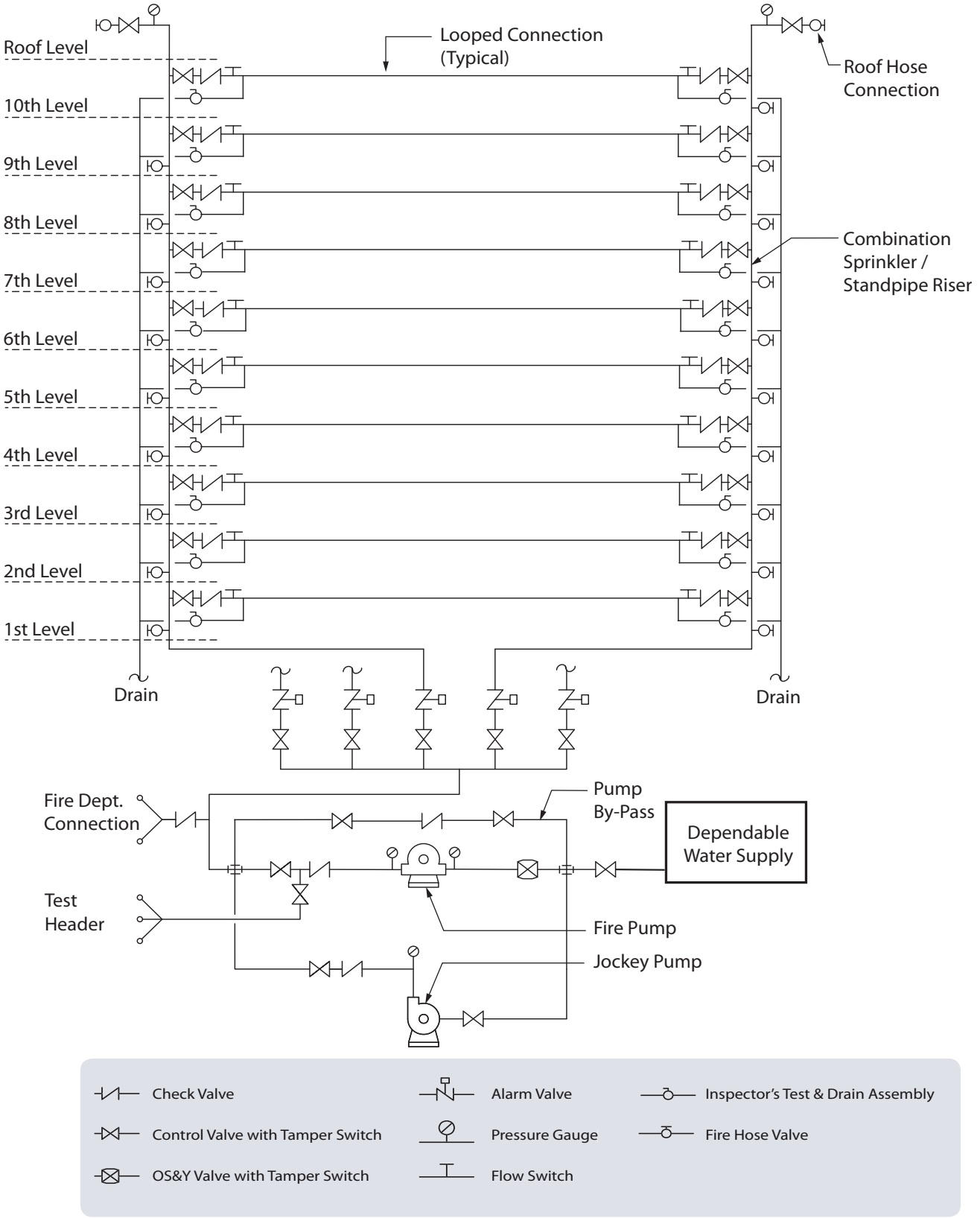


Figure 5 **- Typical Interconnected High-Rise Sprinkler Riser Diagram**



14.16 Fire Alarm System Sequence Matrix

General Notes:
- Reference numbers are shown in parenthesis (1) for "Notes / Notations" indicated below and in headings to the right.
- Fire alarm system devices are point addressable.
- On campus style properties, provide point addressable intelligent networking reporting to continuously attended property location.
- Sprinkler system water flow and tamper switch alarms are annunciated on the FACP.

	System Smoke Sensors (1)	System Heat Detectors (7)	Elevator Lobby smoke detectors (2)	Guestroom System Smoke Sensors (3)	Manual Pull Stations	Waterflow Switches	Dry Sprinkler Pressure Switches	Type 1 - Grease Hood & Duct Fire Suppression	Low / High Air Supply Switches	Duct Smoke Sensors	Sprinkler Valve Tamper Switches	Fire Pump Signals (8)	Emergency Generator Signals (9)	Carbon Monoxide Signals
FACP: Display an audible / visual alarm.	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Remote Annunciator: Display an audible / visual alarm.	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Audible / Visual Alarms: Activate audible / visual strobe appliances on affected floor. (5)	X	X			X	X	X	X						
Assembly Doors and Fire Doors: Release magnetic door holders on affected floor.	X	X				X	X							
Stairwell Pressurization: Automatically activate pressurization.	X	X			X	X	X							
Smoke Exhaust: Automatically activate exhaust system in affected zones.	X	X				X (4)	X (4)							
Guestroom Audible Alarms: Activate alarms in rooms on affected floor. (5)	X	X			X	X	X	X						
Guestrooms Audible / Visual Signals: Activate both signals in hearing impaired guestrooms on affected floor. (5)	X	X			X	X	X	X						
Local Audible Alarms: Activate audible alarms only in rooms containing alarm.				X										X (6)
Guestroom Local Audible / Visual Signals: Activate both signals only in hearing impaired guestroom containing alarm.				X										X (6)
Air Handlers: Automatically shut off associated air handlers.										X				
Cooking Area Gas / Electric: Automatically shut off associated cooking line gas & electric and makeup air handler.								X						
Elevator Phase 1 Designated Level and Alternate Level Recall, Phase 2 Firefighters' In-Car Operation.			X											

Notes / Notations:

(1) System smoke sensors not located in guestrooms.

(2) Provide Elevator Phase 1 Designated Level and Alternate Level Recall, Shunt Trip Function and Phase 2 Firefighters' In-Car Operation in compliance with ASME A17.1, Elevator Code.

(3) Guestroom Smoke Sensors: Provide photoelectric type, with sounder base (minimum ratings of 85 dBA, with 75 dBA "at the pillow"). In suites, multiple sensors shall activate simultaneously.

(4) Except on guestroom floors, water flow alarms shall not activate smoke control exhaust fans where smoke control zones and fire sprinkler zones do not correspond.

(5) Fire alarms shall activate only on floor of alarm. Governing authority may require additional zoning.

(6) Carbon monoxide detectors in guestrooms, public and BOH areas shall activate an alarm in the guestroom and rooms of incident and at the fire alarm control panel.

(7) Heat detectors are not recommended since fire sprinklers serve the same function.

(8) Provide "fire pump run" and "fire pump fault" supervisory signals from controller to the FACP, as a minimum.

(9) Provide "generator run" and "generator fault" supervisory signals to the FACP.

AUTOGRAPH® COLLECTION STANDARDS

MODULE

15

MECHANICAL, PLUMBING & ELECTRICAL

15A - Mechanical (HVAC) Systems

15B - Plumbing Systems

15C - Electrical Systems

May 2014

AUTOGRAPH® COLLECTION

STANDARDS

MODULE

15A

MECHANICAL SYSTEMS

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Mechanical Systems

15A.1 General Requirements

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Design Criteria: This Module establishes minimum Marriott International (MI) requirements and is not intended to provide complete design solutions to project specific situations.

B. Codes & Standards:

1. Deviations: Submit in writing, proposed deviations from systems, equipment or manufacturers to MI Engineering for approval. For deviations that alter operating costs, submit a complete computer simulated life cycle cost analysis so that negative impacts are reflected in the operating Pro-Forma.
2. Governing Regulations: If governing regulations conflict with MI's Design Standards, contact MI Engineering for resolution.
3. Documentation: Clearly identify on the design drawings, systems and equipment required by this Module and provided by the contractor.
4. Zurich Global: Fired pressure vessels, boilers, boiler tanks and their safety trains (controls that include combustion safeguards, safety shutoff valves, over temperature protection and pressure relief valves) require Zurich Global approval.

C. Building Pressures: Design air systems to maintain positive building pressure, maintain environmental requirements (temperature and humidity) and ensure guest comfort.

1. Minimum outside air intake quantities shall exceed building exhaust quantities by 10% for public and back-of-house spaces. Provide complete airflow matrix showing supply, return, exhaust, and outside air quantities on a floor-by-floor basis.
2. In high-rise buildings, the use of entry vestibules, with a revolving door will significantly reduce "chimney or stack effect". See Module **<2A>** for the application of architectural requirements at Lobby entrance.

D. Equipment Selection: Select equipment, components and specified materials rated for applicable service, environment, temperatures and pressures.

1. Design and select outdoor equipment for project specific conditions complete with factory applied corrosion resistant coatings. Do not select equipment designed for indoor use at outdoor locations.

E. Fire Protection & Life Safety: See Module **<14>**.

F. **Environmental Requirements:** Design and select equipment to maintain indoor temperature and humidity levels in compliance with *Table 1* – Environmental / Ventilation Requirements, at the end of this Module.

G. **Dimensions, Sizes & Measurements:** In this Standard, conversions from English to metric (SI) units are approximate. Verify, coordinate and confirm product and material dimensions for required design applications.

15A.2 Building Cooling & Heating Load Calculations

A. **Reference:** Current edition of American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Handbook of Fundamentals.

B. **Method:** Utilize the Cooling Load Temperature Difference (CLTD) as defined in ASHRAE.

C. **Outdoor Design Conditions:** Utilize the ASHRAE 1% Cooling dry bulb and mean coincident wet bulb temperatures and the 99.6% Heating dry bulb temperature.

D. **Review:** Obtain MI Engineering acceptance of load calculations, psychometric analysis and equipment selections prior to beginning the design process.

E. **Procedures:** Prepare calculations for purposes of selecting central cooling and heating plant equipment.

1. Capacity of central cooling plant is based on building block loads including the following conditions:
   a. Assembly Spaces - Ballroom, Meeting Room & Pre-function Occupancy: Assume load at one person per 0.93 m² (10 sq. ft.) for block cooling load purposes.
   b. System provides sufficient capacity to meet peak cooling loads but must be capable of operating efficiently at part load conditions.
   c. Central Heating Plant: Assume no credit for solar heat gain or internal heat gain (such as people, lights or appliances).

15A.3 HVAC System Requirements

A. General Design Requirements:

1. Design the Heating, Ventilation and Air Conditioning (HVAC) system to be cost effective, quiet and energy efficient.
2. Design the HVAC system to be fully automated and allow for easy maintenance by local service personnel.
3. Provide clearances and access to equipment in compliance with manufacturers' minimum requirements, to allow routine maintenance, and removal and replacement of system components.
4. Locate louvers and exterior mechanical equipment away from vantage points of public and guest view.
5. Utilize linear slot diffusers for supply and return in public spaces. Coordinate with MI Interior Design. Return slot diffusers are not permitted for smoke control systems.
6. Avoid placement of access panels in public spaces. Where required, coordinate location and design with MI Interior Design.

B. Indoor Air Quality (IAQ):

1. High IAQ is a critical component of guest comfort and is achieved through the proper design of building air systems.
2. Provide air quality, including filtering and humidity control in compliance with ASHRAE Standard 62.1 2007 Ventilation for Acceptable Indoor Air Quality and ASHRAE Standard 55 2010 Thermal Environmental Conditions for Human Occupancy.
3. Provide special consideration to spaces such as commercial cooking areas, fitness centers, pools, spas etc. to ensure proper environmental conditions and to avoid odor migration to surrounding areas.
4. Design rooms containing refrigeration equipment in compliance with ASHRAE Standard 15 or equivalent governing standard. Provide visual alarm outside the space and connect to Building Automation System (BAS).

C. Energy Efficiency: MI has adopted a significantly aggressive environmental policy. At a minimum, design the HVAC systems in compliance with ASHRAE Standard 90.1, 2010 Energy Efficiency in Buildings.

1. Cost Analysis: Provide a complete computer simulated life cycle cost analysis for renewable energy options and alternate HVAC systems and equipment considered for implementation.

2. Energy Options & Sources: Evaluate the following renewable energy options and alternate energy sources with MI Engineering with respect to application, practicality and cost effectiveness.
   a. Renewable Energy Options: Investigate renewable energy options including thermal storage, solar power, solar hot water and swimming pool heat, wind power, geothermal cooling and heating and deep water cooling.
   b. Alternate Energy Sources: Based on project geographic location, consider alternate energy sources such as electric, gas, oil and alternate HVAC systems.

D. Noise Criteria:

1. Design systems and select mechanical equipment to minimize the transmission of sound and vibration.
2. Isolate ductwork, piping and equipment suspended from structures.
3. Select equipment, air distribution systems and air devices to not exceed the following NC (Noise Criteria) or RC (Room Criteria) levels:

Space	Guestrooms	Public	Back-of-House
Maximum NC or RC Level	NC / RC 30	NC / RC 35	NC / RC 40
Hertz (Hz)	NC / RC db	NC / RC db	NC / RC db
31.5	- / 55	- / 60	- / 65
63	57 / 50	60 / 55	64 / 60
125	47 / 45	53 / 50	57 / 55
250	41 / 40	46 / 45	51 / 50
500	35 / 35	40 / 40	45 / 45
1000	31 / 30	36 / 35	41 / 40
2000	29 / 25	34 / 30	39 / 35
4000	28 / 20	33 / 25	38 / 30
8000	27 / -	32 / -	37 / -

4. Locate cooling towers on main roof. Select cooling towers to maintain sound level of 45 dB or lower at a distance of 15 m (50 ft.) and perform acoustic analysis when cooling towers are located near to guestrooms or guest areas.

15A.4 Central Cooling Plant

A. Design Considerations:

1. Components: High efficiency water cooled chillers with a variable-primary flowchilled water system with chilled water pumps, condenser water pumps and cooling towers. Required accessories include *SpiroVent* Water and Dirt Separator (chilled water system), SpiroVent Dirt Separator (condenser water system) isolation valves, gauges, thermometers, thermo-wells (Pete's Plugs), temperature and pressure sensors and drains.
2. Service: Plant supplies chilled water to central station air handling units (AHUs) in public and back-of-house spaces and to fan coil units (FCUs) in guestrooms.
3. Location: Locate chiller plant, preferably at grade, to facilitate maintenance. Locate above water table and protect from flooding.
4. Flanges & Valves: Provide blind flanges and valves in chilled water system for connection to temporary equipment in the event of a failure.
5. Bypass: Provide bypass with control valve for minimum chiller flow in the event of either a chiller or variable frequency drive (VFD) failure.
6. Other Systems: For central plant systems other than chilled water, consult with MI Engineering for acceptance.

B. Chillers:

1. Type: Electric water cooled centrifugal (300 tons) or rotary screw chillers (300 tons) with factory mounted starters. Chillers utilize either R123 or R134a refrigerant.
2. Quantity: Minimum of two, piped in parallel. A single chiller with dual compressors is not acceptable.
3. Capacity Selection: When two chillers are provided, select each at 65% of peak load. When peak load is greater than 1,600 tons, select three chillers at 40%.
4. Controls: Manufacturer's factory mounted chiller plant optimization package including complete control of chillers, chilled water pumps, condenser water pumps, cooling towers and automatic chilled and condenser water valves with contact point for external connection to Building Automation System (BAS).
5. Efficiency Range: Centrifugal chillers shall not exceed 0.54 kW/ton at full load at ARI conditions. Screw chillers shall not exceed 0.68 kW/ton at full load. Specify NPLV part load efficiencies.

6. Water Temperatures: Chilled water supply 5.5° C (42° F) and return 12.2° C (54° F). Consult MI Engineering for higher temperature difference applications.
7. Mounting: Install chillers on 15 cm (6 inch) reinforced concrete pads with spring isolators. Provide flexible pipe connectors at inlets and outlets of each chiller to isolate the piping system.
8. Variable Frequency Drives (VFD): In a two chiller configuration, provide one with VFD.
9. Chiller System Heat Recovery: In projects that require hot water for reheat comply with one of the following options:
   a. Rotary Chiller: Provide an individual rotary chiller.
   b. Condenser Water Bundle: Provide an auxiliary condenser water bundle to the lead chiller.
10. Region Requirements: Consult with MI Engineering to determine regional requirements:
    a. In some regions, air cooled screw chillers may be appropriate. Provide high efficiency chillers rated at 1.18 kW/ton at ARI conditions with multiple refrigerant circuits, copper condenser tubes, fins and factory applied corrosion resistant coating.
    b. Redundancy: Based on geographic location, availability of factory trained local service personnel and spare parts, redundant chillers, pumps and cooling towers may be required.
11. Preferred Manufacturers: *Trane*, Accepted Manufacturers: *Carrier*, *York and McQuay*

C. **Cooling Towers:**
1. Quantity: Same as chillers
2. Type: Induced draft type or centrifugal crossflow type
   a. Stainless steel and / or fiberglass construction with drift eliminators
   b. VFDs for air side control
   c. Premium efficiency motors
   d. Electronic water level control
   e. Basin heaters (if required)
   f. OSHA approved access ladders and platforms
   g. 2 cells minimum, with fully independent cells so one cell can be drained for repair.
3. Sizing: Select chillers at ASHRAE 0.4% Evaporation wet bulb temperature, or equivalent governing standard. Deviation requires MI Engineering acceptance.
4. Water Temperatures: Condenser water supply at 29° C (85° F) and return at 38° C (100° F) typically, or meet chiller manufacturer requirements.

5. Piping: Connect cooling towers in parallel and provide full line size bypass with automatic 3 way valve for use when condenser water temperatures drop below minimum requirements of chiller manufacturer.
6. Isolation: Mount cooling towers on structural steel rail supports with spring vibration isolators. Provide flexible pipe connectors at inlets and outlets of each tower to isolate the piping system.
7. Isolation Valves: Provide automatic isolation valves on each cooling tower cell and connect to BAS.

8. Region Requirement: Consult with MI Engineering for regional requirements.
    a. Where appropriate for ambient conditions, design chilled water system with waterside economizer containing plate and frame heat exchangers selected at 1° C (2° F) approach with flow rates and pressure drops the same as one chiller.
    b. Where ambient wet bulb temperature is exceptionally high, consult chiller manufacturer for specifications of chillers using higher temperature condenser water supply.
    c. Consider use of sea water for condenser water with parallel titanium plate and frame heat exchangers selected at 1° C (2° F) approach.
9. Accepted Manufacturers: *BAC*, *Marley*, *Evapco*, and *Pro Tech*

D. Water Cooled Refrigeration Equipment:

1. Connect coolers, freezers and ice machines to separate condenser water system with closed circuit cooling tower. Equipment to be on backup operational power.
2. Locate remote compressors in a fully conditioned mechanical room.
3. Provide each unit with water supply of 0.1 l/s (1.5 gpm) per hp with strainers piped in parallel so circulation is maintained at all times.
4. Backup Power: **<15C>** Connect coolers, freezers, cooling tower and pumps to backup operational power.

E. Condensate: Provide condensate recovery system for air handling units (AHUs) and fan coil units (FCUs) and pipe to cooling towers for makeup water. System to include collection tank, lift pumps, and integration to cooling tower water level control.

F. Multi-Use Facilities: Individually meter chilled water to each occupancy. Consult MI Engineering for project specific requirements.

15A.5 Central Heating Plant

A. Design Considerations:

1. Components: High efficiency, gas fired, hot water boilers with a hydraulically separate primary and secondary hot water pumping system with "bridge". Required accessories include expansion tanks, *SpiroVent* Water and Dirt Separator, isolation valves, gauges, thermometers, thermo wells (Pete's Plugs), temperature and pressure sensors, drains, shell and tube heat exchangers for heating hot water, double wall heat exchangers for domestic hot water, laundry and commercial cooking area systems.
2. Service: Plant supplies heating hot water to central station AHUs in public and back-of-house spaces and FCUs in guestrooms.
3. Location: Locate boiler plant preferably at grade to facilitate maintenance and above water table and protect from flooding.

B. Boilers:

1. Type: Modular gas fired condensing boilers with stainless steel heat exchangers. Fire tube boilers are not allowed. Each boiler is individually vented to the exterior with positive pressure.
2. Sizing: Maximum 2,000,000 Btuh input, required to meet simultaneous peak load for building heating and outside makeup air unit reheat.
3. Quantity: Minimum of two, piped in parallel.
4. Efficiency: Minimum 90%
5. Water Temperatures: Primary hot water supply loop maximum 82° C (180° F).
6. Mounting: Install boilers on 10 cm (4 inch) reinforced concrete pads.
7. Region Requirements: Consult with MI Engineering to determine requirements.
   a. In areas where winter temperatures are below 0° C (32° F), connect boiler plant, controls and pumps to backup operational power. **<15C>**
   b. Redundancy: Redundant boilers, heat exchangers and pumps may be required based on geographic location and availability of factory trained service personnel and spare parts.
8. Controls: Manufacturer's standalone digital based microprocessor with lead and lag control, circulating pump controls, boiler and burner staging and contact points for external connection to Building Automation System (BAS).

9. Accepted Manufacturers: *Aerco, Lochinvar, RBI, AO Smith, and Patterson-Kelley*

C. **Stairwells:** Provide heat in stairwells to maintain a minimum temperature of 5° C (40° F).

D. **Front Entrance Vestibule:** Provide radiant heat in vestibules to maintain a minimum temperature of 10° C (50° F). See Module **<2A>**.

E. **Front Entrance:** Provide radiant or floor slab heat at outdoor Bell Stand where winter temperatures consistently drop below 0° C (32° F). See Module **<2A>**.

F. **Receiving Area:** Provide hydronic cabinet heaters where winter temperatures drop below 0 C (32° F). Provide circulating fans in hot climates. Provide air curtains at all loading docks doors.

G. **Multi-Use Facilities:** Individually meter heating hot water to each occupancy. Consult MI Engineering for project specific requirements.

15A.6 Pumps

A. **Design:** Perform accurate system head calculations with prudent but not excessive consideration of safety factors to eliminate operation in an overload condition and eliminate excessive differential pressures across valves. Provide minimum 2 pumps for each system.

B. **Sizing:** Select for maximum efficiency, a minimum of 10% larger than calculated brake horsepower with flows to match equipment.

C. **Type:** Centrifugal base mounted, 1,450 rpm at 50 hz (1,750 rpm at 60 hz) pumps with premium efficiency motors.

1. Chilled Water Pumps: Provide one variable speed chilled water pump with VFS for each chiller and one pump for standby with piping and valves for cross connection to other pumps with automatic line size shutoff valve and suction diffuser.
2. Condenser Water Pumps: Provide one constant speed condenser water pump with VFD for balancing for each chiller and another pump for standby with piping and valves for connection to other pumps.
3. Primary Hot Water Pumps: Provide one constant speed pump with VFD for balancing for each boiler and another pump for standby with piping and valves for cross connection to other pumps.

4. Secondary Hot Water Pumps: Multiple zoning consisting of a minimum of two pumps (one standby) for each of the following systems; FCUs, AHUs, domestic hot water system and laundry hot water system. Equip pumps with VFDs and premium efficiency motors. Locate pressure sensors in most remote areas of the building.
5. Boiler Circulating Pumps: To prevent thermal shock, provide one in-line constant speed pump for each boiler to provide minimum continuous flow to comply with manufacturer's recommendations. Pipe so automatic valves do not bypass water around boiler.
6. AHU Circulating Pumps: *Grundfos* Magna3 with integral VFD.

D. **VFD's:** Provide with built-in or external supplied by pump manufacturer.

E. **Control:** Provide pumps to operate in the following modes:
- Constant pressure
- Proportional pressure (calculated)
- Proportional pressure (measured)
- Temperature control
- Input of external set point
- Control signals

F. **Piping:** Provide automatic line size shutoff valve and suction diffuser on pump suction.

G. **Mounting:** A Victaulic valve assembly consisting of a MasterSeal butterfly valve with a Series 779 venturi check valve is provided in grooved piping systems.
1. Provide three Victaulic flexible pipe couplings or flexible pipe connectors at suction and discharge of each pump to isolate the piping system.
2. Install pumps on 10 cm (4 inch) high concrete housekeeping pads with concrete inertia bases and spring isolators.
3. Concrete inertia bases are not required when pumps are mounted on slab on grade.

H. **Preferred Manufacturer:** *Grundfos*

15A.7 Piping Systems

A. Water Treatment: Provide complete automated water treatment system to prevent premature pipe failure, loss of efficiency and heat transfer in chilled water, condenser water and heating hot water systems. Install corrosion coupon racks during construction.

1. Water Analysis: Obtain a complete, current water analysis from the local water authority to address issues of corrosion, scale formation, biological growth and suspended solid matter.
   If a complete current water analysis is not available, submit a water sample to a laboratory for analysis
2. Water Quality: Meet the following criteria for the water treatment system.

HVAC Water System	Treatment Type	Type of Protection	Minimum Requirements	
Chilled Water	Automatic Dosing	Rust Prevention & Scaling Precaution	pH NTU Total Dissolved Solid (mg/L) Iron (ppm) Copper (ppm)	8.0 to 9.0 less than 20 less than 250 less than 1.0 less than 0.1
Heating Hot Water	Automatic Dosing	Rust Prevention & Scaling Precaution	pH NTU Total Dissolved Solid (ppm) Iron (ppm) Copper (ppm) Silicon (ppm) Nitrite (ppm)	8.0 to 9.0 less than 20 less than 2500 less than 0.2 less than 0.2 15 to 25 500 to 1000
Condenser Water	Automatic Dosing	Scaling, Rusting, Bacteria & Scum Prevention	pH NTU Total Dissolved Solid (mg/L) Iron (ppm) Copper (ppm) Bacteria	7.0 to 8.5 less than 20 300 to 3,500 less than 2.0 less than 0.1 less than 10^6 npml

3. Chilled Water System: Complete automatic shot feeder system with bulk chemical storage for corrosion inhibitors and antimicrobials.
4. Condenser Water System: Provide a complete automatic system with the following:
   a. Total dissolved solids meter with flow through cell
   b. Chemical proportioning pump
   c. Solenoid controlled adjustable flow bleed valve
   d. Automatic blow down and bulk chemical storage for corrosion inhibitors, deposit disbursements, antimicrobials and pH adjustment chemicals.

5. Heating Hot Water System: Provide automatic shot feeder system with bulk chemical storage for corrosion inhibitors and antimicrobials.
6. Provide makeup water meters for chilled water, condenser water and heating hot water systems and connect to the BAS.
7. Preferred Manufacturer: *NALCO*

B. Pipe Material: Provide the following:

1. Chilled Water and Heating Hot Water System Types:
   a. Schedule 40 black steel with welded, screwed, grooved or *ProPress* fittings.
   b. Type "L" copper
   c. *Uponor* or *Pex*
   d. *Aquatherm* polypropylene piping systems
2. Condenser Water System Types:
   a. Schedule 40 black steel with welded, screwed, grooved or *ProPress* fittings.
   b. Type "L" copper
   c. *Aquatherm* polypropylene piping systems
   d. *Uponor* or *Pex* inside the building
   e. Schedule 40 CPVC. CPVC is limited to piping of less than 75 mm (3 inch). CPVC is not allowed for outdoor piping.
3. Galvanized Pipe: Not permitted for HVAC systems.
4. Di-electric Unions: Provide for connections of different materials. *Victaulic Style 47* dielectric waterway fittings are acceptable.
5. Solder for Copper: 95 / 5, tin / antimony solder

C. Pipe Sizing: Size piping based on the following:

1. 50 mm (2 inch) and Smaller: 1.2 m/sec (4 fps) maximum velocity in chilled, hot and condenser water piping
2. 50 mm (2 inch) and Larger: 2.4 m/sec (8 fps) maximum velocity in chilled, hot and condenser water piping
3. Pressure Drop: 11.96 kPa (4 ft of water column) per 30.5 m (100 ft.) maximum pressure drop.

D. Pipe Insulation: Provide continuous insulation for piping systems as follows:

1. Chilled Water Supply, Return and Condensate Drains: Closed cell elastomeric thermal insulation of thickness based on pipe diameter as follows:
   a. 18 mm (¾ inch) Pipe: 18 mm (¾ inch) minimum
   b. 25 mm (1 inch) to 50 mm (2 inch) Pipe: 25 mm (1 inch) minimum
   c. 50 mm (2 inch) and Larger Pipe: 38 mm (1½ inch) minimum
2. Fiberglass Insulation: Not permitted on cold water systems.

3. Heating Hot Water Supply and Return: Insulate piping with 38 mm (1½ inch) minimum thick fibrous glass insulation with vapor barrier. Insulate piping 50 mm (2 inch) and larger with 50 mm (2 inch) insulation.
4. Seams & Joints: Continuously glued with insulation contact adhesive.
5. Exterior Chilled Water Piping: Not recommended but where required, insulate with *Armacell* ArmaTuff UV resistant exterior insulation and cover with continuous aluminum jacket.
6. Valves & Fittings: Insulate as required above and cover with one piece, PVC, molded jacket covers.
7. Freeze Protection of Condenser Water System: Provide electric heat trace and insulate condenser water piping same as required above for chilled water outdoor piping.
8. Accepted Manufacturers: *3M Venture Clad ero Perm Vapor Barrier Jacket, Owens Corning Vapor Wick*, *Johns Manville*.

E. Valves: Design the piping distribution systems with shutoff valves located to permit repairs without shutting down other pieces of equipment or risers.

1. Location: Locate balancing, isolation and shutoff valves over back-of-house areas to allow access not visible to guests.
2. Types: Provide full port ball or butterfly valves with the following applications:
   a. In supply and return piping to each piece of equipment and on both sides of AHU circulating pumps.
   b. In chilled water supply, chilled water return, hot water supply and hot water return lines at the base of risers (including fan coil risers).
   c. At major branch takeoffs for isolation of systems.
3. Gate Valves: Not allowed for shut off duty.
4. Hose End Drain Valves: Provide at the bottom of risers.

F. Strainers: Provide strainers with drain valve at each air handling unit (AHU) and at the base of each return riser.

G. Thermo Wells (Pete's Plugs): Provide at both sides of equipment and at temperature control devices.

H. Equipment Connections: Provide connections at the following locations:

1. Flanged or Screwed Unions: On both sides of AHUs. Unions are not required on installations provided with grooved mechanical joint couplings.
2. Di-Electric Unions: At connections of dissimilar metals

I. **Piping Identification:** Provide the following:
1. Plastic Nameplates: Identify air handling units, pumps, heat exchangers, tanks, chillers, cooling towers, water treatment devices and control panels.
2. Brass Tags: Identify small devices, including in-line pumps and valves.
3. Plastic Pipe Markers: Snap-on type with directional flow arrows for chilled water supply and return, condenser water supply and return, condensate drain and heating hot water supply and return.
4. Spacing: 6 m (20 ft.) minimum, both sides of each wall penetration and at each change in direction.

15A.8 Air Side Systems

A. **Design Considerations:** Provide air conditioning in habitable Public and Back-of-House spaces. Do not use the HVAC system during construction. Prior to opening, provide one new set of filters for each piece of equipment including AHU's and FCU's.
1. AHU Design: Provide complete information for AHUs on the design documents including maximum design outside air quantities, supply air dry bulb and wet bulb temperatures.
2. Load Calculation Criteria: Select AHUs with greater than 50% outside air quantity using the ASHRAE 0.4% Evaporation wet bulb and mean coincident dry bulb temperatures. Select AHUs with 50% outside quantities or less using the ASHRAE 1% annual Cooling drybulb and mean coincident wet bulb temperatures.
3. Zoning: Zone air handling systems by type of occupancy, solar orientation and time of operation to allow shutdown of equipment or reset of temperature when heating and cooling is not required.
4. Commercial Cooking Areas & Laundries: Provide individual constant volume AHUs.
5. Rooftop Units: If required, locate immediately above conditioned space with a minimum two 90 degree elbows on supply and return duct to minimize noise transmission.
6. Variable Air Volume (VAV) Systems: Use VAV systems to serve areas with similar occupancies and hours of operation but different load conditions (ballrooms, multiple retail shops, gift shops and administrative offices).
7. AHU Locations: For ease of access and maintenance, do not install AHUs above ceilings. Locate AHUs in mechanical rooms or mechanical mezzanines.

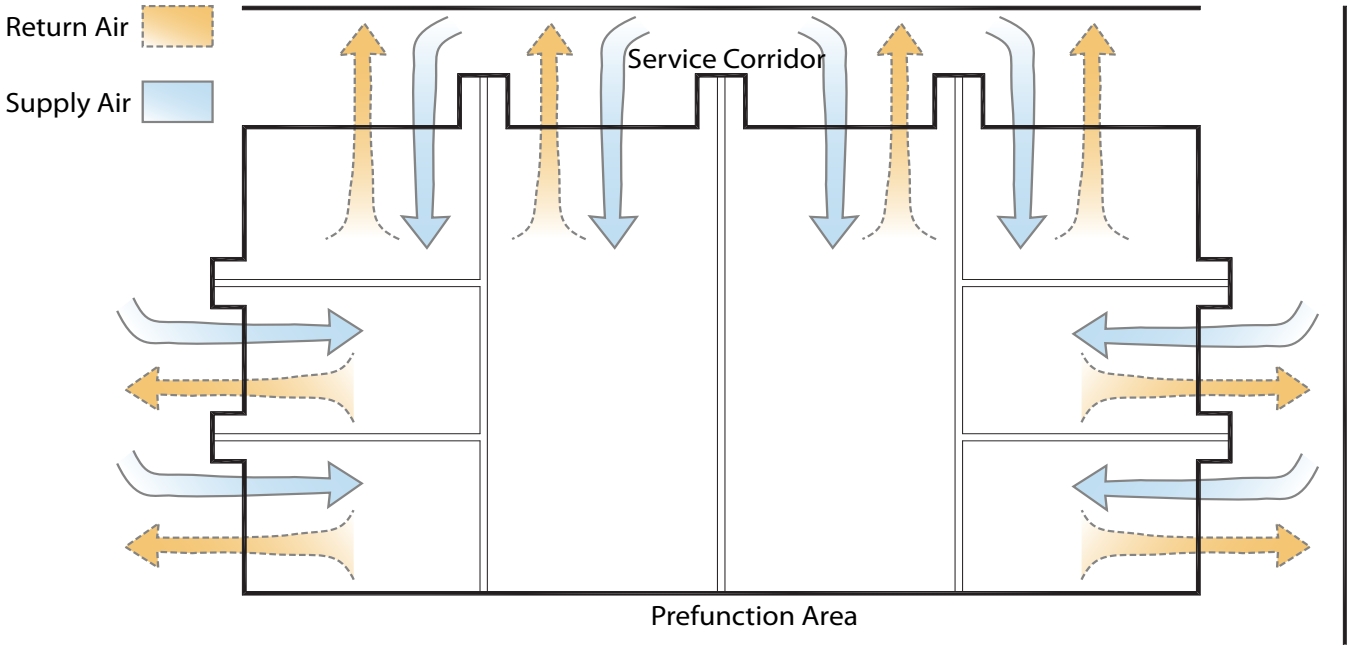
8. Mechanical Rooms: Do not utilize as return air plenums. Hard duct outside air and return air to AHUs.
9. Outside Air Intakes: Locate a minimum of 10 m (30 ft.) above grade and away from public and accessible areas. **<1> <16>**
10. Region Requirements:
    a. Tropical Climates: Provide separate AHUs for preconditioning outside air.
    b. Preheat Coils: Provide on air handling units in cold climates to prevent freezing chilled water coils.
    c. Run Around Coils: Provide for reheat.
    d. Coastal Areas & Corrosive Environments: Provide hurricane resistant hold downs and coils with copper fins mechanically bonded to copper tubes. Provide factory applied corrosion protection for HVAC equipment and ductwork.
    e. Contact: Consult with MI Engineering for project specific requirements.

B. Public & Back-of-House AHUs:

1. AHU Type: Provide factory packaged modular vertical or horizontal type draw through with premium efficiency motors.
2. Fabrication: Double wall construction with 50 mm (2 inch) for indoor and 100 mm (4 inch) for outdooor locations, closed cell insulation and positive drain type stainless steel drain pan.
3. Components: Select with the following:
    a. Supply fan with double width, double inlet air foil fan
    b. Hot water preheat coil with in-line circulating pump
    c. Chilled water cooling coil with in-line circulating pump
    d. Hot water heating coil with in-line circulating pump
    e. Waste heat for humidity control. Electric coils are not allowed.
    f. Intake hood for OA, combination filter and mixing boxes with low velocity 51 mm (2 inch) MERV 8 filters, motorized dampers and automatic temperature controls
    g. Provide secondary drain pans under AHU's and FCU's above finished ceilings.
4. Return Fan: Provide with motor operated dampers on return, outside air and relief air ducts, when required for air side economizer.
    a. Select fan with capacity to match supply air.
    b. Consider use as smoke exhaust fan if capable of exhausting a minimum 8 air changes per hour in smoke exhaust mode. Use of 2 speed motor is acceptable to operate fan at high speed in smoke control mode. **<14>**
5. Freeze Stats: Provide freeze stats to protect coils from freezing by shutting down fans and closing outside air dampers when temperature at coils drops to 5° C (40° F).

6. Sensors: Provide direct digital sensors connected to the BAS with temperature and humidity control for the following:
   - Lobbies
   - Restaurants
   - Pre-function Corridors
   - Executive Offices
7. Sensors: Provide direct digital sensors connected to the BAS with set point display and local occupant control from 20 to 24.5° C (68 to 76° F) for the following:
   - Exhibit Halls
   - Ballrooms
   - Meeting Rooms
   - Boardrooms
8. Back-of-house sensors are similar to public space sensors without display, and are only set through the BAS.
9. VAV Systems:
   a. Sensors: Locate static pressure sensor at last VAV box and high pressure limit switch at AHU.
   b. Duct: For accurate sensing of velocity pressures on box controller, provide straight duct at inlet of VAV box with length equal to 4 times the inlet diameter.
   c. VAV Box Location: Locate in mechanical plant rooms or above accessible ceilings with catwalks, preferably in back-of-house areas for service and maintenance. Where heat is required, outfit VAV boxes with hot water heating coils with modulating 2 way control valves.
   d. Equip VAV AHUs with variable frequency drives (VFDs) and premium efficiency motors.
10. Selection Criteria:
    a. Design Supply Rate: Minimum of 6 air changes per hour
    b. Cooling Coil: Maximum air velocity of 3 m/sec (500 fpm)
    c. Heating Coil: Maximum air velocity of 3 m/sec (500 fpm)
    d. Fans: Air foil type fans with premium efficiency motors
11. Accepted Manufacturers: *Trane*, *Carrier*, *York, Sinko, AAF* and *McQuay*

***Figure 1*- Exhibit Hall & Ballroom (Public Space) Ductwork Schematic**



C. Public Spaces: Comply with the following for Lobbies, Atriums, Restaurants, Lobby Bars, Ballrooms, Exhibit Halls, Meeting Rooms, Boardrooms and Pre-function Corridors:

1. Carbon Dioxide (CO_2) Sensors: Provide CO_2 sensors to control outside air quantities in areas where there are large changes in occupancy.
2. Fan Powered Variable Air Volume (FPVAV): Provide systems with hot water reheat coil and VFDs.
3. Air Distribution: Size ducts for quiet airflow without noise or whistle. Provide linear supply slot diffusers. Coordinate appearance with MI Interior Design.
4. Ductwork: Plan duct locations to avoid passing through the wall above operable partitions. **<6>**
5. Acoustics: Minimize return air through acoustical partitions and, if penetrations are required, fabricate sound traps with two 90 degree acoustically lined elbows.
6. Plenums: Do not use supply air plenums. Return air plenums are acceptable, except if the space requires smoke control **<14>**.

D. Indoor Pool:

1. Type: Provide packaged dehumidification type heat pump unit with direct drive motor and VFD that rejects heat back into the pool. Design and construct unit for pools with reheat for proper temperature and humidity control.
2. Condensation: Provide supply air to wash windows and skylights to prevent condensation.
3. Return Air: Provide hard ducted.

4. Remote Monitoring: Provide manufacturer's factory controls for monitoring the unit, including refrigerant pressures.
5. Corrosion Protection: Keep components, including the blower motor, out of the corrosive air stream. Fully dip air coils exposed to the pool air to ensure 100% corrosion protection. Pre-coated finish stock is not acceptable.
6. Filters: 50 mm (2 inch) Farr 30/30
7. Accepted Manufacturers: *Innovent, Seresco, Desert Aire, Dectron and Poolpak*

E. Guestroom & Guest Corridor Dedicated Outside Air System (DOAS): Provide DOAS unit to supply guest corridors and guestroom makeup air. Locate temperature and humidity sensors in one typical guest corridor.

1. Type: Double wall rooftop units with foam or ceramic insulation specifically manufactured for economical cooling, dehumidifying, heating and reheating 100% outside air. Equip with energy recovery and a VFD controlled by static pressure sensors located in the vertical riser, and set at 3.4 kPa (0.5 inch w.c.)
   a. Provide unit capable of maintaining space conditions of 24°C (75°F) 50% RH with less than 65 grains of moisture per pound of dry air at all load conditions and comply with ASHRAE Standard 90.1.
   b. Reheat: Provide full modulating reheat to maintain constant discharge temperature during cooling and dehumidification season. Do not use electric coils for reheat. Utilize recovered energy for reheat.
2. Guestrooms Supply Ventilation:
   a. Type: Provide Zone Register Terminal (ZRT-1-4-120) manufactured by *American Aldes* (*www.americanaldes.com*) in the entry vestibule ceiling.
   b. Integrate operation of ZRT with digital guestroom control system to shut off airflow when the guestroom is unoccupied and automatically supply a regulated volume of 17 l/s (35 cfm) when occupied.
3. Corridors: Provide a minimum ventilation rate of 2 air changes per hour with preferably vertical ducts and horizontal distribution system on each floor. Do not use ceiling hung fan coil units.
4. Remote Monitoring: Provide manufacturer's factory mounted controls with remote monitoring by BAS.
5. Process Air: Locate DOAS vital components out of the process air stream. Fully dip air coils to ensure 100% of the coil is protected.

6. Blower and Motor: Direct drive with VFD for supply air balancing. Belt driven motors are not acceptable.
7. Winter Heating: Provide fully modulating hydronic or gas-fired hydronic heat to maintain a constant discharge air temperature during heating season.
8. Preferred Manufacturer: *Aaon,* national account contact, Tom Whiteley, (443) 832-1657 or e-mail *tom.whiteley havtech.com*. Accepted Manufacturers: *Trane*, *DesertAire*, *Advantix*, *Seresco,* and *SolutionAir*

F. **Guestroom FCUs: <7A>**

1. Sizing: Provide the larger of either 46 m^2 (500 sf)/ton or 140 l/s (300 cfm) fan coil.
2. Location: Position FCU supply air to avoid blowing directly on the bed. Coordinate supply grille, return grille and access panel placement with MI Interior Design.
3. Type: Vertical stack or concealed horizontal with chilled water cooling coil with 2-way control valve, hot water heating coil with 2-way control valve. Based on climate data, electric heat may be appropriate. Consult MI Engineering for acceptance. *Hayes* Fluid Controls *Measurflo* automatic flow control valves on chilled and hot water, epoxy coated insulated drain pan, filter return with 18 mm (¾ inch) MERV 8 filters and foil faced insulation. Provide 3-way control valves at the top of each riser or a the last FCU on a horizontal run.
   a. Suites: Multiple, four pipe fan coil units. Provide minimum one unit for each room or space.
   b. Guest Floor Lounge: Air handling units (AHUs) or multiple fan coil units (FCUs) discharging toward exterior wall with hard ducted return air.
   c. Bathrooms: In large 4 and 5 fixture bathrooms and bathrooms with solar gain from windows, provide supply air to the bathroom from the fan coil unit.
   d. Location: For horizontal FCU's locate above the entry vestibule ceiling with hard ducted return air . Provide full size access panel to allow for complete maintenance access.
4. Guestroom Automation System:
   a. Digital Thermostat: Provide with the following features:
      - occupancy sensor - built-in
      - RFID signal from proximity door lock
      - lighting control - integrated
      - central network control interfaced with Property Management System (PMS)
      - RF switch at exterior sliding door (if applicable)
      - on / off make-up air damper control

b. Location: Locate on guestroom side of bathroom wall.
c. Preferred manufacturer: *Telkonet*
Accepted Manufacturers: *Inncom, Crestron, Schneider*

5. Shut off Valves: Provide full port ball valves for shut off on chilled water and hot water coil connections.
6. Condensate: Do not connect fan coil unit condensate drains to plumbing fixtures. Hard pipe to condensate recovery system.
7. Accepted Manufacturers: *International*, *Trane,* Tempspec and *Envirotech*

G. **Ventilation:** Provide mechanical ventilation to non-habitable spaces to maintain a minimum winter temperature of 13° C (55° F) and maximum summer temperature of 32° C (90° F).

H. **Supplemental A/C:**
1. Provide chilled water fan coil unit for primary cooling with backup direct expansion (DX) split system air conditioning units connected to backup operational power to provide 24 hour air conditioning for PMS computer room, telephone equipment room and elevator machine rooms **<13A> <13B> <12> <15C>**
2. Provide high efficiency DX split systems (with a minimum EER of 12.0) for Pastry / Chocolate Room, Meat / Fish Room, Garde Manger, Beverage Storage and Refrigerated Trash Room to maintain 15° C (59° F) **<10>**.

I. **Elevator Shafts:**
1. Pressurization: Pressurize elevator shafts to maintain minimum of 25 kPa (0.10 inch w.c.) and maximum of 67 kPa (0.25 inch w.c.).
2. Heat: Provide heating to maintain a minimum supply temperature of 7.2° C (45° F).
3. Standby Power: **<15C>** Connect fan to standby power.
4. Dampers: See “Ductwork” in this Module.

J. **Exhaust Systems:**
1. Type & Location: Provide exhaust fans with premium efficiency motors as follows:
- Pool Equipment Rooms
- Toilet Rooms
- Vending Rooms
- Maintenance Shops
- Locker Rooms
- Electric Rooms
- Commercial Cooking Area Hoods
- Bars
- Laundries
- Employee Cafeteria
- Other areas producing odors, fumes and excessive heat.

2. Guestroom Tower: Total exhaust is typically 236 to 378 l/s (500 to 800 cfm) per floor. Provide exhaust at the following:
   - Service Elevator Lobby
   - Laundry Chute Room
   - Housekeeping
   - Vending
   - Electrical Rooms to maintain 27° C (80° F)
3. Parking Structure Exhaust: Provide exhaust of 0.7 l/s/m^2 (1.5 cfm/sf) minimum, controlled by carbon monoxide sensors. Provide a minimum of one sensor per 700 m^2 (7,500 sq. ft.).

K. Guest Bathroom Exhaust:

1. Type: Provide ceiling mounted *American Aldes* Zone Register Terminal (ZRT-1-4-120) in the shower compartment subducted into vertical sheet metal exhaust risers to roof mounted exhaust fans.
   ZRT automatically regulates the airflow at 30 l/s (50 cfm) when the light switch is on and closes when the light switch is off.
2. Roof Mounted Exhaust Fans: Provide with VFD sized at 50% of the total exhaust quantity. Locate static pressure sensor in the vertical riser, set at 3.4 kPa (0.5 inch w.c.).

L. Combustion Air: Provide for gas fired appliances including boilers, pool heaters and laundry dryers.

1. Cold Climates: Provide unit heaters for general space conditioning.
2. Fan Operation: If provided by a fan, interlock fan and intake damper with boiler controls to ensure proper supply of combustion air prior to boiler and equipment firing.

M. Fans:

1. Type: Centrifugal, except parking structure fans may be propeller fan with premium efficiency motors.
2. Commercial Cooking Area Hood Exhaust Fans: **<10>** High velocity discharge at 13 m/sec (2,500 fpm) with weather resistant finish, motor guard, drain plug and removable stainless steel drain pan.
   Mount on roof and direct exhaust away from outside air intakes to prevent reentry of contaminated air into building.
3. Dampers: Provide with motor operated dampers that automatically close when the fan is off.

N. Air Curtains: Provide for the entire length of doors that open to the Receiving Area.

15A.9 Ductwork

A. Requirements:

1. Type: Low and medium velocity galvanized sheet metal constructed in compliance with Sheet Metal and Air conditioning Contractors National Association (SMACNA) Standards.
2. Flex Duct to Diffusers: Medium pressure rated, externally insulated, spiral wound, with a maximum length of 2.4 m (8 ft.). Flexible duct is not allowed on return and exhaust systems.
3. Sizing: To minimize airborne noise and ensure space noise criteria, size ductwork for maximum duct velocity as follows:
   a. 10 m/sec (2,000 fpm): Main supply ducts
   b. 7.5 m/sec (1,500 fpm): Branch ducts, and return and exhaust systems
   c. 4 m/sec (800 fpm): Ducts serving room terminal air devices
   d. Duct Friction Loss: Not to exceed 0.7 kPa (0.10 inch w.c.) per 30.5 m (100 ft.) of duct
4. Turning Vanes: Provide in rectangular elbows greater than 45 .
5. Duct Option: Ductwork downstream of terminal devices may be *Knauf Koolduct* or *Mansville Superduct RC*.

B. Vertical Risers: *Flamebar* BW11 UL listed 2-hour fire rated duct system complete with gaskets, caulk, fire dampers, etc. in lieu of 2-hour shaft wall construction.

C. Outdoor Ductwork: Not recommended, but when necessary provide as follows:

1. Roof: Locate bottom of duct a minimum of 450 mm (18 inch) above roof to permit servicing roof area.
2. Access: Provide steps over ductwork for access to roof areas and roof mounted systems and equipment.
3. Insulation: Encapsulate with *3M* Venture Clad Zero Perm vapor barrier jacket or *Armacell* ArmaTuff, UV resistant weatherproof outdoor insulation.

D. Pool Rooms: 304 stainless steel for pool equipment and storage room.

E. Sewage Ejection & Grease Trap Rooms: Exhaust system to be under negative pressure with fans located at remote end of the system and discharge to building exterior.

F. **Exhaust Outlets:** Position exhaust outlets 3 m (10 ft.) minimum away from outside air intakes and operable windows except for the following:
   1. Kitchen Hood Exhaust: Locate fan outlet minimum of 15 m (50 ft) away from outside air intake.
   2. Fireplaces: Locate wood burning fireplace outlets 15 m (50 ft.) minimum from outside air intakes and operable windows.

G. **Acoustic Lining:** Provide closed cell elastomeric insulation that is non-fibrous and resists bacterial growth, with impervious face to permit cleaning.
   1. Provide 51 mm (2 inch) 1½ lb density duct liner for the first 9 m (30 feet) from an AHU.
   2. Outside Air Duct: Provide 51 mm (2 inch) 3 lb density external duct board.

H. **Dampers:**
   1. Provide low leakage motor operated dampers in the following locations:
      a. For openings in the elevator shafts and machine rooms (dampers normally closed). Provide control by the fire alarm system to open dampers under emergency conditions.
      b. On supply and exhaust systems to automatically close when the systems or spaces served are not in use.
   2. Provide fire dampers and fire / smoke dampers **<14>** where required, to meet fire ratings of floors, walls and ceiling systems complete with 200 x 200 mm (8 x 8 inch), framed, hinged, lockable access doors. Coordinate locations with MI Interior Design.
   3. Provide balancing dampers for each supply and return riser, registers and diffusers. Where possible, locate balancing dampers in ceiling space over back-of-house areas where remote servicing is accomplished out of guest view.
   4. Volume Dampers: Provide in branch ducts at connection to main duct.

I. **Flues:** Provide factory built, double wall gas flue / vent for each boiler and fireplace vented to outdoors.

15A.10 Smoke Control Systems

A. **General:** See Module **<14>** for smoke control systems, zones, locations and coordinate requirements with HVAC and ductwork in this Module.

15A.11 Fuel Oil System

A. **Type:** Provide complete automatic fuel oil system for standby power generator. **<15C>**

B. **Location:** Install double wall, fiberglass fuel oil tanks above ground with spill containment. In ground tanks are not acceptable. Generator skid mounted tanks are preferred.

C. **Controls:** Provide each tank with the following:
- Remote electronic level gauges
- Leak detection and monitoring equipment
- Interstitial monitoring
- Overfill protection

D. **Pumps:** If a skid tank is not required, provide duplex fuel oil pump sets to transfer fuel to day tanks.

E. **Fuel Storage:** Size fuel oil tanks based on 24 hours fuel oil storage capacity for backup operational power.
1. High Risk Areas: For properties in high risk areas (hurricane regions) provide a minimum of 72 hours storage capacity.
2. Remote Properties: On island and remote properties, size fuel oil tanks based on 7 days storage capacity.
3. Acceptance: Obtain acceptance from MI Engineering.

15A.12 Commercial Food & Beverage (F&B) Production

A. **Air Conditioning:** Provide air conditioning with a separate HVAC unit that remains negative with respect to surrounding areas.
   1. Supply Air: Locate devices so cool air is directed away from "hot food" serving areas.
   2. Return Air: Provide hard ducted return system. Plenum ceilings are not permitted in food production areas.

B. **Type 1 - Grease Hood:** See Module **<14>** for cooking hood and duct fire suppression system at food production cooking equipment that produces grease laden vapors, and coordinate requirements with Modules **<10>**, **<15B>**, **<15C>** and this Module. Provide the following:
   1. Standard: Comply with NFPA 96 - Ventilation Control and Fire Protection of Commercial Cooking Operations.
   2. Hood Control System: Provide *Melink Intelli-Hood* or *Halton Marvel* system for food cooking hoods to automatically reduce the speed of the exhaust fan and control outside and return air dampers during idle and non-cooking periods to save fan energy and conditioned air. The system does the following:
      a. Includes the I/O (input and output) processor, key-pad, temperature sensors, optic sensors, variable frequency drives (VFDs) and cables.
      b. Automatically turns the hoods on / off based on temperature or a time of day schedule.
      c. Varies the hood fan speeds based on both the heat and smoke load to ensure optimal hood performance and energy savings.
      d. Automatically adjusts the temperature span to ensure optimal energy efficiency.
      e. Automatically recalibrates the optics at start-up to ensure optimal energy efficiency.
      f. Provides additional inputs and outputs to allow compatibility with other equipment and devices such as HVAC systems and cooking appliances.
      g. Provides remote access capability via modem for monitoring and diagnostics.
   3. Hood Exhaust Duct: Provide dedicated exhaust duct and fan. Do not combine hood exhaust ducts with other exhaust systems (warewashing, laundry, fireplace, building, etc.).
      a. Solid Fuel Burning: At cooking appliances utilizing solid fuel (wood, charcoal, etc.), provide ductwork with spark arrester, separately ducted to building exterior.

b. Type: Black steel, 1.46 mm (0.057 inch) minimum thickness or stainless steel, 1.14 mm (0.045 inch) minimum thickness ductwork with welded joints.
   - Slope duct back to the hood, with welded drip proof seams.
   - Galvanized steel duct is not acceptable. *Flamebar* BW11 Grease Duct & *Unifax* Fyrewrap are acceptable alternates.

c. Cleanouts & Access Doors: Provide at maximum spacing of 3.6 m (12 ft.) in horizontal and at every floor of vertical riser. Locate at base of vertical riser, at every change in direction and at sprinklers.

d. Fire Rated Enclosure: Provide a minimum 2 hour fire rated duct enclosure from the point where the duct exits the cooking area (wall or ceiling) and to the point where the duct exits the building (exterior wall or roof). Not required if Flamebar is used.

e. Insulation: Provide 50 mm (2 inch) minimum, calcium silicate or high temperature fiberglass insulation, tested and approved for the application, with all-service jacket on entire length of grease exhaust duct.

f. Sizing: Based on velocity of 7 m / sec (1,500 fpm) to 10 m / sec (2,000 fpm) to prevent grease from accumulating in ducts and to ensure grease not trapped in hood filters is exhausted away from the building.

g. Dampers: Not permitted in grease exhaust systems.

4. Exhibition Cooking Hood:
   a. Exhaust Air Quantity: 100%
   b. Air Curtain: Provide an air conditioned air curtain to control air, heat and odor between cooking area (edge of cooking hood), restaurant area and customers.

5. Hood Exhaust Fans: High velocity discharge at 13 m / sec (2,500 fpm) with drain plug and removable stainless steel drain pan.
   a. Mount on roof minimum 5 m (15 ft.) from outside air intakes to prevent reentry of contaminated air into the building.
   b. Position fans so entire cooking exhaust system is under negative pressure.

C. **Dishwasher Exhaust Duct:** Provide separate, dedicated, welded 304 stainless steel exhaust duct, sloped back to equipment for drainage of condensation. Run duct directly to building exterior.

15A.13 Laundry

A. Coordination: See Module **<11A>** for Laundry Facility criteria and applicable design requirements.

B. Facility Features: Provide the following:

1. Diffusers: Locate adjustable type ceiling mounted diffusers for cooling within 2.7 m (9 ft.) of work stations.
2. Dryers: If dryer enclosure is located adjacent to an exterior wall, provide louvers for combustion air and size to prevent significant negative pressure in the enclosure when dryers operate. If dryer enclosure is not on an exterior wall, provide an outside air supply fan equal to the total tumbler exhaust volume.
3. Flatwork Ironer Vacuum Exhaust Air Duct:
   a. Provide dedicated, welded 304 stainless steel exhaust duct and slope back to equipment for condensation drainage. Run duct directly outdoors.
   b. Equip ducts exceeding 7.6 m (25 ft.) in overall length with in-line booster fans having a capacity equal to the equipment exhaust capacity.
   c. Do not combine vacuum exhaust duct with other ductwork systems.

C. Valet:

1. Provide individual FCU with thermostat over each work station.

15A.14 Building Automation System (BAS)

A. System Requirements: Provide a BAS with the following:

1. HVAC Scheduling, Operation & Optimization: The BAS provides automatic scheduling, operation and optimization of major HVAC and Plumbing systems to provide the most cost effective property operation while maintaining guest comfort and property sustainability.
   a. BAS maximizes property efficiency providing alarms of critical conditions.
2. Control System: Provide a peer to peer network of digital control panels and operator workstations.
   a. Design the control system so each mechanical system operates under standalone control.
   b. At each digital control panel, provide an operator interface display to display parameters and set points in the property's equipment rooms.
3. Operator Workstation: Provide a personal computer (PC) in the Engineer's office with a color monitor, mouse and keyboard. The PC is the user interface for building areas and systems utilizing dynamic color graphics.

4. Direct Digital Control (DDC): Integrate the BAS with the DDC temperature control system that is provided, engineered, installed and warranted by the same BAS Manufacturer.
   DDC technology provides the functions necessary for the project's systems control.
5. Network: Provide communications between control panels and workstations through a high speed network.
   a. Network nodes are peers.
   b. Provide a modem or network communications card for remote access to the system.

B. Monitoring & Controls: BAS monitors and controls the following systems except guestrooms:

1. Central Cooling Plant: Includes chillers, pumps and cooling towers (monitor only)
2. Central Heating Plant
3. Air Handling Systems: Includes Guestroom and Guest Corridor makeup air unit, Back-of-House AHUs, Public Space AHUs and VAV boxes.
4. Commercial Cooking Hood: Exhaust fans and makeup air units
5. Critical non-HVAC Systems: Includes the following:
   - cistern water level
   - domestic hot water systems
   - outdoor lighting
   - electric meters
   - gas meters
   - walk-in coolers and freezers
   - water feature pumps
   - water treatment plant
   - sewage treatment plant
   - swimming pool filtration

C. Applications: Consult MI Engineering for Sequence of Operations and Points Lists that are supplements to this Module.

D. Preferred Manufacturers: Automated Logic. Accepted Manufacturers: *Trane*, *Siemens*, *Schneider Electric*, *Johnson*, and *Honeywell*

Table 1 ☒ Environmental / Ventilation Requirements

Module	Space	Design Temperatures & Relative Humidity		Occupancy m^2/Person (ft^2/Person)	Outside Air	Maximum Lighting Load Watts/m^2 (watts/ft^2)	Remarks
		Cooling C (F) RH	Heating C (F)				
1	Parking Structures	-	-	-	-	-	Provide supply and exhaust of 7.5 l/s/m^2 (1.5 cfm/sf) minimum controlled by carbon monoxide sensors.
2A	Main Entrance & Lobby	24°C (75°F) 50% RH	21°C (70°F)	3 (30)	3.8 l/s/person + 0.3 l/s/m^2 (7.5 cfm/person + 0.06 cfm/sf)	43 (4)	-
	Public Toilets	24°C (75°F) 50% RH	21°C (70°F)	-	-	-	Provide conditioned supply air into each restroom. Keep toilets under negative pressure with respect to surrounding public areas. Exhaust quantity 10 l/s/m^2 (2 cfm/sf) minimum.
2B	Business Center	24°C (75°F) 50% RH	21°C (70°F)	4.6 (50)	3.8 l/s person + 0.3 l/s/m^2 (7.5 cfm/person + 0.06 cfm/sf)	75 (7)	
3	Lounges & Restaurants	24°C (75°F) 50% RH	21°C (70°F)	1.0 (10) or number of seats	3.8 l/s person + 0.9 l/s/m^2 (7.5 cfm/person + 0.18 cfm/sf)	54 (5)	Individual temperature control in each Private Dining Room.
4	Exercise Area / Spa	24°C (75°F) 50% RH	21°C (70°F)	4 (45)	10 l/s person + 0.3 l/s/m^2 (20 cfm/person + 0.6 cfm/sf)	32 (3)	Keep under negative pressure with respect to surrounding public areas. Provide dedicated HVAC unit or combine with locker room unit only.
	Locker / Dressing Areas	24°C (75°F) 50% RH	21°C (70°F)	-	Exhaust required	-	Keep under negative pressure with respect to surrounding public areas. Provide dedicated HVAC unit or combine with exercise area or spa unit.
	Sauna & Steam Rooms	-	-	-		-	Provide 47 l/s (100 cfm) exhaust in ceiling plenum above each sauna and steam room.
	Treatment Rooms	24°C (75°F) 50% RH	21°C (70°F)	-	100 % exhaust	32 (3)	Provide individual temperature control and 100% exhaust in each treatment room.
	Indoor Pool	27°C (80°F) 65% RH	27°C (80°F)		2.4 l/s/m^2 (0.48 cfm/sf) outside air	32 (3)	Keep under negative pressure with respect to surrounding public areas. Provide separate HVAC unit.
5	Retail	24°C (75°F) 50% RH	21°C (70°F)	4 (45)	3.8 l/s person + 0.6 l/s/m^2 (7.5 cfm/person + 0.12 cfm/sf)	75 (7)	Provide individual temperature control in each shop.

Table 1 – Environmental / Ventilation Requirements

Module	Space	Design Temperatures & Relative Humidity		Occupancy m²/Person (ft²/Person)	Outside Air	Maximum Lighting Load Watts/m² (watts/ft²)	Remarks
		Cooling C (F) RH	Heating C (F)				
6	Pre-Function	24°C (75°F) 50% RH	21°C (70°F)	1 (10)	3.8 l/s person + 0.6 l/s/m² (7.5 cfm/person + 0.12 cfm/sf)	54 (5)	Provide individual temperature sensor connected to BAS.
	Ballrooms	24°C (75°F) 50% RH	21°C (70°F)	1 (10)	2.5 l/s person + 0.3 l/s/m² (5 cfm/person + 0.06 cfm/sf)	54 (5)	Provide individual temperature sensor connected to BAS with local occupant control in each Salon.
	Meeting Rooms	24°C (75°F) 50% RH	21°C (70°F)	2 (15)	2.5 l/s person + 0.3 l/s/m² (5 cfm/person + 0.06 cfm/sf)	54 (5)	Provide individual temperature sensor connected to BAS with local occupant control in each Meeting Room.
	Boardrooms	24°C (75°F) 50% RH	21°C (70°F)	2 (15) or number of seats.	2.5 l/s person + 0.3 l/s/m² (5 cfm/person + 0.06 cfm/sf)	54 (5)	Provide individual temperature sensor connected to BAS with local occupant control in Board Room.
	Service Corridors	24°C (75°F) 50% RH	21°C (70°F)	10 (100)	0.3 l/s/m² (0.06 cfm/sf)	32 (3)	Keep under negative pressure with Meeting Spaces but positive with respect to Banquet Kitchen.
7A	Guestrooms & Suites	24°C (75°F) 50% RH	23°C (74°F)	2 persons	2.5 l/s person + 0.3 l/s/m² (5 cfm/person + 0.06 cfm/sf)	-	Hard duct 100% outside air into each guestroom. Provide supply air into large 4 & 5 fixture guest bathroom and bathrooms with exterior exposure.
7B	Guestroom Corridors & Elevator Foyers	24°C (75°F) 50% RH	21°C (70°F)	-	2 air changes per hour 100% outside air	11(1)	Supply 2 air changes per hour minimum. 100% outside air
	Ice Machine Rooms		21°C (70°F)	-	170 m³ / hour (100 cfm) exhaust	-	Water cooled ice machines
	Linen Room	24°C (75°F) 50% RH	18°C (65°F)	-	Exhaust required	-	Exhaust as required to maintain conditions.
	Service Elevator Foyer	24°C (75°F) 50% RH	21°C (70°F)	-	Exhaust required	32 (3)	Provide 94 l/s (200 cfm) exhaust in foyer to keep negative to guest corridor.
	Exit Stairs	-	5°C (40°F)		-	-	-
7C	Guest Floor Lounge	24°C (75°F) 50% RH	21°C (70°F)	2 (15) or number of seats	3.8 l/s person + 0.9 l/s/m² (7.5 cfm/person + 0.18 cfm/sf)	32 (3)	Provide individual temperature controls in Lounge, Meeting Room and Pantry. Provide hood exhaust in Pantry if required.

Table 1 ☒ **Environmental / Ventilation Requirements**

Module	Space	Design Temperatures & Relative Humidity		Occupancy m^2/Person (ft^2/Person)	Outside Air	Maximum Lighting Load Watts/m^2 (watts/ft^2)	Remarks
		Cooling C (F) RH	Heating C (F)				
8A	Administrative Facilities	24°C (75°F) 50% RH	21°C (70°F)	10 (100)	2.5 l/s person + 0.3 l/s/m^2 (5 cfm/person + 0.06 cfm/sf)	43 (4)	Provide individual temperature controls in offices. Provide exhaust as required.
8B	Employee Facilities	24°C (75°F) 50% RH	21°C (70°F)	10 (100)	2.5 l/s person + 0.3 l/s/m^2 (5 cfm/person + 0.06 cfm/sf)	32 (3)	Provide exhaust where required.
	Employee Cafeteria	24°C (75°F) 50% RH	21°C (70°F)	1 (10) or number of seats	3.8 l/s person + 0.9 l/s/m^2 (7.5 cfm/person + 0.18 cfm/sf)	32 (3)	Keep under negative pressure with respect to surrounding areas. Provide exhaust for grease hood and dishwasher if applicable.
9	Engineering & Maintenance	24°C (75°F) 50% RH	21°C (70°F)	10 (100)	2.5 l/s person + 0.3 l/s/m^2 (5 cfm/person + 0.06 cfm/sf)	43 (4)	Provide individual temperature controls in offices. Provide exhaust for workshops as required.
	Refrigerated Trash Room	13°C (55°F) 50% RH	13°C (55°F) 50% RH	-	Exhaust required	-	Keep under negative pressure with respect to surrounding areas. Provide individual temperature control.
	Receiving Area	-	-	-	-	-	Provide air curtains at each entrance from receiving dock into building. Provide radiant heating panels in Receiving Area at locations where winter temperatures drop below 0° C (32° F). Provide circulating fans in hot climates.

Table 1 Environmental / Ventilation Requirements

Module	Space	Design Temperatures & Relative Humidity		Occupancy m²/Person (ft²/Person)	Outside Air	Maximum Lighting Load Watts/m² (watts/ft²)	Remarks
		Cooling C (F) RH	Heating C (F)				
10	Commercial Kitchens (F&B production)	27°C (80°F) 50% RH	21°C (70°F)	5 (50)	3.8 l/s person + 0.9 l/s/m² (7.5 cfm/person + 0.18 cfm/sf)	32 (3)	Keep under negative pressure with respect to surrounding areas. Operate dishwasher exhaust 24 / 7
	Cold Prep & Vegetable Prep	15°C (59°F) 50% RH	-	5 (50)	3.8 l/s person + 0.9 l/s/m² (7.5 cfm/person + 0.18 cfm/sf)	32 (3)	See applicable program requirements in Module **<10>**. Provide individual split system connected to BAS.
	Dry Storage	21° to 24°C (70° to 75°F) 50% RH	-	-	-	32 (3)	Provide individual temperature control connected to BAS.
	Meat / Fish / Poultry / Pork Prep Area	15°C (59°F) 50% RH	-	5 (50)	3.8 l/s person + 0.9 l/s/m² (7.5 cfm/person + 0.18 cfm/sf)	32 (3)	Keep under negative pressure with respect to surrounding areas. Provide individual split system connected to BAS.
	Pastry / Chocolate Room	15°C (59°F) 50% RH	-	5 (50)	3.8 l/s person + 0.9 l/s/m² (7.5 cfm/person + 0.18 cfm/sf)	32 (3)	Keep under negative pressure with respect to surrounding areas. Provide individual temperature control connected to BAS.
	Red Wine Storage	13°C (55°F) 50% RH	-	-	-	32 (3)	Provide individual split system connected to BAS.
	Beverage Storage	21°C (70°F) 50% RH	-	-	-	32 (3)	Provide individual temperature control connected to BAS.
11A	Laundry /Valet	27°C (80°F) 50% RH	21°C (70°F)	3 (30)	2.5 l/s person + 0.6 l/s/m² (5 cfm/ person + 0.12 cfm/sf)	32 (3)	Keep under negative pressure with respect to surrounding areas. Provide spot cooling over each valet station.
11B	Housekeeping	24°C (75°F) 50% RH	21°C (70°F)	5 (50)	2.5 l/s person + 0.3 l/s/m² (5 cfm/person + 0.06 cfm/sf)	32 (3)	Keep under negative pressure with respect to surrounding areas.

Table 1 ☒ **Environmental / Ventilation Requirements**

Module	Space	Design Temperatures & Relative Humidity		Occupancy m^2/Person (ft^2/Person)	Outside Air	Maximum Lighting Load Watts/m^2 (watts/ft^2)	Remarks
		Cooling C (F) RH	Heating C (F)				
12	Elevator Equip. Rooms	24°C (75°F) 50% RH	21°C (70°F)	-	-	-	Provide split systems with individual temperature controls. Ventilation not required.
13	Computer Room	21°C (70°F) 50% RH	-	10 (100)	2.5 l/s person + 0.3 l/s/m^2 (5 cfm/person + 0.06 cfm/sf)	43 (4)	Provide two computer room a/c units sized at 65% of total equipment load. Connect a/c units to emergency backup power.
	IDF	Design system to maintain temperature between 10° to 27° C (50° to 80° F) non-condensing.		-	-	-	Provide 24 hour conditioning. Provide IDF supply and exhaust based on specific project requirements but typically 1.5 kW (5,000 Btuh/hr) per guestroom floor. Connect a/c units to emergency backup power.
	Sound Equip. Room			-	0.3 l/s/m^2 (0.06 cfm/sf)	-	
	Dimmer Equip. Room			-		-	
15	Mechanical, Electrical, Telephone Rooms & Closets	24°C (75°F) 50% RH	21°C (70°F)	-	0.3 l/s/m^2 (0.06 cfm/sf)	-	Split system a/c unit for main telephone room, on emergency backup power.
16	Security	24°C (75°F) 50% RH	21°C (70°F)	-	-	43(4)	Provide individual temperature control connected to BAS.

15A.15 Acceptance Testing

A. Requirements:

1. Efficiency: The primary goal of acceptance testing is to produce a building with service systems that function, in all respects, according to the design intent. Properly tested systems function at maximum efficiency, and minimize energy consumption and operating costs.

To achieve this, it is essential that an acceptance testing process be implemented that tests, verifies, adjusts, calibrates and documents functional and environmental performance of systems and equipment outlined in this Module, prior to occupancy.

2. Testing Representative: The acceptance representative is a critical part of implementing the process and functions most effectively as an independent agency (not associated with the HVAC, prime or general contractors)
3. The acceptance testing process is completed when the required documents are submitted and approved.

B. Acceptance Testing Level: Perform Accpetance Testing on building systems as defined by ASHRAE 189.1 - 2009 Standard for the Design of High Performance Green Buildings and include required pre-start, start-up and verification checklists. Additional documentation water test and balance reports, operating & maintenance manuals, highlighted manufacturer cut sheets, Record "As-Built" documents in pdf format, and equipment warranties on all equipment.

C. Coordination: See "Acceptance Testing" in Modules **<15B>** and **<15C>** and coordinate requirements with this Module.

AUTOGRAPH
COLLECTION

AUTOGRAPH COLLECTION®

STANDARDS

MODULE

15B

PLUMBING SYSTEMS

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Plumbing Systems

15B.1 General Requirements

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Design Criteria: This Module establishes minimum Marriott International (MI) requirements and is not intended to provide complete design solutions to project specific situations.

B. Codes & Standards:

1. Deviations: Submit in writing, proposed deviations from systems, equipment or manufacturer required by these Standards and obtain MI Engineering acceptance. For deviations that alter operating costs, submit a complete computer simulated life cycle cost analysis so that negative impacts are reflected in the operating Pro-Forma.
2. Governing Regulations: If governing regulations conflict with MI's Design Standards, contact MI Engineering for resolution.
3. Documentation: Clearly identify on the design drawings, systems and equipment required by this Module and provided by the contractor.
4. Sanitation: Comply with sanitation standards to safeguard the water supply, drainage and food service equipment **<10>**.

C. System Design: Comply with the American Society of Plumbing Engineers (ASPE) standards.

D. Dimensions, Sizes & Measurements: In this Standard, conversions from English to metric (SI) units are approximate.

E. Energy Efficiency: MI has adopted a significantly aggressive environmental policy. At a minimum, design plumbing systems in compliance with ASHRAE Standard 90.1 2013, Energy Efficiency in Buildings.

1. Provide a complete computer simulated life cycle cost analysis for alternate plumbing systems and equipment considered for implementation.
2. Investigate the use of alternate or renewable energy options, including solar hot water and swimming pool heat.

15B.2 Sanitary System

A. System Requirements: Provide entire facility with complete sanitary waste and vent system connected to a public sanitary system with each fixture vented to the atmosphere.

1. Private Sewage Disposal System: Provide when public sanitary sewers are not available.
2. Guest Bathroom Floor Drains: Unless required by governing codes, guest bathroom floor drains are prohibited.
   a. Where floor drains are required, provide Trap Guard by *ProSet Systems* to eliminate methane gas from entering bathroom and guestroom.
   b. At accessible roll-in showers, provide a secondary floor drain outside the shower area.
3. Vertical Sanitary Risers: Provide clean out with access every 3 floors minimum, 2 per riser.
4. Waste Water: Indirect connect the following to the sanitary sewer:
   - Cooling tower drain
   - Water softener backwash
   - Pool filter backwash
   - Whirl Pool filter backwash
5. Sewage Ejectors: When required, provide duplex submersible sump pump system with each pump sized at 65% of peak load. System includes control panel for alternating pumps, pump failure alarm and high water level. Connect sewer pumps to backup power **<15C>**.
6. Food & Beverage Production Facilities: **<10>**
   a. Indirect Waste: Provide for kitchen equipment drains with air gaps equal to 2 times the drain pipe diameter to prevent back siphonage and contamination.
   b. Direct Waste: Provide as appropriate for the fixture.
   c. Hand Sinks: Connect to direct waste.
   d. Funnel Floor Drains: Provide for low volume indirect waste. Place in easily accessible locations for service.
   e. Recessed Floor Sinks: Provide for high volume indirect waste.
   f. Type 1 Grease Hood: Conceal water wash drain lines in walls and extend to building drains.

B. Region Requirement: In areas of high water costs, collect guestroom showers, bath and lavatories and circulate to a "gray" (non-potable) water reclamation plant for use in landscape irrigation, cooling tower make-up and possibly water closet flushing. The minimum standards for gray water are 10 mg/l BOD, 15 mg/l COD and 10 mg/l suspended solids.

15B.3 Storm Water Drainage System

A. System Requirements: Provide a complete, quiet storm water drainage system connected to a public storm sewer, for the entire facility including the following:

- Roof drains
- Balcony drains
- Planter drains
- Fountains
- Subsurface water

B. Drainage Requirements:

1. Overflow: Design roof system with hard piped overflow system. Do not use roof scuppers for overflow.
2. Disposal: When public storm sewers are not available, discharge storm water at points of safe disposal.
3. Region Requirement: May consider storage of storm water for irrigation systems.

C. Subsurface Water: During the design process, address the presence of subsurface water.

1. Foundation Drain System: Provide to prevent uplifting of building slabs by hydrostatic pressure or wet slab and wall conditions.
2. Pumping and discharge of subsurface water into municipal storm sewers is preferred.
3. Regional Requirements: Consider storage of subsurface water for irrigation and similar applications.
4. Sump Pumps: Provide duplex submersible sump pump system with the following:
   a. Size: Each pump sized at 65% of peak load.
   b. Motors: Premium efficiency
   c. Control Panel: For alternating pumps, pump failure alarm and high water level alarm
   d. Emergency Power: Connect to backup operational power. **<15C>**

15B.4 Domestic Water

A. General Requirements:

1. Potable Water: Provide to every fixture throughout the facility in compliance with, at a minimum, the following Table. Obtain a current water analysis.

Contaminations	Maximum Concentration
Arsenic	0.05 mg/l
Barium	1.0 mg/l
Cadmium	0.01 mg/l
Chloride	100 mg/l
Chromium	0.05 mg/l
Copper	1.0 mg/l
Cyanide	0.005 mg/l
Iron	0.3 mg/l
Lead	0.01 mg/l
Manganese	0.05 mg/l
Mercury	0.02 mg/l
Nitrate	10 mg/l
Selenium	0.01 mg/l
Silver	0.05 mg/l
Sulfate	250 mg/l
Zinc	5.0 mg/l
Total Trihalomethanes	0.1 mg/l
Endrin	0.002 mg/l
Undane	0.004 mg/l
Methoxychlor	0.1 mg/l
Toxaphene	0.005 mg/l
2.4-D	0.1 mg/l
2,4,5-TP (Silvex)	0.001 mg/l

2. Vacuum Breakers: Provide on fixtures where cross connection to, or siphon from, non-potable system is possible.
3. Double Check Valve Backflow Preventer: Provide on connections to non-potable water systems such as chillers, cooling towers, boilers, pools, and irrigation systems.
4. Metering: Provide separate water meters, connected to the Building Automation System (BAS), for the following:
   a. Main domestic water
   b. Cooling tower make-up
   c. Kitchens (hot and cold for each Kitchen)
   d. Guestroom floors (hot and cold)
   e. Spa (hot and cold)

f. Laundry (hot and cold)
g. Irrigation system
h. Swimming pools

5. Food & Beverage Production Facilities: To avoid back siphoning of contaminates into water system, provide check valves, air gaps and vacuum breaks.
6. Exhibit Hall: Cold water, compressed air quick disconnnect and a floor drain at each column. Provide compressed sir system with storage tank and filter drier.

B. Cisterns: In areas where water supply reliability is not dependable provide cisterns that meet the following:

1. Cells: Minimum of 2 independent cells each with a lockable cover.
2. Lining: Non-porous material such as ceramic tile or PVC.
3. Capacity:
   a. General: Minimum of 380 liters (100 gal.) storage per guestroom for properties without laundry
   b. Laundry: Minimum of 570 liters (150 gal.) per guestroom for properties with a laundry
   c. Resorts: Minimum of 760 liters (200 gal.) per guestroom for resorts

C. Water Conditioning:

1. Hot Water: Condition hot water when hardness exceeds 170 ppm (10 grains) or more per gallon.
2. Kitchen & Laundry: Provide hot water conditioning if water analysis indicates more than 119 ppm (7 grains) per gallon hardness.
3. Hardness: Submit lab test results of the domestic water analysis.
4. Preferred Manufacturer: Watts Oneflow

D. Hot Water:

1. General Requirements:
   a. Hot Water Return: Provide complete hot water return system with balancing (flow control) valves at the end of every branch or riser. At a minimum, circulate 0.06 l/s (1.0 gpm) through each hot water riser so that hot water reaches every fixture within 10 seconds of flow initiation.
   b. Heat Trace: Not allowed for hot water return systems.
2. Digital Re-circulating Valve (DRV): Provide DRVs for the following hot water system applications:
   a. Systems with a maximum simultaneous demand (MSD) less than or equal to 3.8 l/ sec (60 gpm), provide one DRV40R-BS-DS.
   b. Systems up to 7.2 l/sec (115 gpm), provide two DRV40R-BS-DS in parallel or one DRV80R-BS-DS.

c. Systems up to 14.5 l/sec (230 gpm), provide two DRV80R-BS-DS in parallel.

d. Features: Provide DRVs with the following:
   - +/- 2F temperature control
   - Automatic shut-off of inlet hot water flow upon cold water supply failure, power failure or 2nd level over temperature error.
   - Setpoint: Programmable setpoint, hi/lo temp alert.
   - Integral Serial Port: Provide for BrainScan – Building Automation Systems (BAS), interface for Bacnet , LonWorks and Web
   - Modbus: Provide Direct interface with BAS **<15A>** utilizing Modbus protocols.

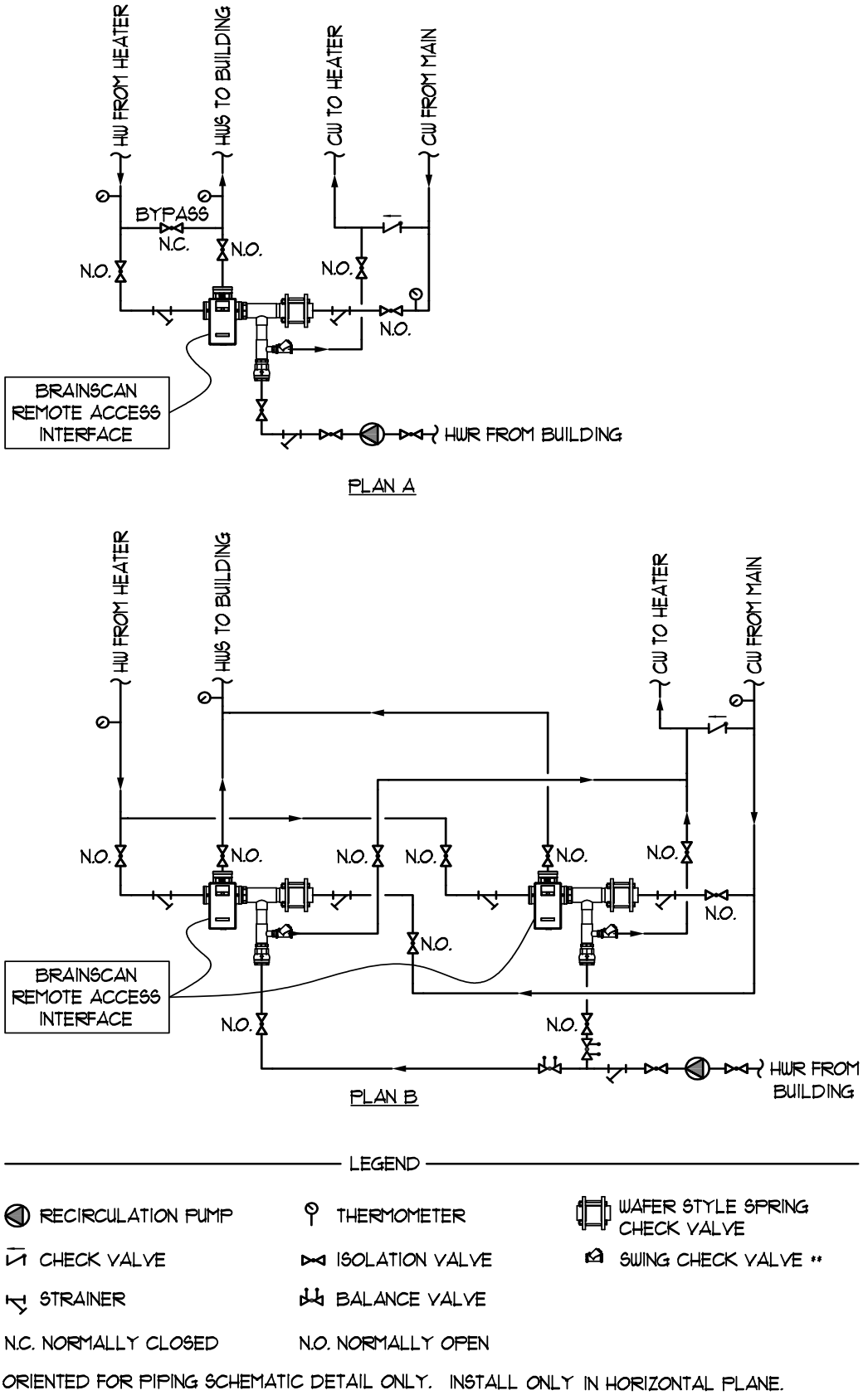
e. Pre-piped Digital Mixing Center (DMC): Consider fully pre-piped DMC models (DMC40-BS-DS, DMC40-40-BS-DS, DMC80-BS-DS, DMC80-80-BS-DS, DMC80-80-80BS-DS).

f. Testing: Pipe and pressure test the complete installation including isolation valves, strainers, mixed return flow indicator, check valves, thermometers and mixed outlet water sensor required by manufacturer.

g. Accepted Manufacturer & Model: *Armstrong* Model DRV40R-BS-DS or DRV80R-BS-DS, The Brain ; contact Ryan Bloss; tel. (269) 279-3158 or e-mail: *rb-loss armstronginternational.com*

3. Domestic Hot Water Pumps:
   a. Duplex wet rotor circulator pumps with integrated VFD, premium efficiency motors and pre-programmed system controls that allow for alternation on alarm and time, and automatically adjusts to maintain desired hot water return temperature.
   b. Preferred Manufacturer: *Grundfos*
4. Water Temperatures: Provide hot water temperatures as follows:
   a. Guestrooms, Kitchen Hand Sinks & Other Areas: Minimum 57º C (135º F) storage and 53º C (128º F) at point of connection to any fixture and as required by governing codes.
   b. Kitchens: Provide 60 C (140 F) for preparation, pot sinks, warewashing machines and general kitchen use.
   c. Laundry Washers: 74º C (165º F).
5. Guestrooms & Kitchen Hot Water Sizing:
   a. Domestic hot water plant consists of minimum two cement lined tanks and gas fired water heaters or heat exchangers. Tank type heaters or "immersion coils" are not acceptable.

Figure 1 - Digital Re-circulating Valve (DRV) - Diagrams



b. Heat or Heat Exchanger Capacity: Provide a minimum of two double wall, heat exchangers or fuel fired water heaters, each capable of recovering 15 liters (4 gal.) per guestroom per hour at 55º C (100º F) rise plus required gallons per hour recovery based on actual kitchen equipment selections.
c. Design: Interconnect heaters and tanks in a "reverse return" arrangement.
d. Gas Fired Water Heaters: Provide with sealed combustion chambers with direct venting of exhaust and combustion air. Minimum efficiency is 85%. Tank type heaters are not accepted.
e. Storage Tanks: Provide a minimum of two PVI Aquaplex stainless steel storage tanks sized at 38 liters (10 gal.) per guestroom, plus required gallons based on actual kitchen equipment selections.
Provide each tank with one for hot water out, one inlet for cold water and hot water return, one outlet to the heaters and inlet for return from the heaters

6. Laundry Hot Water Sizing: **<11>**
a. Capacity: Provide one heat exchanger or water heater capable of recovering required liters (gallons) per hour based on actual laundry equipment selections.
b. Storage Tank: Provide one cement lined storage tank sized at required liters (gallons) based on actual laundry equipment selections.

15B.5 Facility Requirements

A. **Accessible Fixtures:** Provide ambulatory and accessible fixtures and hardware as required by government regulations and governing codes. As a minimum, provide in compliance with ADA.

B. **Kitchen (Commercial F&B) Plumbing:** **<10>**
1. Plumbing Piping: Conceal in kitchen walls. If concealed piping is not possible, use surface mounted stainless steel or chrome plated pipe covers in prep and production areas. Do not stub out from floor or expose piping on face of walls and ceiling.
2. Piping Connections:
a. Design piping connections to equipment at the highest elevation possible but not less than 150 mm (6 inch) above the floor to provide clearance for cleaning.

b. Function Space Kitchen: Provide flexible gas lines and quick disconnects (where applicable) for cooking equipment on casters.

3. Domestic Water Lines: Connect to kitchen equipment through individual water filters when required by equipment manufacturer. Use flexible stainless steel lines with quick disconnect connections.
4. Choose utility based on the following:
   a. Use natural gas when available.
   b. If municipal gas service is not available, provide central LPG system with exterior bottles or tank farm.
   c. Prefer induction in buffet areas.
5. Gas: Comply with NFPA 54, National Fuel Gas Code.
6. Walk-in Refrigeration System:
   a. Condenser / Compressor Units: Provide each unit with a water supply of 0.1 l / s (1.5 gpm) per hp at 21° C (70° F).
   b. Do not use domestic, potable water for cooling. Provide recirculating system.

C. **Type 1 Grease Hoods:** **<10>** Provide the fire suppression system **<14>** to perform the following actions when activated (coordinate with Modules **<15A>**, **<15C>** and this Module):
1. Alarm Signal: Send to fire alarm control panel (FACP).
2. Power: Automatically turn off power to cooking appliances, lighting and hood makeup air handler, except exhaust fan continues to operate.
3. Gas: Automatically activate solenoid to turn off gas to affected cooking lines.
   - Position the solenoid as close to the appliance as practical to minimize gas supply when activated.
   - Locate the solenoid reset in an accessible area.

D. **Grease Traps:** **<10>**
1. Design: Drain main kitchen areas with both a grease waste and a non-grease waste system. Connect floor drains, pot sinks, and dish washers to grease waste system. Connect all other fixtures, including grinders and disposal waste machines, to non-grease waste system.
2. Location: Locate grease traps outside building in a serviceable location, preferably near the Receiving Area, but as close to the grease source as possible.
3. Remote Kitchen Areas: Equip with small cast iron interceptors located in Back-of-House areas for easy cleaning and maintenance.
4. Standard: Design grease traps in accordance with governing code or ASPE with cleanouts at the entry and exit. Vent grease trap individually through the roof.

E. Trash & Can Wash: <10>

1. Hot and Cold Water: Provide for wash down at Receiving Area.
2. Drains: Provide floor and trench drains in the loading dock and trash compactor area. Route drains through the grease trap.

F. Swimming Pools & Water Features: Verify that pools (indoors and outdoors), and site and building water features are provided with appropriate water supply, filtration, circulation, treatment, aeration and drainage.

15B.6 Piping Systems

A. Design Pressures:

1. Design: Zone system to maintain between 275 kPa and 550 kPa (40 and 80 psi) at fixtures.
2. Zone: Provide a maximum of 8 floors in pressure zones. The use of pressure reducing valves in domestic water systems at each floor is prohibited. When required, install two in parallel with shut off valves for maintenance.
3. System Pressure: Maintain through a factory manufactured and tested automatic triplex booster pump system with premium efficiency motors sized at 50% - 50% - 20% split with variable frequency drives. Pump controller sequences pumps based on flow readings from a flow sensor with back-up pressure switch.
4. Booster Pump System: Connect to operational standby power **<15C>**.
5. Preferred Manufacturer: Grundfos

B. Pipe Material:

1. Domestic Water Pipe:
   a. Exterior Water Mains: Cement lined ductile iron, minimum diameter 75 mm (3 inch).
   b. Inground / Below Grade: Type "K" copper or PVC grades SDR 21 or 26, depending on pressure requirements.
   c. Galvanized Pipe: Not permitted for domestic water systems (mains, below grade or interior).
   d. Interior Distribution: Type "L" copper with no-lead solder or "ProPress" joints and copper fittings. Accepted alternatives include:
      - *Flowguard Gold* CPVC piping systems
      - *Cor an* CPVC piping systems
      - Stainless steel piping and fittings with pressure ratings equivalent to Type "L" copper

- "PEX" Piping and Risers: Comply with ASTM F876 / F877, NSF 61, 5006 chlorine resistance rating and 60 day minimum UV rating. Provide manifold under lavatory behind access panel.
- Accepted Manufacturers: *Viega* and *Uponor*

2. Storm & Sanitary Sewer:
   a. Cast iron pipe and fittings for piping larger than 50 mm (2 inch). Galvanized pipe is not permitted.
   b. Schedule 40 PVC Piping: Acceptable for vent piping, underground waste piping (provide PVC materials and joint cement compatible with waste temperatures encountered), and 50 mm (2 inch) for sanitary piping. Foam Core PVC is not accepted.
3. Natural or LP Gas: Schedule 40 black steel with screwed malleable or Viega Pro Press fittings or Type "L" copper. Install gas piping only in accessible locations and surface mount at kitchen hoods. Limit gas pressure inside building to 0.14 bar (2 psi) maximum.

C. **Pipe Sizing:** Maximum velocity 2.4 m/s (8 fps) in the domestic water system and 1.2 m/s (4 fps) in the hot water return system.

D. **Pipe Supports:** Provide clevis or Uni-Strut trapeze hangers with maximum spacing for copper or cast iron piping based on pipe diameter, on both sides of changes in direction and at both sides of valves and fittings.
1. 50 mm (2 inch) & Smaller: 1.8 m (6 ft.) maximum
2. 65 mm (2.5 inch) to Less than 150 mm (6 inch): 3 m (10 ft.) maximum
3. 150 mm (6 inch) & Larger: 4.5 m (15 ft.) maximum
4. PVC Piping: Provide clevis or Uni-Strut trapeze hangers with maximum spacing of 1.2 m (4 ft.).
5. Hanger Shields: Provide at each hanger for insulated piping.
6. Floor Penetrations: Provide steel riser clamps (copper coated for copper pipe) at each floor. Provide cork and rubber isolation pad between clamp rings and floor structure.

E. **Pipe Insulation:** Provide continuous insulation systems for domestic water piping as follows:
1. Cold Water & Horizontal Storm Drainage Piping: Inside building, provide flexible elastomeric thermal insulation of thickness based on pipe diameter as follows:
   a. 18 mm (¾ inch) Pipe: 18 mm (¾ inch) minimum
   b. 25 mm (1 inch) to 50 mm (2 inch) Pipe: 25 mm (1 inch) minimum
   c. 65 mm (2.5 inch) & Larger Pipe: 35 mm (1½ inch) minimum

2. Hot Water Supply, Return & Recirculating Piping: Provide fiberglass insulation with vapor barrier of thickness same as cold water piping.
3. Seams & Joints: Continuously glue insulation with contact adhesive.
4. Pipe Jacketing: Provide protective preformed jacket covers for insulated piping at the following locations:
   - PVC Jacketing: Exposed in mechanical rooms and where piping is less than 1.8 m (72 inch) above finish floor.
   - One Piece PVC Jackets: Provide for indoor valves and fittings.
   - Aluminum Jacketing: Provide at outdoor piping with double seal, water tight joints utilizing *Venture* foil faced adhesive tape. Aluminum jacketing is an acceptable alternative in mechanical rooms.

F. **Disinfection of Potable Water System:** First, flush the entire water system with clean, potable water until dirty water does not appear at all outlets. Continue with the following flushing requirements:
1. Disinfection Solution: Once flushed per above, fill the entire domestic water system with a water / chlorine solution containing a minimum of 50 parts per million (50 mg/l) and retain solution in system for 24 hours minimum.
2. Chlorine Purging: After retaining the solution for 24 hours, flush the system with clean potable water until the system is purged of chlorine. Repeat the flushing procedure until contamination is eliminated and the disinfection is verified by a bacteriological examination and tests.

G. **Valves:** Locate valves to permit repairs without shutting down more than one riser. Where possible, locate balancing, isolation and shut-off valves over Back-of-House areas to allow service that is not visible to public and guests.
1. Shut-off Valves: Provide full-port ball valves or butterfly valves for all pipe sizes and for the following:
   a. At the base of hot water and cold water risers
   b. In supply and return piping to equipment to permit service and replacement.
   c. In domestic hot water return line on both sides of the flow control valve at top of each riser.
   d. At major branch takeoffs for isolation of systems.
   e. Provide gas shutoff valve at each piece of kitchen equipment.
   f. Gate valves are not allowed.

2. Balancing (Flow Control) Valves: Provide with memory stops and measuring ports to calibrate pressure drop and water flow at each piece of equipment and at each hot water return riser. Do not use ball valves for balancing.
3. Pressure Regulators & Shock Absorbers: Provide on branches serving ice machines, dishwashers and laundry equipment. Provide shock absorbers in locations accessible for service and maintenance.
4. Gas Pressure Regulating Valves: **<10> <11A>** Install to regulate gas pressure at the point of entry to the building and at kitchen and laundry equipment based on requirements of actual equipment selected. In earthquake areas, provide automatic shut-off gas solenoid valve.
    a. Install regulators and valves in an accessible location, not above ceilings.
    b. Outfit regulators with full size piped vent to exterior of building.

H. **Piping Connections:** Provide di-electric unions at connections of dissimilar metals.

I. **Piping Identification:** Provide the following:
1. Plastic Nameplates: Identify pumps, heat exchangers, tanks, water treatment devices and control panels.
2. Brass Tags: Identify small devices, including in-line pumps and valves.
3. Plastic Pipe Markers: Snap-on type with flow arrows for gas, domestic cold water, domestic hot water and hot water return piping.

15B.7 Laundry

A. Facility Features: Provide the following:

1. Eye Wash Station: See Module **<16>**. Provide one in the chemical storage room and one near washers.
2. Lint Screens: Install 12 mm x 12 mm (½ x ½ inch) expanded metal lint screens in trench drains. Locate screens and design to fully protect the trench, for easy removal and daily cleaning.
3. Floor Drains: Provide floor drains in the mechanical rooms, electric rooms, laundry mechanical room, garment shop, boiler room and air compressor room. Provide area and laundry washer trenches with drains leading to storage pits. Slope trench bottoms to drain at center or one end.

B. Water Reclamation & Reuse Systems:

1. Waste & Rinse Water: Provide Kemco water reclamation and rinse water reuse system **<11A>**.
2. Waste Water Heat Recovery: Provide a waste water heat recovery system when a waste water reclamation system is not provided.

C. Wash Chemical Storage & Injection System: Provide 20 mm (¾ inch) hot and cold water lines connected through a thermostatic mixing valve to a single 20 mm (¾ inch) wall mounted valved outlet.

D. Water Quality Requirements: Comply with the following:

Parameters	Upper Limit
NTU	1
pH	6.5 to 7.7
Total Hardness ($CaCO_3$) (mg/L)	Less than 150
Iron Content (ppm)	Less than 0.1
Copper Content (ppm)	Less than 0.2
Total Dissolved Solid (mg/L)	Less than 300
Total Coliform (CFU/100ml)	0

15B.8 Plumbing Fixtures, Accessories & Trim

A. General: Provide commercial grade fixtures, faucets and trim.

B. Eye Wash Stations: **<16>** Provide eye wash fixtures where chemicals are mixed, dispensed or handled and used in concentrated form.

1. Locations: The following are example locations:
   - Swimming & Whirl Pool Equipment Room storage and handling **<4>**

- Engineering maintenance and shop areas **<9>**
- Kitchen warewashing **<10>**
- Laundry chemical storage and handling **<11>**
- Housekeeping chemicals rooms **<11>**

2. Fixture Type: Provide permanent (not reservoir type that requires maintenance, testing and regulation burdens), foot operated, non-shower type fixtures in compliance with OSHA standards.
3. Plumbing: **<15>** Connect fixtures to piped plumbing system with tepid water supply and drain.

C. Fixture Trim:

1. Toilet and Lavatory Supply: 12 mm (½ inch) angle stop valve, wall flange, chrome plated and braided stainless steel supply line.
2. Lavatory and Sink Traps: 17 gauge, chrome plated brass with wall flange and no clean-out
3. Accessible Lavatory Trap Insulation Kit: *Handi Lav-Guard* Model 102 & 105 white, self fastening, flexible, vinyl insulation covers for drain traps and supply piping angle stop valve
4. Shower Drain: 50 mm (2 inch) diameter with 100 mm (4 inch) square perforated grid strainer, chrome finish

D. Plumbing Fixtures Schedule: Coordinate the following Fixture Schedule items with the Architectural criteria and Interior Design requirements from Modules **<2>** through **<11>** for public areas, guestrooms and Back-of-House (BOH) areas.

1. Bathtub Drain: Provide below floor rough-in design so the bottom of the bathing well is at the same elevation as the finished floor.
2. Toilets: Dual flush toilets are not permitted. Provide flush toilets that exceed 800 MaP test.
3. Low Flow Fixtures: Consult with MI Engineering for projects that require water saving or low flow fixtures.
4. Plumbing Fixtures From *Table 1,* identify fixtures on documents and submit for review by MI Engineering.
5. Accepted Manufacturers: *Kohler*, *American Standard*, *Toto*, *Hansgrohe*, *Gerber*, *Dan e*, *Grohe*, *Symmons, Waterworks, Delta, Laufen*

Table 1 - Plumbing Fixture Schedule & Requirements			
Fixture Item	**Item / Description**	**American Standard / Other Model**	**Kohler Model**
Toilet (Water Closet)	Provide flush toilets that exceed 800 MaP test. Dual flush toilets are not permitted		
Toilet, Public	Fixture: 5 liter (1.28 gal.) per flush, wall hung, 55 mm (2⅛ inch) diameter fully glazed trap, vitreous china, siphon jet elongated bowl, 40 mm (1½ inch) top spud, white. Provide carrier with horizontal and vertical adjustments.	Afwall	Kingston
	Seat: Heavy duty solid plastic, elongated, open front, stainless steel posts and check hinge, white	Commercial Seat	Stronghold
	Flush Valve: Automatic with 40 mm (1½ inch) top spud coupling, wall and spud flanges, chrome plated	Selectronic	Wave
Toilet, Public, BOH, Accessible	Fixture: 5 liter (1.28 gal.) per flush, wall hung, vitreous china, 55 mm (2⅛ inch) diameter fully glazed trap, siphon jet elongated bowl, 40 mm (1½ inch) top spud, white. Minimum seat height of 440 mm (17 inch). Provide carrier with horizontal and vertical adjustments.	Afwall	Kingston
	Seat: Heavy duty solid plastic, elongated, open front, stainless steel posts and check hinge, white	Commercial Seat	Stronghold
	Flush Valve: Automatic with 40 mm (1½ inch) top spud coupling, wall and spud flanges, chrome plated	Selectronic	Wave
Toilet, Guestrooms & Typical Suites	Fixture: Floor outlet, 55 mm (2⅛ inch) diameter fully glazed trap, rim height 420 mm (16½ inch) with close coupled tank, vitreous china, siphon jet, elongated bowl, bolt caps, white, with polished chrome trip lever 5 liter (1.28 gal.) per flush	Cadet 3	Cimarron
	Seat: Ergonomic, heavy duty solid plastic, elongated, closed front with cover, stainless steel posts and check hinge, white	Rise & Shine	Brevia
Toilet, Guestrooms, Accessible	Fixture: Same as standard guestroom P1B Toilet	Cadet 3	Cimarron
	Seat: Same as standard guestroom	Rise & Shine	Brevia
Toilet, Suites, Presidential & V.P.	Fixture: Floor outlet, 55 mm (2⅛ inch) diameter fully glazed trap, comfort height, one piece, water saver, tank type, vitreous china elongated bowl, chrome finish trip level, with ergonomic matched seat and cover, white	Compact Cadet 3	Cimarron One Piece
Bidet, Guestrooms & Suites	Fixture: Vitreous china for deck mount fitting, integral filler and overflow, flushing rim and spray, white	Cadet	San Tropez
Bidet, Guestrooms & Suites	Fitting: Deck mounted, lever handle trim, pop-up drain, polished chrome finish with traditional handles	Town Square	Memoirs

Table 1 - Plumbing Fixture Schedule & Requirements			
Fixture Item	**Item / Description**	**American Standard / Other Model**	**Kohler Model**
Lavatory			
Lavatory, Public & Lavatory, Public, Accessible	Fixture: 53 x 43 cm (21 x 17 inch) overall, undercounter, vitreous china, front overflow, white	Ovalyn	Caxton
	Faucet: Proximity operation, battery powered (DC), single spout, cast brass body and spout, with 0.1 liter/ sec. (1.5 gal./minute) vandal resistant aerator, and thermostatic mixing valve	Selectronic	Hybrid Touchless
	Drain: 30 mm (1¼ inch), 17 gauge open grid strainer and tailpiece, chrome plated	***	***
Lavatory, Guestroom & Suite & Accessible	Fixture: 53 x 36 cm (21 x 14 inch) overall, undercounter, rectangular shape, vitreous china, front overflow, white color	Studio	Ladena
	Faucet: 13 cm (5¼ inch) spout; 20 to 40 cm (8 to 16 inch) centers, cast brass body and spout, with aerator, pop-up drain, polished chrome	Town Square	Memoirs
Lavatory, Back of House & Lavatory, Back of House, Accessible	Fixture: 51 x 46 cm (20 x 18 inch), wall hung with 10 cm (4 inch) centers, concealed arms, front overflow and backsplash, white. Provide with adjustable, floor supported concealed arm carrier.	Lucerne	Greenwich
	Faucet: Proximity operation, battery powered (DC), single spout, cast brass body and spout, with 0.1 l/sec (1.5 gpm) vandal resistant aerator, and thermostatic mixing valve	Selectronic	Hybrid Touchless
	Drain: 30 mm (1¼ inch), 17 gauge open grid strainer and tailpiece, chrome plated	***	***
Urinal			
Urinal, Public & Urinal, Public, Accessible	Wall hung, white vitreous china with 0.5 liter (0.125 gallon) per flush automatic flush valve	Washbrook Flowise	Bardon Tripoint Touchless
Urinal, Back of House and Urinal, Back of House, Accessible	Wall hung, white vitreous china with 0.5 liter (0.125 gallon) per flush automatic flush valve	Washbrook Flowise	Bardon Tripoint Touchless

Table 1 - Plumbing Fixture Schedule & Requirements			
Fixture Item	**Item / Description**	**American Standard / Other Model**	**Kohler Model**
Sink			
Sink, Service	Fixture: 61 x 51 cm (24 x 20 inch) enameled cast iron, with wall hanger and stainless steel rim guard, white with 75 mm (3 inch) acid resistant enameled cast iron "P" trap with grid strainer	Akron	Bannon with Trap
	Faucet: Wall mounted service faucet, vacuum breaker, integral stops, adjustable wall brace, pail hook, chrome plated	"Utility"	Kinlock
Sink, Mop (Floor Mounted)	Fixture: 61 x 61 x 25 cm (24 x 24 x 10 inch) molded stone, 75 mm (3 inch) stainless steel combination dome strainer and lint basket	Florwell	Whitby
	Fitting: Wall mounted service faucet, vacuum breaker, integral stops, adjustable wall brace, pail hook, chrome plated	"Utility"	Kinlock
Sink, Bar (Guestrooms)	Fixture: 38 x 38 x 23 cm (15 x 15 x 9 inch) deep undercounter, 18 gauge 302 stainless steel, fully under coated	***	Vault
	Fitting: 38 cm (15 inch) gooseneck spout, 5.70 l min (1.5 gpm) flow restrictor, aerator, lever handles, polished chrome finish	***	HiRise
	Strainer: Perforated grid chrome strainer with 302 stainless steel chrome plated tailpiece	***	DuoStrainer
Sink, Kitchen (Pantry)	Fixture: 58 x 44 x 24 cm (23 x 17.5 x 9.5 inch) 18 gauge stainless steel, undermount	Prevoir	Undertone
	Fitting: Single lever, high arch spout, 8.3 l/min (2.20 gpm), aerator, polished chrome finish	Quince	Forte

Table 1 - Plumbing Fixture Schedule & Requirements			
Fixture Item	**Item / Description**	**American Standard / Other Model**	**Kohler Model**
Shower	Factory fabricated shower receptor / base with integral drain; see Module 7A - Guest Bathroom		
Shower Fixtures			
Shower, Guestrooms, Suites and Fitness Center	Fixture: As accepted by MI	***	***
	Shower Valve: Pressure balanced valve with screwdriver stops	Cycling Valve	Rite Temp
	Shower Trim: Lever handle, vandal-proof, faceplate, with one piece arm and flange, polished chrome finish	Town Square	Memoirs
	Shower Head: Polished chrome finish, multi-function 0.19 liter/second (2.5 gal./minute)	Speakman: S-2005-HB Anystream S-3010 Neo S-3011 Alexandria S-3014 Caspian	Forte
	Shower Head (option): Polished chrome finish, multi-function 0.15 liter/second (2.0 gal./minute)	Speakman: S-2005-HB-E2 Anystream S-3010-E2 Neo S-3011-E2 Alexandria S-3014-E2 Caspian Danze: D460030, D460055, D460035	Forte
Shower, Accessible Guestrooms & Suites	Fixture: As accepted by MI	***	***
	Shower Valve: Pressure balanced valve with screwdriver stops	Cycling Valve	Rite Temp
	Shower Trim: Lever handle, vandal-proof, faceplate, polished chrome finish	Town Square	Memoirs
	Hand Shower Assembly: 152 cm (60 inch) chrome plated flexible hose, shower head, swivel connector, 61 cm (24 inch) long slide bar, supply ell, in-line vacuum breaker, chrome finish	Hand Shower Kit	Forte Hand Shower
	Seat: As accepted by MI	***	***
Shower, Employee	Fixture: As accepted by MI	***	***
	Shower Valve: Pressure balanced valve with screwdriver stops	Volume Valve	Rite Temp
	Shower Trim: Lever handle, vandal-proof, faceplate, adjustable spray shower head, 0.19 liter/second (2.5 gal./minute) flow restrictor, with one piece arm and flange, polished chrome finish	Colony Soft	Coralais
Shower, Employee, Accessible	Fixture: As accepted by MI	***	***
	Shower Valve: Pressure balanced valve with screwdriver stops	Volume Valve	Rite Temp
	Shower Trim: Lever handle, vandal-proof, faceplate, polished chrome finish	Colony Soft	Coralais
	Hand Shower Assembly: 152 cm (60 inch) chrome plated flexible hose, shower head, swivel connector, 61 cm (24 inch) long slide bar, supply ell, in-line vacuum breaker, chrome finish	Hand Shower Kit	Forte Hand shower
	Seat: As accepted by MI	***	***

Table 1 - Plumbing Fixture Schedule & Requirements

Fixture Item	Item / Description	American Standard / Other Model	Kohler Model
Bathtubs	Provide tubs with below floor rough-in drains so that the tub well and bathroom floor are at the same elevation.		
Bathtub, Guestroom	Fixture: 152 x 81 x 42 cm (60 x 32 x 16 inch) deep, recess installation, enameled cast iron, or *Americast*, slip resistant surface, white	Cambridge	Mendota
	Valve: Pressure balanced valve with screwdriver stops, lever handle, vandal-proof faceplate, tub filler spout, chrome finish	Cycling Valve Town Square	Rite Temp Memoirs
	Shower Head: Polished chrome finish, multi-function 0.19 liter/second (2.5 gal./minute) with flow restrictor	Speakman: S-2005-HB Anystream S-3010 Neo S-3011 Alexandria S-3014 Caspian	Forte
	Shower Head (option): Polished chrome finish, multi-function 0.15 liter/second (2.0 gal./minute) with flow restrictor	Speakman: S-2005-HB-E2 Anystream S-3010-E2 Neo S-3011-E2 Alexandria S-3014-E2 Caspian Danze: D460030, 460055 D460035	Forte
	Tub Waste and Overflow: Solid brass 40 mm (1½ inch), 17 gauge drain with tailpiece, lift and turn stopper, chrome finish	Gerber	***
Bathtub, Accessible Guestroom	Fixture: 152 x 81 x 42 cm (60 x 32 x 16 inch) deep, enameled cast iron, or *Americast*, slip resistant surface, white	Cambridge	Mendota
	Valve: Pressure balanced valve with screwdriver stops, lever handle, vandal-proof faceplate, diverter valve, tub filler spout, chrome finish	Cycling Valve Town Square	Rite Temp Memoirs
	Hand Shower Assembly: 152 cm (60 inch) chrome plated flexible hose, shower head, swivel connector, 61 cm (24 inch) long slide bar, supply ell, in-line vacuum breaker, chrome finish	Hand Shower Kit	Forte Hand Shower
	Bathtub Seat: By Architect	***	***
	Tub Waste and Overflow: Solid brass 40 mm (1½ inch), 17 gauge trip lever drain with tailpiece, chrome finish.	Gerber	Clearflo
Whirl Pool Bath	Fixture: Selection by Architect (review with MI)	***	*** Bubble Massage
	Faucet: Deck mounted valve, 20 cm (8 inch) centers, 25 cm (10 inch) spout, lever handles, polished chrome finish	Town Square	Memoirs
	Tub Waste and Overflow: 17 gauge drain with tailpiece, lift and turn stopper, polished chrome finish	Gerber	***
Bathtub, Suite	Fixture: 152 x 81 x 42 cm (66 x 32 x 16 inch) deep, recess installation, enameled cast iron, slip resistant surface, white	Spectra	Dynametric
	Faucet: Deck mounted valve, 20 cm (8 inch) centers, 25 cm (10 inch) spout, lever handles, polished chrome finish	Town Square	Memoirs
	Tub Waste and Overflow: Solid brass 40 mm (1½ inch), 17 gauge drain with tailpiece, lift and turn stopper, chrome finish	Gerber	***

*** Verify manufacturer and model with MI.

Table 2 - Plumbing Requirements

Module	Space	CW	HW	Gas	Remarks Provide the following fixtures, systems, devices and equipment:
1	Site / Building Exterior	X			Irrigation system and drainage for live plant areas. Hose bibs at Porte Cochere area, entry and sidewalk for wash down. Box hydrants 30 mm (1¼ inch) at 61 m (200 ft.) intervals for parking lot, and 30 mm (1¼ inch) box hydrant for feature water pool and fountain wash down.
2	Entrance / Lobby	X			Irrigation system and drainage for live plant areas
	Public Toilets	X	X		Floor drains under toilet partitions Water hammer arrestors at flush valves
	Janitors Closet	X	X		Service sink
	Business Center	X			
	Lounges	X	X	X	Irrigation system and drainage for live plant areas
4	Exercise Room	X			
	Steam Generator Room	X			Water connection and floor drain
	Indoor Pool	X		X	Hose Bibs: 20 mm (¾ inch) at 23 m (75 ft.) intervals for deck wash down Floor drains around pool deck and under toilet partitions in restrooms
	Pool Equipment Room	X		X	Sump pit, hose bib, floor drain, make-up water connection, and gas connection for heaters.
	Outdoor Recreation	X			Hose Bibs: 20 mm (¾ inch) at 61 m (200 ft.) intervals for wash down
7B	Ice Machine	X			Water connection and floor drain with air gap
	Housekeeping / Linen	X	X	X	Washing machines service sink, floor drain and wall box Glass washer make-up water and floor drain
7C	Guest Floor Lounge Pantry	X	X		Coffee station; sink; floor drain
8	Admin. Offices	X	X		Coffee Station; sink
	Service Corridors	X			Ice Machine: Water connection and floor drain with air gap
	First Aid / Nurse	X	X		Sink: Small for hand washing
	Employee Lockers	X	X		Janitor's Closet: Service sink
	Employee Toilets	X	X		Floor Drains: Locate under toilet partitions Hose Bibb: 20 mm (¾ inch) under lavatories Water Hammer Arrestors: At flush valves
	Employee Dining	X	X	X	
9	Receiving Area	X			Wall Hydrant: 20 mm (¾ inch) for wash down Drains: Domed type in dock trench drain
	Can Wash	X	X		Wall Hydrant: 20 mm (¾ inch) hot and cold water Drains: Domed type in floor
10	Food Production Kitchens	X	X	X	Heat Tracing: Insulate and heat trace condensate lines in freezers and coolers. Ice Machines: Water connection and floor drain with air gap Gas Valve: Gas pressure regulating valve on incoming line Gas Shut-Off: Automatic gas solenoid valve with manual reset under exhaust hood to shut-off gas to appliances in fire condition
11A	Laundry	X	X	X	Water Hammer Arrestors: At quick closing water valves Floor Drains: Domed type in depressed areas at 3 m (10 ft.) on center Washing Machines: 20 mm (¾ inch) hose bibb Dryers: Gas connection to dryers Folders: Compressed air

15B.9 Acceptance Testing

A. Requirements:

1. Efficiency: The primary goal of acceptance testing is to produce a building with service systems that function, in all respects, according to the design intent. Properly tested systems function at maximum efficiency, and minimize energy consumption and operating costs.

To achieve this, it is essential that an acceptance testing process be implemented that tests, verifies, adjusts, calibrates and documents the functional performance of the systems and equipment outlined in this Module, prior to occupancy.

2. Testing Representative: The acceptance representative is a critical part of implementing the process and functions most effectively as an independent agency (not associated with the electrical, mechanical or prime contractor).
3. Sign Off: Acceptance Testing process is completed when the required documents are submitted and approved.

B. Acceptance Testing Level: Perform Accpetance Testing on all building systems as defined by ASHRAE 189.1 - 2009 Standard for the Design of High Performance Green Buildings and include required pre-start, start-up and verification checklists. Provide additional documentation, water test and balance reports, operating & maintenance manuals, highlighted manufacturrer cut sheets, Record "As-Built" documents in pdf format, and warranties on all equipment.

C. Coordination: See "Acceptance Testing" in Modules **<15A>** and **<15C>** and coordinate requirements with this Module.

AUTOGRAPH COLLECTION

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STANDARDS

MODULE

15C

ELECTRICAL SYSTEMS

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

Electrical Systems

15C.1 General

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

A. Design Criteria: This Module establishes minimum MI requirements and is not intended to provide complete design solutions to project specific situations.

B. Codes & Standards:

1. Deviations: Submit in writing, proposed deviations from systems, equipment or manufacturer required by these Standards and obtain MI Engineering acceptance. For deviations that alter operating costs, submit a complete computer simulated life cycle cost analysis so that negative impacts are reflected in the operating Pro-Forma.
2. Compliance: Comply with governing codes, and the current editions of NFPA 70 (NEC), NFPA 72, NFPA 101.
3. Governing Regulations: Comply with governing laws, codes, regulations and MI Design Standards, including MI requirements that exceed or are more stringent than governing laws, codes, regulations. If governing requirements conflict with MI's Design Standards contact MI Engineering for resolution.
4. Documentation: Clearly identify on the design drawings submitted for MI Engineering review and comment, systems and equipment required by this Module and provided by the contractor.

C. Design Considerations:

1. General: Provide an energy efficient electrical system requiring minimum maintenance and a high level of safety.
2. Reliability: Provide a system design, equipment selection, and a property operating environment that permits maintenance with little or no down time and a high degree of reliability.
3. Equipment: Locate to provide a minimum impact to architecture and interior finishes.
4. Interior: Locate equipment in an interior weather protected space unless an exterior location is absolutely necessary. Do not provide equipment designed for interior use at exterior locations.

D. Fire Protection & Life Safety: See Module **<14>**.

15C.2 Power - Incoming Service

A. **Type:** Provide primary electrical service underground from utility company with two high voltage service laterals from two different substations.
   1. Services: Provide in 5 to 15 K voltage range to serve primary property loop and numerous substations for major load feeds.
   2. Option: Secondary option is providing two primary feeds that terminate in one location, generally in a mechanical yard. Provide metering and one main high voltage switchboard to feed other substations on the property that steps high voltage to 208 or 480 volts. Connect emergency power generators to main high voltage switchboard so property loads are fed according to load shed program by the BMS.

B. **Sizing:** Compute service capacity in compliance with NEC.

C. **Transformers:** NEMA TP-1 high efficiency dry type. If oil filled transformers are used, locate them in protected area outside of building or in power company vaults.

15C.3 Distribution

A. **General:**
   1. Throughout Building: Typically, with either bus duct or cables to sub-distribution panels for lighting, power outlets, appliance circuits and mechanical equipment.
   2. Tower Distribution Riser: Typically, vertical to sub-distribution panels located every floor or every third floor.

B. **Switchboards & Panels:**
   1. Main Switchboard:
      a. Provide breakers with single main disconnect switch, GFPE (ground fault protection equipment) where required and transient voltage surge suppression (TVSS) protection.
      b. Provide digital multifunction meters on main distribution feeders from the main and distribution switchboards. Meters provide direct readouts with network connections for networked information accessed from a centralized monitoring location. Information provided includes:
         - Voltage (all phases)
         - Current (all phases and neutral)
         - Wattage (all phases & neutral)
         - KWHrs consumed
         - Power Factor

- Total Harmonic Distortion
- Reactive Power
- Apparent Power

2. Spares: Provide 15% spare capacity on switchboards bussing.
3. Sub-distribution Panelboards: Circuit breaker type with thermal magnetic breakers or electronic trip breakers (magnetic only breakers are not allowed).
4. Panelboards: Where possible locate within 30 m (100 ft.) of its loads, but not in pool equipment rooms. Do not locate panelboards, disconnect switches, cabinets, etc. in public spaces.
5. Region Requirement: If required, locate guestroom load centers as directed by MI, coordinated with the interior design.

C. Shunt-Trip: See "Type 1 Grease Hoods" in this Module.

D. Feeders:

1. Conductors: Copper cable in cable trays or conduit. Aluminum 1/0 gauge or larger for non-rotating equipment. Place in conduit when installed in concrete slabs and masonry walls.
2. Feeder Size: Comply with governing standards and NEC.

E. Branch Circuits:

1. Conductors: Copper
2. Circuits: Provide circuits that serve only single guestrooms and suites. Do not share circuits with other guestrooms and suites. Serve typical guestrooms with two 20 A circuits and one 20 A circuit for guest bathroom.
   a. Generally, provide horizontal circuiting from panel boards.
   b. Provide individual circuits for service appliances and mechanical equipment, where required by the load.
   c. In suites and special rooms, circuit as required.

F. Wiring - General:

1. Within Building: Copper wiring. Feeders serving non-rotating equipment greater than 1/0 gauge may be aluminum.
2. Wiring Distribution: Four wire color coded grounded system. Provide non-continuous grounded systems, such as cable trays or conduits, with separate ground at less than 25 Ohms to ground.

G. **Rated Cable:** Provide specified rated cable for Property Based System (PBS) **<13A>**, Point of Sale System (P.O.S.) **<13A>** and Audio/Video (A/V) System **<13C>**. Cable type requirements (shielding, rating, and conduit enclosure) are defined in Module **<13>** and subsequent Modules.

H. **Computer Conduit Raceways:** Provide raceway (PVC, EMT or code approved protection material) for runs of computer trunk wiring from P.O.S. units to computer system room with easy sweep bends of 46 cm (18 inch) radius minimum. Install and support conduit on underside of slab or above finished ceiling as appropriate.

15C.4 Devices

A. **Power Outlets:** Commercial grade rated in all areas. Provide weatherproof device covers and GFCI protection in exterior locations.

1. Public Spaces: 20 amp rated located at lamp locations and for cleaning at 8 m (25 ft.) radius.
2. Guestrooms: Provide the following:
   a. Arc fault and tamper protected.
   b. One GFI outlet at each vanity bowl.
   c. One fully accessible outlet in entry for housekeeping services.
   d. One outlet for each appliance (coffee maker, refrigerator, etc.); certain appliances may require separate circuits.
   e. One outlet for each portable guestroom lamp.
   f. At desk and bedside, provide sufficient outlet quantities for guest use.
   g. Provide power outlets for other electrical accessories.
3. Guest Corridors: **<7B>** Maximum of three outlets per circuit, located every 15 m (50 ft.) along corridor walls.
4. Administration Areas: **<8A>** Maximum of five outlets per circuit, located at desks and work areas for electronic equipment, convenience and lamps.
5. Food & Beverage Production Facilities: **<10>**
   a. Banquet Service: **<6> <10>** At large meeting and event areas serviced by mobile banquet cabinets, provide single outlet on dedicated circuit on both corridor walls, every 1.8 m (6 ft.), 1.2 m (4 ft.) above finished floor, within 15 m (50 ft.) of service entrances.
   b. Mobile Banquet Cabinets: At kitchen staging and holding areas, provide outlets at 1.8 m (6 ft.) intervals 1.2 m (4 ft.) above floor or at ceilings.

c. Ceiling Outlets: Provide at island workstations, banquet plating and holding areas.
d. Preparation Areas: Provide ample power outlets on separate circuit.
e. Non-service Line Areas: Provide single outlet on dedicated circuit every 3 m (10 ft.).
f. Voltages: Power voltages vary. Confirm voltages available for project site and review with MI Engineering for acceptance.
g. Electric Panels: Provide panels outside of main kitchen areas.
h. Disconnects: Provide disconnects to avoid interference with kitchen equipment locations and not behind equipment below exhaust hoods.
i. Waterproof Wiring: Provide internally wired within equipment or in conduit with appropriate controls and safety features.
j. Conduit: Zinc coated (galvanized). Cover and concealed exposed conduit in walls and ceilings.

6. Laundry: Provide the following:
   a. Power Outlets: With polarized ground fault interrupters (GFI), spaced liberally throughout spaces and where appropriate.
      - Provide power outlets on wall at the two sewing stations and on wall at end of the Issue Counter for a marking machine.
      - Mount outlets on the flatwork ironer and at small piece folder. Provide a junction box on ceiling above the folder.
   b. Flexible Connections: Connect high voltage electrical to flatwork spreader / feeder, the flatwork folder and small piece (towel) folder utilizing generous length of flexible cord fitted with twist lock plug so equipment on castors are movable for floor cleaning purposes without disconnecting machines.
7. Mechanical Areas: Located within 8 m (25 ft.) of mechanical equipment in mechanical rooms and on roofs.
8. Exterior of Building: GFI protected outlets, locate around building for landscape trimming, generally in the vicinity of exit doors at Porte Cochere and major landscape areas.
9. Live Entertainment Areas: Provide power at locations programmed to accommodate live entertainment or public events. Provide NEMA 3R, 60 amp, 3 phase and other necessary 20 amp, convenience outlets.
10. Exterior Events: 6 Provide NEMA 3R, 60 amp, 3 phase and other necessary 20 amp, convenience outlets.

11. Ballroom / Meeting Rooms: 6 Maximum of two outlets per 20 amp circuit, located for convenience every 8 m (25 ft.) along wall with one on each side of a door.
    a. Provide 200 amp, 3 phase, disconnect with pin and sleeve cable receptacle (company switch) for each large ballroom section and one 60 amp, 3 phase outlet for Ballroom salons.
    b. Provide method of routing electrical distribution wiring, from service corridor into ballroom sections, through concealed audio / video **<13C>** and electrical connection panels and in flush mount floor boxes.

***Table 1* - Event Power Matrix**

Space m² (sq. ft.)	Description Voltages vary by country
74 & 37 m² (400 & 800 sq. ft.)	1PH outlets – 20A each, at 15 ft. intervals
	1PH, 208V, 60A twist lock outlet located on the service corridor wall
74 m² (800 sq. ft.)	1PH outlets - dedicated 20A each, at 4.5 m (15 ft.) intervals
	1 - 3PH, 208V, 60A power lock outlet located on the service corridor wall
139 m² (1500 sq. ft.)	1 PH outlets - dedicated 20A each, at 4.5 m (15 ft.) intervals
	2 - 3PH, 208V, 60A power lock outlets located on the service corridor wall
465 m² (5000 sq. ft.)	1PH outlets - dedicated 20A each, at 4.5 m (15 ft.) intervals
	Each Salon, 1 - 3PH, 208V, 60A power lock outlet located in the Salon on the back wall with decorative cover
	1 - 3PH, 208V, 200A service disconnect with company switch located in the service aisle with pass through for cables
929 m² (10,000 sq. ft.)	1PH outlets - dedicated 20A each, at 4.5 m (15 ft.) intervals
	1PH outlets - 20A located to match hang point grid above ceiling with access
	Each Salon, 1 - 3PH, 208V, 60A power lock outlet located in the Salon on the back wall with decorative cover
	1 - 3PH, 208V, 800A service disconnect located in the service aisle with pass through for cables
	1PH, 208V, 30A and 2 each 1PH outlets - 20A each power outlets located in floor boxes per 186 m² (2000 sq. ft.) (locations depend on shape of room and booth configurations). Boxes include phone and Cat 5 cable.
	Install two 60 x 60 x 60 cm (2 x 2 x 2 ft.) floor boxes centrally located with four 7.5 cm (3 inch) conduits that run to the service aisle or adjacent electrical room to facilitate additional power runs, data / telecom cable, water, sewer, compressed air and other appropriate utilities. Coordinate location with MI Engineering.
1858 m² (20,000 sq. ft.)	1PH outlets - dedicated 20A each, at 4.5 m (15 ft.) intervals

Table 1 - Event Power Matrix	
Space m^2 (sq. ft.)	**Description** Voltages vary by country
1858 m^2 (20,000 sq. ft.)	1PH outlets - 20A located to match hang point grid at ceiling
	Each Salon, 1 - 3PH, 208V, 60A power lock outlet located in the Salon on the back wall with decorative cover
	2 - 3PH, 208V, 1200A service disconnect located in the service aisle with pass through for cables
	1 - 3PH, 208V, 30A and 2 each 1PH outlets - 20A each power outlet located in floor boxes per 186 m^2 (2000 sq. ft.) (locations depend on shape of room and booth configurations). Boxes include phone and Cat 5 cable.
	Install two 60 x 60 x 60 cm (2 x2 x2 ft.) floor boxes centrally located with four 7.5 cm (3 inch) conduits that run to the service aisle or adjacent electrical room to facilitate additional power runs, data / telecom cable, water, sewer, compressed air and other utilities. Coordinate location with MI Engineering.
Prefunction Space	1PH outlets - dedicated 20A each, at 4.5 m (15 ft.) intervals
	1 - 3PH, 208V, 60A power lock outlet in central locations per 232 m^2 (2500 sq. ft.)
Outdoor Space 74 m^2 (800 sq. ft.)	1 - 3PH, 60A power lock outlet and 2 - 20A outlets
	Concealed

B. GFI Outlets: Provide GFI protection as required by code and at locations near water including, but not limited to:

- within 1.5 m (5 ft.) of sinks and lavatories
- guest bathrooms
- pool areas
- employee shower areas
- outlets for portable appliances in kitchen areas
- exterior locations

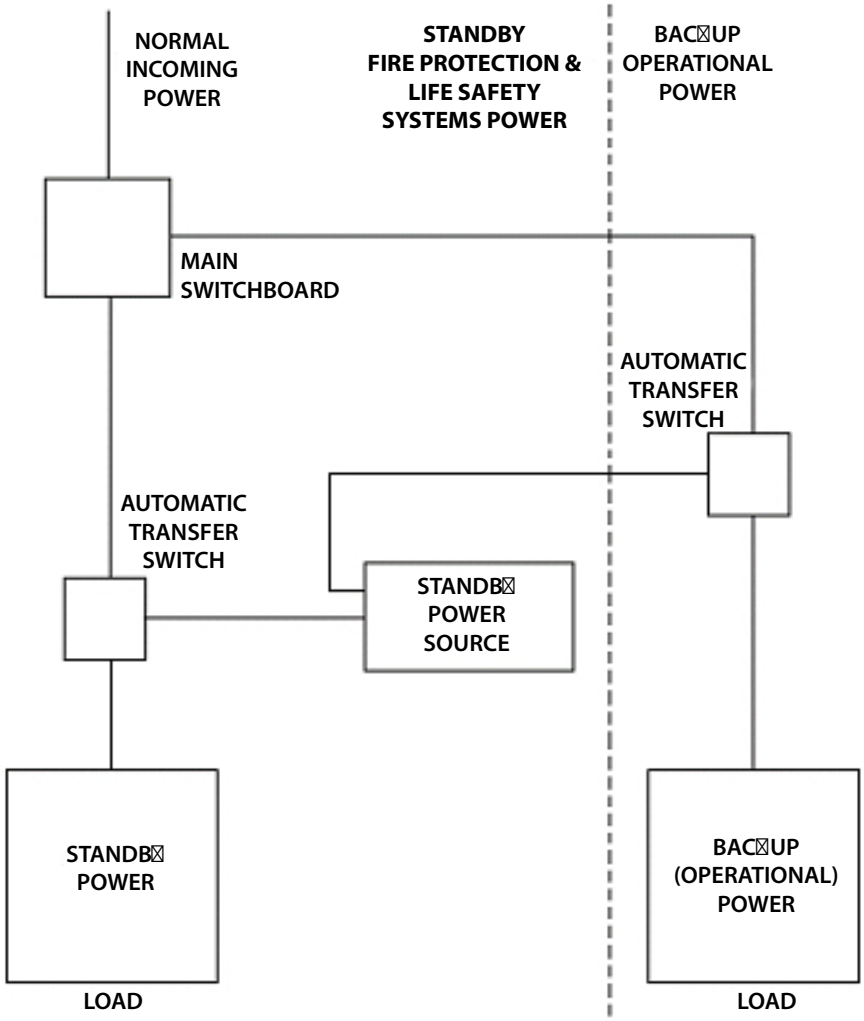
Provide GFI devices in color to match device plates.

C. Switches: Commercial grade rated. Provide rocker type switches in guestrooms and where visible to guests.

D. Finishes & Colors:

1. Outlets & Switches: Provide in color to match device plates selected by Interior Design.
2. Device Plates: Coordinate color and finish with Interior Design including guestrooms **<7A>**, except provide stainless steel plates (with ground) for kitchen **<10>** outlets.

Figure 1 **- Emergency Electrical System – Single Line Diagram**



15C.5 Emergency Electrical Systems

A. Standards: NEC 70 / NFPA 70 and NFPA 110. **<14>**

B. General Requirements: Design and provide emergency electrical systems for standby power to emergency power and lighting.

1. Comply with applicable standards for design of electrical circuits and equipment to automatically supply, distribute and control electricity for lighting and power when normal incoming power is interrupted.
2. Provide emergency "backup" operational power to maintain property operation in the event of loss of normal incoming power service.
3. Coordinate electrical service design with Module **<14>** requirements and provide electrical power equipment to meet the project design requirements for emergency electrical systems.

C. **Region Requirements:** Prior to beginning design, obtain and review with MI, a 2 year grid history showing number and duration of power outages.

In geographical areas with electrical service reliability issues, provide generators with the capacity to supply 100% of facility power requirements.

D. **Standby Power Source / Generators:** Provide one or more units as follows:

1. Type: NFPA Type 10 diesel engine driven generator, rated to restore power in 10 seconds to provide standby and backup operational loads as determined by MI. Provide with synchronization of automatic reset for main disconnects and automatic transfer switches to activate generator upon loss of normal incoming power service.
   a. Power delays greater than 10 seconds are not permitted.
   b. Verify that location of generator exhaust fumes and noise will not disrupt occupied areas, public areas and guestrooms. Do not locate near building intakes.
2. Mounting: Comply with manufacturer's mounting requirements to eliminate vibration.
3. Access: Locate and secure to limit access to authorized personnel only.
4. Cooling: Do not use condenser or domestic water systems.
5. Fuel Oil Storage: See Module **<15A>** for generator fuel oil system requirements.

E. **Emergency Electrical System Distribution:** Provide standby power for the following:

1. Standby Power Load: **<14>** Electrical systems required by governing code and Module **<14>** fire protection and life safety systems.
2. Backup Operational Power Load: Electrical systems for security **<16>** and property operations.
3. Standby Power Source: Provide applicable power source equipment and devices such as generator and battery pack for standby and backup operational power where indicated in *Figure 1* and *Table 2*.

Table 2 - Emergency Electrical System Distribution	
Standby Power to: <14>	**Backup Operational Power to:**
Fire Pumps: Electric fire pump and jockey pump	Food Production & Kitchen: • Walk-in freezers and refrigerators **<10>** • Kitchen power outlets • Cooking equipment
Smoke Control System: (including panels), exhaust fans, stairwell and elevator shaft pressurization fans and Type 1 grease hoods **<10>**	Building Automation System (BAS).
Elevators: Minimum one service and one guest elevator serving all floors with power transferable to selected elevators Elevator emergency return and firemen's service and elevator machine room air conditioning	Sewage plant, ejectors and sump pumps
	Central fuel fired heating plant
Fire Alarm System **<14>**	Domestic water plant
Lighting (emergency egress): • Exit signs (including from assembly spaces and direction to exits) • Egress paths and stairwells (including ballrooms, meeting rooms, restaurants, public spaces, guestroom corridors, occupied spaces, back-of-house areas, etc.) • Exterior exit door discharge • Public stairs and steps • Central Control Station **<14>** (Fire Command Room) in high-rise building • Guestrooms: Power entry light from the corridor emergency circuit.	Systems & Work Stations: • Telephone, IDF power, PBX, security, VSS, computer (PMS / PBS, P.O.S., Call Accounting, MARSHA Systems), PI, charging stations, etc. • HVAC at Computer / Telecom Rooms
	Lighting (operational emergency): • Porte Cochere • Front Desk • Public Toilets • Telephone Equipment Room • Mechanical, Electrical Rooms • Elevator Equipment Rooms • Near the fire alarm monitoring panels • Fire pump / sprinkler riser room • Employees lockers and toilets • Spa / Exercise Room • Engineering / Maintenance Office • Administrative Offices • PABX / PBX Room • Security Office • Parking Structure • Pool lighting
	Critical Power: To permit basic property operations during loss of power. Provide several power outlets at the following: • Porte Cochere • Front Desk & outlets for equipment • Employee Dining • Engineering • Housekeeping • Security

F. **Uninterruptible Power Source (UPS):** **<13> <16>** Sealed units, usually supplied with or included for critical operations systems dedicated to computer, communications, security, etc. Provide electrical circuits and outlets for local connection of UPS units.

G. **Emergency Lighting:** **<14>** Design and provide with a control system having the capability to turn on selected lighting to predetermined levels (without central or distributed intelligence) for emergency egress within public spaces, guestroom corridors, occupied areas, back-of-house, etc., and in exit access corridors, stairs and at exterior of exit discharge.

15C.6 Fire Alarm System

A. **Coordination:** See Module **<14>** - Fire Protection and Life Safety for applicable electrical criteria. Coordinate fire suppression system design and function with Modules **<10>**, **<14>**, **<15A>** **<15B>** and this Module.

B. **Type:** Fully point addressable intelligent system (all alarm initiating and supervisory devices individually addressable) or activation of zoned smoke control system and for required reprogramming, with printer in the Central Control Station **<14>** (Fire Command Room).

C. **Type 1 - Grease Hoods:** **<10>** Provide the fire suppression system to perform the following actions when activated:
   1. Alarm Signal: Send to fire alarm control panel (FACP).
   2. Power: Automatically turn off power to cooking appliances (under the hood), lighting (under the hood) and hood makeup air handler, except exhaust fan continues to operate.
   3. Gas: Automatically activate solenoid to turn off gas to affected cooking lines.

15C.7 Fire Command Room (Central Control Station)

A. **High-Rise Buildings:** **<14>** Provide at a location approved by the fire department containing the following:

1. Fire Alarm System: Fire alarm system control and annunciation panels
2. Communications Service Panels and Controls: Fire department 2 way telephone communications service panels and controls
3. Voice Fire Alarm System: Panels and controls
4. Smoke Control: Smoke exhaust and stairwell pressurization control panels and annunciators
5. Elevator Annunciators: Elevator floor location and operation annunciators
6. Standby Generator Annunciator Panel: Indicators for standby generator status
7. Stairway Door System: Controls for automatic stairway door unlocking system
8. Fire Pump Indicators: Fire pump status indicators
9. Fire Department Phone: Telephone for fire department use with controlled access to public telephone system

15C.8 Lightning Protection

A. **Standard:** Provide for total building protection and install in compliance with UL (Master Label), Zurich and governing codes.

15C.9 Lighting

A. Design Considerations:

1. Service and Access:
   a. Locate lighting fixtures to enable reasonable access for service and re-lamping.
   b. Locate ground mounted exterior fixtures to enable reasonable access for service and re-lamping.
   c. Locate master dimmer control in air conditioned, protected, non-public areas.
2. Circuiting: Provide separate zones for wall washers, down lights and decorative fixtures.
3. Lighting Levels: Design lighting systems to provide foot-candle (lux) levels in compliance with *Table 3* - Lighting Requirements at the end of this Module.

B. Types:

1. Public Spaces: Lighting in restaurant areas, guest corridors, stairwells and public toilets is generally, LED or compact fluorescent downlights, wall sconces and halogen decorative light fixtures.
2. Function Areas: See lighting fixture types below in this Module for criteria.
3. Guestroom Lighting: 2700 degree Kelvin LED or compact fluorescent spiral type lamps with color rendering index (CRI) of 85 and instant on, no flicker ballasts and lamps. Downlights are CFL or LED.
4. Suite Lighting: Obtain MI review and acceptance.
5. Guestroom Bathroom Lighting: Damp location rated downlights over tub and shower, CFL or LED downlights over vanity sink, and paired wall sconces flanking the vanity. If room size dictates, provide a decorative downlight fixture at center of room. Provide two level lighting control in the bathroom.
6. Back-of-House Lighting: Generally fluorescent lighting is designed by the electrical engineer.
7. Food & Beverage: Provide the following:
   a. Recessed mounted fixture and lens flush with ceiling
   b. Shatterproof sheaths
   c. Fluorescent lamp (Back of House)
   d. Removable, washable plastic lens

C. **Function Areas - Lighting Fixture Types:** The selection of the appropriate combination of fixtures and controls for event venues can assure that the events are supported with the desired visual setting.

The following is a summary of the design issues and generic types of lights that are provided in event spaces.

1. Design: Ideally, lighting designs and fixture selections are managed by an experienced lighting consultant or electrical engineer with extensive experience with hospitality functions.
2. Multipurpose Design: When event areas are intended to serve multiple purposes (Ballrooms used as exhibit space, Exhibit Hall used for banquets, etc.) a combination of lighting systems and controls may be appropriate.
3. Lamp Selection: Many light fixtures offer the choice of LED or fluorescent lamps. Fluorescent lamps are selected for light quantity and energy efficiency. Generally, a good lighting design is a compromise of types based on their intended use.
4. Track Lighting: Provide at Ballroom subdivides to increase flexibility in customizing lighting settings to highlight specific parts of the room and head tables.
5. Separate Down Light Zones: A lighting zone is a group of lights powered on one circuit. The number of zones is dependent upon the number of different fixture types and locations within a room.
    a. Down light zone controls are used to prevent excessive light spill onto projection screen or to accent buffets.
    b. While increasing flexibility, this option still requires planning and identification of the most common placement of screens and buffets.
    c. This option may require adding a new control zone to the room, and in pre-set systems, may require adding a zone to the control station.
6. Scenes. Typical meeting area control systems have four scene presets, in addition to a work light (full on and off). A scene is a combination of lighting groups that create the lighting effect desired for functions such as banquets, meetings, slide shows, etc. More scenes may be necessary in larger Ballrooms or spaces that have intense video or theatrical use.
7. Light Dimming: Provide a state of the art programmable system with multiple zones and electronic dimming, tied to the motorized screen projection and black-out window treatment systems when necessary.

D. Boardrooms & Meeting Rooms:

1. LED or compact fluorescent down lights, dimmed (and zoned).
2. LED or compact fluorescent wall sconces, dimmed.
3. Four scene plus on / off preset / control station with black-out capability.

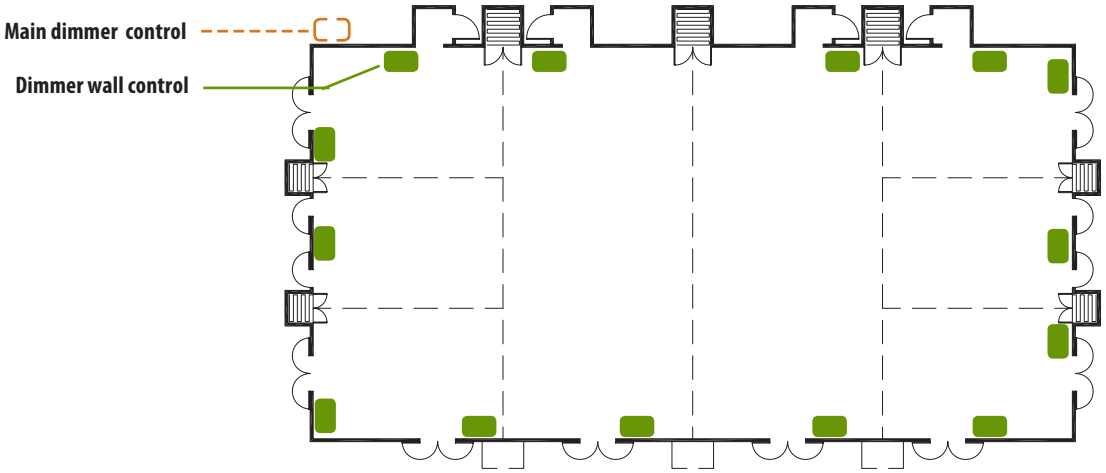
E. Pre-function:

1. Provide chandeliers, dimmed.
2. Wall sconces, dimmed.
3. Compact fluorescent / LED down lights, dimmed.
4. Cove lighting (fluorescent double staggered tube or LED), dimmed.

F. Ballrooms:

1. Provide chandeliers, dimmed.
2. Wall sconces, dimmed.
3. Compact fluorescent / LED down lights, dimmed.
4. Cove lighting (fluorescent double staggered tube or LED), dimmed.
5. Track lights for head table locations, dimmed.
   a. Track Lighting Flexibility: Large Ballroom subdivides have either 2 sets of track lighting to provide flexibility in customizing lighting settings to highlight specific parts of the room or "two-circuit" tracks to allow flexibility in activating individual lights within a track. Provide sufficient light heads to avoid damage by excessive removal and installation.
   b. Ballroom: Four scene (minimum) plus full on and off, preset / control station, remote controlled with black-out capability.

***Figure 3*- Ballroom Lighting Control Locations - Example Diagram**



- Equip each subdivided space with fully dimmable system.
- Locate recessed dimmer control station at public entrance and service corridors.
- onthe lighting so that head table locations are individually controlled.
- Decorative chandeliers and sconces, cove lighting and track lighting are individually controlled

***Figure 4* - Salon Lighting - Typical Plan**

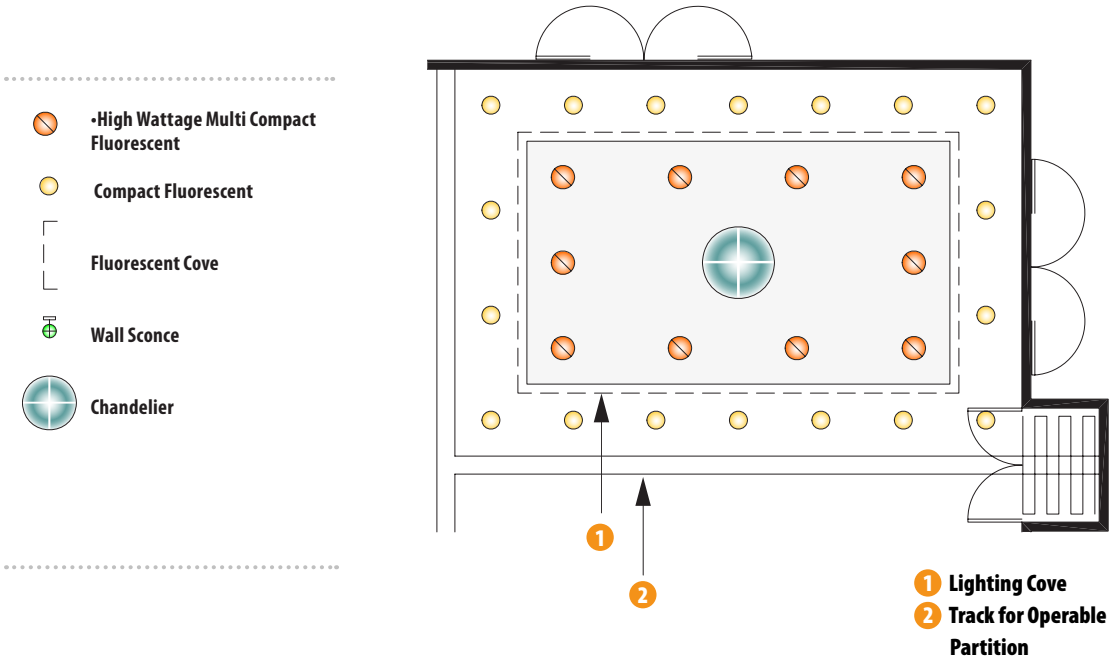


Table 3 **- Lighting Control Design for Meeting Spaces**		
Functional Area	**Lighting Control Type**	**Rationale**
Grand Ballroom salons & Jr. Ballroom salons	[illegible] • Backlit and engraved • 4 scene (min.) recall with raise, lower and off	In the Ballroom area, simple recall of preset scenes is appropriate, when controls are properly labeled.
	Infrared handheld control • 4 scene (min.) recall with raise, lower and off • Communicate to infrared ceiling sensors.	Handheld control empowers the clients to have full control of their environment.
	Partitioning capability using wall station or ceiling mounted sensors.	Partition controls allow the individual and combined rooms to function appropriately.
	Override zone control from back of the house In room programming jacks and handheld programmer when processor based systems are used.	When A/V person is available, they may want to have the ability to alter scene or zone settings, or to look at the facility remotely.
	DMX control capability by theatrical stage board for all architectural lighting when required.	When additional stage lighting is used in Ballroom for specific events, the audio / visual technician requires the ability to patch architectural lighting to the stage board for large events. When the stage board is disconnected, architectural lighting returns to its last selected scene.
	Circuit and zone lighting in Ballroom areas to accommodate maximum flexibility of space.	The locations of the head table and food displays and other table presentations move from one event to the next. Property requires the ability to turn individual light zones on and off in the appropriate parts of the Ballroom without affecting the entire Ballroom.
	Occupancy sensors	Provide occupancy sensors to communicate directly with the lighting control system to ensure that lights are turned off or to a pre-programmed night light.
Prefunction	Wall box-mounted manual dimmers or include as a defined area within the Ballroom dimming system. Provide astronomic time clock control for after hours light level settings.	This area requires flexibility of lighting for multiple events and functions.
	Photo sensors	Where daylight is present, integration with photo sensors adjust electronic light levels to save energy.
Meeting Rooms	Multi-zone preset control requirements are similar to Ballroom requirements. Meeting Rooms integration is not required with the Ballroom, but is considered if it supports project cost savings.	In the Ballroom area, simple recall of preset scenes is appropriate, when controls are properly labeled.
	[illegible] • Backlit and engraved • 4 scene (minimum) recall with raise, lower and off	Simple recall of preset scenes is appropriate, when controls are properly labeled.
	Infrared handheld control • 4 scene (minimum) recall with raise, lower and off • Communicate to infrared ceiling sensors.	Handheld control empowers clients with full control of their environment.
	Partitioning capability using wall station or ceiling mounted sensors.	Partition controls allow the individual and combined rooms to function appropriately.
	Circuit and zone lighting in Meeting Room areas to accommodate maximum flexibility of space.	The locations of the head table can move from one event to the next.
	Occupancy Sensors	Provide occupancy sensors to communicate directly with the lighting control system to ensure that lights are turned off or to a pre-programmed night light setting when space is unoccupied. Occupancy sensors are only operational in the late to morning hours so there is no chance lights operate inappropriately while the space is occupied by customers.
Amphitheater/ High Tech Meeting Area	Preset wall station controls with ability to communicate, as required, to shades, screens, projectors, and other equipment.	System is simple to use for multiple, relatively untrained users.

G. **Lighting Controls & Switching:**
   1. Back-of-House:
      a. Office: Locally switched
      b. Corridors: Dual level switching
      c. Occupancy Sensors: Provide in back-of-house offices and storage rooms.
      d. Dual Lamp Fluorescent Fixtures: Provide with built in occupancy sensors to cycle off one lamp.
      e. Mechanical Rooms: Do not provide occupancy sensors.
   2. Public Toilets and Fitness Center: Keyed switch, local
   3. Public Area: Dimmer controlled
   4. Exterior, Site and Parking Lot: Photocell or timeclock. Connect to Building Automation System (BAS).
   5. Electric Rooms: Locate dimmer modules in electric rooms with cooling.

H. **Lighting Control Quality:** Provide lighting control systems that are safe, reliable, perform flawlessly and look good.
   1. Safety: System conforms to codes and industry standards (AIC & SCCR) and provides fail-safe operation.
   2. Performance: System operates quietly and consistently regardless of power input and lighting type variables.
   3. Reliability: System operates without property maintenance on a continuous 24 hour / 7 day a week schedule supported by factory service and backup.
   4. Aesthetics: Visible components are uniform in design, color and finish with intuitive, backlit, engraved controls and graphics.
   5. Design Standards: Successful events require a high quality lighting control system that is defined in this Design Standard.

I. **Energy Efficiency:** Unnecessary energy consumption can erode revenue, may be limited by governmental authorities and, increasingly, is a social and marketing concern.
However, simplistic efforts to conserve energy, such as reducing lamp wattage (quantity of light) or switching lamp types (quality of light) may seriously degrade the quality of the event environment.
Successful means to conserve energy without affecting the quality of the event environment (or possibly improving it) are as follows:
   1. Photo sensors that reduce or eliminate artificial lighting when daylight is available. Ideally, one time clock in the Building Automation System (BAS) controls all zones rather than multiple systems that are difficult to maintain.

2. Occupancy sensors and time clock integration that switch lights off when not in use.
3. Lamp types that are selected for high lumen output (quantity) with minimum energy that maintain the correct color of light (quality).

J. Energy Regulations & Incentive

The following references and authorities may either dictate, encourage or provide reference standards to promote energy conservation:

1. ***Regulations:***
   - Governing Codes. Many regions have energy codes requiring efficient lighting and controls.

     Codes are typically based on IECC model or ASHRAE / IESNA 90.1 standard.
2. ***Energy Law:***
   - a. ASHRAE / IESNA 90.1-2001 Energy Efficiency Standard regulates the amount of power allocated to lighting.
   - b. NECA / IESNA500 Series National Electrical Installation Standards (NEIS)
3. ***Incentives:***
   - a. AH & LA Good Earth Keeping Program: Supports property operations in assessing current energy performance, setting goals and tracking savings.
   - b. EPA's Energy Star Program: Marriott, an Energy Star partner since 2001, has embarked on an ambitious, company wide mission to improve the environment and control costs in partnership with its property owners and franchisees.
     - As part of the program, properties receive the company's Energy Conservation Program Resource Guide.
     - Property engineers and general managers have completed the company's Energy Conservation Program training.
   - c. Government Tax Breaks: Governments provide funding in the form of tax deductions for installing energy efficient commercial lighting systems.
4. ***LEED:*** Provides a national guideline for what constitutes a green building. The following are various methods available to acquire LEED points through lighting and lighting controls:
   - Dimming and switching
   - Personal lighting controls
   - Occupancy sensors
   - Automated window treatments

15C.10 Aircraft Warning Lights

A. Standard: Comply with governing airport authority.

15C.11 Table 3 - Lighting Criteria

The legend and general notes are applicable to *Table 3*.

Legend		Notations
S	=	Locally switched
ML	=	Multi-level
T	=	Timer (time clock, photocell, BAS)
OS	=	People sensor (do not control nightlights)
S2	=	Two level switched
D	=	Dimmer controls
PS	=	Panelboard switched

Measure lighting levels 76 cm (30 inch) above finish floor.

Table 4 ☒ Lighting Criteria						
Module No.	**Space**	**Min. Lux (FC) Maintained**	**Switch**	**Lighting Type**		**Remarks: Provide the following equipment and fixtures:**
				LED/ Halogen	**Fluor**	
1	Site areas - general	11 (1)	T			Generally, applies to walks, driveways, parking lots, service areas, steps and ramps. Photocell and timeclock Typically, HID light sources
	Pathways	11 (1)	T			
	Walkways	11 (1)	T			
	Parking Lot	11 (1)	T			
	Parking Structure	54 (5)	T			Vehicle traffic routes
	Parking Structure - general	11 (1)	T			Minimum – general areas
	Landscaping	22 (2)	T			Protected by GFI. Photocell and timeclock
	Flag Poles	54 (5)	T			Photocell and timeclock
	Building Exterior	215 (20)	T			Photocell and timeclock. Highlight building architectural features
	Porte Cochere	161 (15)	T	X		Or Entry Canopy; photocell and timeclock Wall washing, sparkle or accent lighting.
2	Entry	161 (15)	D	X		Same at Entry Canopy
	Entrance / Lobby	161 (15)	D	X		4 scene preset remote dimmer with panel at Front Desk
	Open Stair	310 (30)	D	X		Grand stairway and other heavy use stairs
	Front Desk	310 (30)	D	X		
	Luggage Room	269 (25)	OS		X	
	Public Toilets	215 (20)	OS			Rooms cannot go full dark
	Vanities	310 (30)	OS	X	X	with night lights
	Business Center	430 (40) 161 (15)	S	X		Provide varied lighting levels appropriate to task - work areas vs. lounge area.
3	Restaurants	215 (20)	D	X		Low voltage and adjustable accent lighting may be used. Four scene preset dimmer Include control panel at Main Cashier.
	Lobby Lounge	161 (15)	D	X		Four scene preset dimmer. Include control panel at Beverage Bar.
	Specialty Restaurants	215 (20)	D	X		Low voltage and adjustable accent lighting may be used. Four scene preset dimmer. Include control panel at Maitre'd Stand.
	Entertainment Lounge	215 (20)	D			Four scene preset dimmer with panel at Bar.
4	Exercise Room	538 (50)	OS		X	Rooms cannot go full dark
	Spa	269/538 (25/50)	D	X		Provide individual dimmer controls in each Treatment Room.
	Pools	comply with governing code	S		X	Pool lamps on GFI and emergency backup power; see Module **<4>**.
	Outdoor Recreation	22 (2)	T			Typically, HID light sources
	Indoor Recreation	varies	OS	X		Rooms cannot go full dark
5	Retail	377 (35)	D	X	X	Halogen task lighting at cashier and wall display areas Track lights (75 W) accent lighting on dimmers Cashier lighting on emergency backup power

Table 4 Lighting Criteria						
Module No.	**Space**	**Min. Lux (FC) Maintained**	**Switch**	**Lighting Type**		**Remarks: Provide the following equipment and fixtures:**
				LED/ Halogen	**Fluor**	
6	Pre-function	161 (15)	D	X	X	
	Coat Room	161 (15)	OS	X		
	Banquet Storage	161 (15)	OS		X	Recessed fixtures
	Ballrooms	430 (40)	D	X	X	Low brightness fixtures with 45 degree angle shielding Halogen, metal halide and LED Each subdivided space, equip with fully dimmable system. Locate recessed dimmer control station at public entrance and service doors. Provide individually controlled head table light. Decorative chandeliers and sconces, incandescent, cold cathode and track lighting are individually controlled.
	Meeting Rooms	430 (40)	D	X	X	
	Conference Rooms	430 (40)	D	X	X	
7A	Guestrooms	See Module <7A>	S	X	X	Lighting provided by table, floor and wall fixture lamps.
	Guestroom Bath	323 (30)	S	X	X	Type as shown in <7A> in bath, toilet, over or next to tub and shower. Based on room size, provide decorative fixture at center of room or cove lighting.
	Bath Vanity	431 (40)	S	X	X	Halogen at vanity, side wall sconces
7B	Guest Corridors	76 (7)	PS	X	X	Halogen at guestroom door downlights and wall sconces
	Guest Elevator Lobbies	76 (7)	S	X	X	Decorative halogen and wall sconces
	Service Elevator Lobbies	108 (10)	PS		X	Single 32 W, 1.2 m (4 ft.); vandal proof tube
	Ice Dispenser	108 (10)	PS	X	X	Consistent with corridors and elevator lobbies
	Housekeeping / Linen	377 (35)	OS		X	Recessed fluorescent
	Valet Closet	323 (30)	S		X	
	Exit Stairs	215 (20)	PS		X	Single 32 W, 1.2 m (4 ft.) vandal proof tube
7C	Guest Floor Lounge	161 (15)	S	X	X	Room cannot go full dark
8	Admin Offices & Work Spaces	431 (40)	OS	X	X	Primarily fluorescent lighting; design by design team engineer and coordinate with architect.
	Circulation - Corridors	108 (10)	PS	X	X	Design by design team engineer and coordinate with architect.
	Employee Facilities	377 (35)	OS	X	X	Includes Employee lockers, toilet rooms and cafeteria. Primarily fluorescent lighting designed by design team engineer and coordinated with architect.
9	Engineering - Maintenance	377 (35)	OS	X	X	Same as above.
	Over Benches	538 (50)	OS		X	
	Service Areas	431 (40)	T	X	X	
	Receiving	431 (40)	T			

Table 4 ☒ Lighting Criteria						
Module No.	**Space**	**Min. Lux (FC) Maintained**	**Switch**	**Lighting Type**		**Remarks: Provide the following equipment and fixtures:**
				LED/ Halogen	**Fluor**	
10	Food Production	538 to 754 (50 to 75)	S	X	X	See Module **<10>** for local, dual level switching, lighting levels and motion sensors.
	Dry Storage	215 to 430 (20 to 40)	OS		X	
	Refrigerated Storage	215 (20)	OS	X	X	
	General Storage	215 (20)	OS		X	
11	Laundry	538 (50)	OS	X	X	Primarily fluorescent lighting designed by design team engineer and coordinated with architect.
	Washing	538 (50)	OS		X	
	Housekeeping	538 (50)	OS	X	X	Same for general lighting of Housekeeping and Laundry areas.
	Ironing	538 (50)	OS	X	X	
	Pressing	538 (50)	OS	X	X	
	Inspection	538 (50)	OS	X	X	
	Sewing	644 (60)	OS	X		
	Linen Storage	377 (35)	OS	X	X	
12	Elevators	108 (10)	PS	X		
15	MEP – Utility Areas	377 (35)	OS/S	X	X	
For spaces not identified above, provide 377 lux (35 fc) minimum.						

15C.12 Acceptance Testing

A. Requirements:

1. Efficiency: The primary purpose of Acceptance testing is to produce a building with service systems that function, in all respects, according to the design intent. Properly tested systems function at maximum efficiency, and minimize energy consumption and operating costs.
   To achieve this, it is essential that an Acceptance Testing process be implemented that tests, verifies, adjusts, calibrates and documents the functional performance of electrical systems and equipment outlined in this Module, prior to occupancy.
2. Testing Representative: The acceptance representative is a critical part of implementing the process and functions most effectively as an independent agency (not associated with the electrical, HVAC, plumbing, prime or general contractors).
3. Sign Off: MI Engineering does not provide final sign off on the completed building until the acceptance testing process is complete and required documents are submitted.

B. Acceptance Testing Level: Perform Accpetance Testing on all building systems as defined by ASHRAE 189.1 - 2009 Standard for the Design of High Performance Green Buildings and include required pre-start, start-up and verification checklists. Additional documentation water test and balance reports, operating & maintenance manuals, highlighted manufacturrer cut sheets, Record "As-Built" documents in pdf format, and warranties on all equipment.

C. Coordination: See "Acceptance Testing" in Modules **<15A>** and **<15B>** and coordinate requirements with this Module.

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STANDARDS

MODULE

16

LOSS PREVENTION

May 2014

Contents

Module Organization

- This Module is a part of an integrated series of 17 Modules.
- Coordination with information from other Modules is required.
- The reference symbol <XX> is used to indicate a Module reference that includes related information.

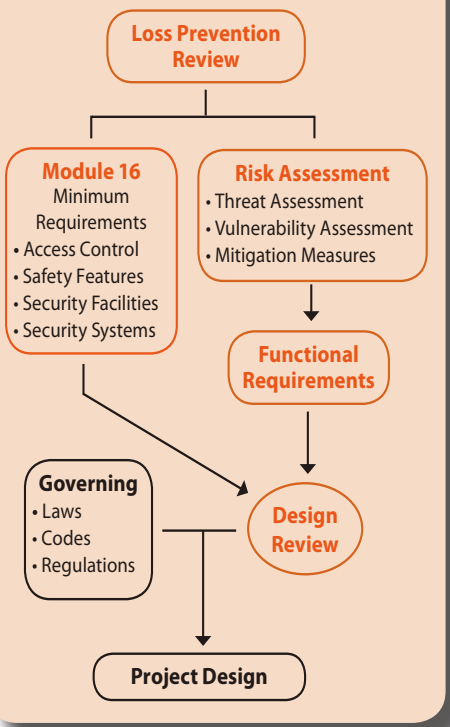
Loss Prevention

16.1 Overview

MI Project Contact

Marriott International - "MI" - is the corporate entity that manages this Brand and all MI hospitality Brands. Contact the MI Design Manager for the project specific manager referenced by the term "MI" throughout this Module.

***Figure 1* - Loss Prevention Program**



A. Objective: Develop a Loss Prevention (safety and security) Program that meets the needs of individual and diverse properties. The reduction of losses by mitigation or elimination of associated risk factors both enhances guest and employee safety and enjoyment of the facility and maximizes owner revenue retention.

B. Loss Prevention Review: A Loss Prevention (safety and security) Program is developed by conducting a comprehensive Loss Prevention (LP) Review that is initiated with a project specific risk assessment that guides the implementation of access control, safety, facilities and security measures.

This Module is organized by the following sections:

- Risk Assessment process
- Access Control
- Safety - Features & Design Elements
- Security Facilities
- Security Systems, Equipment & Design

C. Standards Application: This Module outlines processes and elements to develop comprehensive safety and security measures:

1. MI Managed Properties: This Module defines the process for MI. Deviations from MI's LP Review process and minimum requirements of Module 16 require MI Global Safety and Security Technical Services acceptance.
2. Franchise Properties: Since MI does not manage a franchisee's operations, the franchisee shall determine the most effective method to develop proper measures and select systems that coincide with the operations. This Module is only intended as a guide for franchisee's management to assist in developing proper measures based on a franchisee's unique methods of operations such as, personnel, staffing levels, technology, operational policies and experience.

D. Regulation Coordination: Comply with and integrate governing laws, codes and regulations with the Loss Prevention Program. See Module **<GR1>** section "Code & Regulation Compliance".

If conflicts arise, notify MI's Global Safety and Security Technical Services for resolution.

16.2 Risk Assessment

A. **Objective:** The Risk Assessment forms the basis for identifying the potential risk through analyzing the potential threats and hazards and the vulnerabilities associated with the property's assets (buildings, guests, employees, assets) and selecting the appropriate measures to mitigate or eliminate the risk.

B. **Risk Assessment:** Includes issues such as the following:
   1. Access control to the grounds, parking facility, recreation facilities, buildings, public space, guestrooms, back of house space, etc.
   2. Access control of utilities, data center, roof and exit stairs
   3. Location of air intakes
   4. Site parking and facilities lighting
   5. Potential clientele for example; political figures, controversial groups
   6. Proximity and association to high risk enterprises, for example; embassy, government buildings
   7. Risks associated with crime and terrorism
   8. Changes in elevations resulting in fall hazards

C. **Functional Requirements:** A report summarizes the findings of the Risk Assessment. The Functional Requirements report states the safety and security objectives required to reasonably mitigate or eliminate the risk associated with the property.

D. **Design Integration:** Design and implement safety and security measures that incorporate requirements of Module **<16>** and fulfill the safety and security objectives of the Functional Requirements.
   1. Design Review: This process reviews the submittals listed below (section 16.2,D.2), specific design modifications, equipment and systems proposed to comply with the minimum requirements of Module **<16>** and the functional requirements. **<GR>**
      a. MI Managed Properties: MI Global Safety and Security Technical Services conducts this review and acceptance, or change, as required.
      b. Franchise Properties: (see section 16.1,C.2 "Franchise Properties" above) the franchisee is responsible for conducting an LP Design Review.

2. Submittals: At a minimum, provide the following data during the design and construction process:
   a. Intrusion Detection Alarm System: Locate equipment on drawings and show in a matrix format and indicate if alarm device is integrated with the VSS.
   b. Video Surveillance System (VSS): Locate equipment on drawings, provide a riser diagram and show in a matrix format to include a brief explanation for each surveillance camera function (for example; identify persons exiting door # 103; identify suspicious activity within porte cochere).
   c. Communication Systems: Two-way radios, intercom, inspection tour recording.
   d. Access Control Features: For example; electronic locks, vehicle barriers.
   e. Access Control Systems: Indicate locations of electronic locks, vehicle barriers, personnel screening locations with equipment.
   f. Blast Mitigation: If required, indicate locations of blast mitigation features for example; glass film, reinforced columns, walls, blast wall.
   g. Manufacturer's Drawings: Submit cut sheets and product technical data.
   h. Security Office Design: Submit floor plan.
   i. Shipping, Receiving & Storage Areas: Submit floor plans.

E. **High Level Threat Condition:** Threat assessments may indicate a property is within an area that has a moderate to high level of risk of terrorist activity.
   1. Measures: Within these areas, measures may be implemented to mitigate potential acts against the property. Types of measures vary with the type of potential threat.
   2. Considerations: Mitigation measures may include the following:
      a. Building Setback: Provide separation, 30 m (100 ft.) or more preferred, between the building and vehicle access.
      b. Stationary Barriers: Natural or man made barriers designed to prevent unauthorized vehicles from entering the building setback area.
      c. Vehicle Checkpoint: Provide devices to control access and provide the opportunity to screen vehicles for explosives when vehicles enter and exit the building setback area at guest and service entries.

Provide the following checkpoint devices:
- Operable barriers (designed to physically stop large moving vehicles)
- Video Surveillance Systems (VSS)
- Telephone
- PMS / LAN connection

d. Pedestrian Checkpoints: Provide to screen personnel and parcels for weapons and explosives at guest and employee entrances.
- Metal detectors
- X-ray machine and explosive detectors
- Video Surveillance System (VSS)
- Telephone
- PMS / LAN connection

e. Collapse Mitigation: Building design to mitigate progressive structure collapse due to explosions.

f. Utility Safeguards: Design facilities to comply with seismic standards that safeguard primary utilities (natural gas, fire protection water, electric, etc.) in the event of large explosions.

g. Blast Fragment Mitigation: Design building components (glass, walls, column, etc.) to mitigate the possibility of an explosion creating projectiles of building components.

h. Video Surveillance System (VSS): Provide exterior pan-tilt-zoon (PTZ) cameras to identify suspicious activity and terrorist surveillance. Provide fixed cameras in all elevators **<12>**.

F. High Level Threat Condition "Red": When the Risk Assessment indicates the property is in an area of high threat level (known as threat condition "Red") in addition to incorporating applicable measures listed above for moderate to high level threat conditions, the following are required for properties located in threat condition "Red" areas.

1. Inspection Points: Provide appropriate space, equipment and stand-off distance for inspection for personnel, vehicles and materials entering the property as follows:

a. People: Prior to entering the building, provide walk through metal detectors at inspection points to screen guests, patrons, vendors (their employees and business associates) and property employees.

b. Materials: Provide accepted x-ray machines to screen materials entering the premises, including guest luggage, personal belongings and property supplies.

c. Vehicles & Receiving Area Screening: Provide sniffing dogs or devices equivalent or better than General Electric (GE) Safran "Hardened Mobil Trace" detectors -
   - at vehicle inspection points and -
   - to screen materials and parcels at receiving area

2. Dog Kennel: If sniffing dogs are employed, either by property management or a service contractor, provide facilities to humanely accommodate dogs on property, away from guest view.
   a. Planning Criteria: Provide each vehicle entrance with dogs and handlers depending on traffic conditions.
      - Plan for approximately 2 dogs per shift at each vehicle entrance.
      - Shift duration is determined by frequency of traffic. During high peak traffic a shift may be 2 to 3 hours. In areas with high heat and humidity, shifts are shorter.
   b. Working Area: Provide the following for dogs on duty:
      - Shade and protection from weather conditions
      - Potable water
   c. Kennel Location: Near Security Office or BOH area.
      - Do not locate near guest areas.
      - Provide shade and protection from extreme temperatures and weather conditions.
      - Provide acoustical separation from adjacent rooms
   d. Kennel:
      - Enclosures: Provide one cage per dog.
      - Cage Size: 120 W x 300 D x 150 cm (4 W x 10 D x 5 ft) high
      - Provide an area for exercise when dogs are not working.
      - Provide facilities for preparing food and water.
      - Provide handlers with access to lounge and bathroom facilities.
   e. Kennel Features:
      - VSS: Provide to mitigate tampering with dogs.
      - Ventilation: Avoid exhaust or other fumes in the kennel areas.
      - Floor: Hard surface or wood floor with drains and hose bib for sanitation. Avoid glazed floor tiles.
      - Potable Water: Provide access to water 24 hours a day.
      - Storage: Provide for food, bedding, cleaning and training supplies.

- Lighting: Well lit kennel and working areas.
- First Aid Kit
- Air Conditioning: Consider in high heat and humid regions.
- Dog Pool: Consider in high heat and humid regions.

3. Vehicle Barriers: Provide accepted hydraulic or electric vehicle barriers at vehicle entry and exit inspection points providing there is a sufficient stand-off distance between the property building and vehicle inspection point.
4. Blast Mitigation: Provide accepted measures on glass walls and windows at public areas to mitigate the ability of an explosion to propel glass projectiles.
5. Video Surveillance Systems (VSS): Provide cameras at the following locations:
   a. Elevators (Lifts): Install in passenger and service elevator cabs to identify occupants and the floor they entered and exited.
   b. Inspection Points: Locate at each inspection point to observe inspection activity and to identify persons entering.
6. Elevators: **<12>** Provide programmable, electronic key controlled access at each guest floor.

16.3 Access Control

A. **Application:** Access Control provides selective limits and constraints on the property, facilities and individual rooms.
   1. Methods: Access is typically controlled or monitored with the aid of a physical constraint or equipment such as a storage cabinet lock, an electronic door lock, VSS or a door vision panel.
      a. Receiving areas and lobbies are examples of areas with monitored access.
      b. Guestrooms and equipment storage rooms are examples of access controlled by equipment.
   2. Location: The Security Office is the primary location for managing access control and security systems. The telephone operators or Call Center may serve as a secondary monitoring location.
   3. Site & Building Access: Provide site access controls on the property and within the property buildings.

B. **Gatehouse:** **<1>** If required by the Project Facilities Program or Risk Assessment Functional Requirements (may include, residential and community facilities), provide a property entrance gatehouse to control ingress and egress.

1. Access Control Points: Integrate with video surveillance camera, where applicable, and provide the access control software.
2. Access Control Alarm: Activate video surveillance camera for ease of monitoring.

C. **Parking Structures:** **<1>** Provide facilities, measures and access controls based on the Risk Assessment Functional Requirements.

D. **Pools & Recreational Areas:** **<4>** To mitigate access by unauthorized persons, provide controlled access at the perimeter of swimming pool, and whirl pool deck areas and recreation areas. To avoid access conflicts, avoid means of egress paths from the building to the exterior through the pool area.

E. **Heating, Ventilation & Air Conditioning (HVAC):** **<15A>** Locate outside air intakes in areas that mitigate the possibility of contamination.

F. **Utilities:** Secure and control access for site utilities including but not limited to the following:
- Water
- Gas
- Electric
- Telephone
- Generators

G. **Vehicles:** Based on the Risk Assessment, evaluate the need for vehicle standoff or checkpoints.

H. **Electronic Lock System:** Provide an electronic lock system per the following:
1. Acceptable Manufacturers: Provide system from one of the following:
   - *Kaba* (*Saflok* / *Ilco*)
   - *ASSA ABLOY* Hospitality (*VingCard*)
   - *ONITY* - United Technologies Corporation
2. Lock Technology: RFID (radio-frequency identification), proximity activated, on-line (network) ready
3. System Components, Devices & Locations:
   a. Entry Locks: At Guestroom entries, guest facilities and back of house doors as scheduled below for Electronic Lock System.
   b. Mini-terminal, Room Controller: One per the following:
      - Front Desk, Check-in Station
      - Concierge Desk
      - Guest Floor Lounge
      - Front Office at Rooms Control
      - Security Office
   c. Card Encoders: At each mini-terminal plus system PC.
   d. System PC Control: Computer Room. **<13>**
   e. Card Readers: At P.O.S. stations.

f. Cabling: Install a cable from the system PC to the wall mounted electronic card reader outside the employee entrance door.

4. Guestroom Entry Locks: Review locking schemes with MI and the interface with the PMS **<13A>**. Locks consists of the following:
   - Stand-alone battery operated ANSI standard mortise
   - Automatic Dead Bolt (ADB)
   - 2.5 cm (1 inch) dead bolt length
   - 1.9 cm (¾ inch) latch length
   - Accessible type lever handles
   - Faceplate and trim
   - No exposed fasteners
   - Electronic operated lock with audit trail and minimum of 500 recalls
   - No master hard key cylinder
5. Utility Entry Locks: Provide for Public Spaces and BOH doors having similar features as the guestroom entry locks excluding the automatic dead bolt.
6. Remote Access Readers (RAR): Provide RARs at locations where locks cannot mount on door or where fail-safe passage (emergency ingress) is required:
   a. Access Devices:
      - Access Reader: Mounted on adjacent wall.
      - Power Supply (Overhead): Design for specified door latch.
      - Electric Strike: Design for specified door.
      - Electronic Locks: Design for specified door.
      - Magnetic Lock: Design for specified door.
      - Motion Detector: Design for specified doors with magnetic locks.
      - Panic Exit Device, Electrified Mechanical: Design for specified door.
      - Fire Alarm Signal: Route to specified door.
      - Supplemental Equipment: As required by system design or regional conditions.
   b. Locations: For RAR doors and as dictated by individual property requirements:
      - Fitness Center (where utility locks are not provided)
      - Swimming Pool
      - Remote guest entrances
      - Guest Floor Lounge
      - Business Center (where utility locks are not provided)
      - Employee entrance (where utility locks are not provided)
      - Ballrooms and Meeting Rooms (where utility locks are not provided)

7. Elevator Control Unit (ECU): **<12>** Provide at passenger and service elevators.
8. Electronic Lock System - Locations: Provide at the following locations:

Parking Structure Vestibule - type per LP Review	<1>
Luggage Room	<2>
Fitness Center Reception Area	<4>
Banquet Beverage Storage	<6>
Ballroom and Meeting Rooms - per LP Review	<6>
A / V Storage	<6>
Banquet Storage	<6>
Guestrooms & Suites	<7A>
Suite Pantry	<7A>
Guestroom corridor door entering service elevator area	<7B>
Guest floor linen storage room	<7B>
Guest floor linen chute room	<7B>
Roof Access enclosure	<7B>
Guest Safe Deposit Room	<8>
Counting Room	<8>
Executive Offices staff entry	<8>
Front Office Support accessed from the front desk area - electronic access or push-button combination door lock	<8>
Nurse – First Aid / Exam Room	<8>
Contract Service Storage (out sourced contractor)	<9>
Ancillary Receiving Storage	<9>
Guest Package Storage	<9>
Maintenance Shop	<9>
Liquor Storage	<10>
Dry Storage	<10>
Bulk Refrigerated Storage if applicable	<10>
Silver Storage	<10>
Housekeeping / Linen Bulk Storage	<11>
Guest Floor Lounge	<12>
Computer Room	<13A>
Telecom Equipment	<13B>
MATV System Room	<13C>
Sound System Equipment Room	<13C>

I. **Other Lockable & Secure Spaces:** Provide controlled access to the following:

Ballroom and Meeting Rooms - per LP Review	<6>
Guestroom Balcony / Patio & Terrace Doors - primary and secondary lock	<7A>
Guest Safe Deposit Viewing Room door with remote door release	<8A>
Receiving Area - provide doors / gates to secure from pedestrian and vehicular access	<9>
Food Production Facilities / Kitchens	<10>
Service Bars	<10>
Storage Cages	<10>
Exterior Doors - securable, latching hardware, NFPA approved for that application.	<14>

J. **Door Vision Panels & Viewports:** Provide enclosed areas with visual access at doors for the following locations:

Restaurant Service Entrance	<3>
Food Production Storage (Cold Room) Walk-In-Unit	<3>
Ballroom	<6>
Guestroom; viewports with privacy cover	<7A>
Guestroom floor Ice Dispensing and Vending	<7B>
Guest Laundry	<7B>
Cashier's Area	<8>
Counting Room	<8>
Guest Safe Deposit Room	<8>

K. **Elevators:** **<7B> <12>** Comply with the following:

1. Emergency Medical Evacuation: Size elevator cab and door openings to accommodate stretcher movement from each floor. See governing code for stretcher requirements.
2. Mixed-Use Projects: Do not share guestroom floor elevators with other building occupancies.
3. Parking: Passenger elevators serving parking structures are not to access Guestroom floors.

16.4 Safety - Features & Design Elements

A. Loss Prevention & Safety Information: Provide safety information signage at the following locations and at areas identified by the Risk Assessment Functional Requirements. See signage and graphics in Module **<GR2>**

- Fitness Center
- Swimming Pools
- Sauna
- Steam Room
- Whirl Pools
- Guestrooms
- Guestroom Balconies
- Outdoor Recreation Facilities

1. Parking Structures: **<GR2> <1>**
   a. Pedestrian: Coordinate vehicle signage with pedestrian and overall project signage planning requirements.
   b. Low Clearance: Provide signs to warn drivers of low clearance areas.
2. Evacuation Plan: Provide guestroom evacuation plan with American Hotel Lodging Safety Tips signage on room side of entry door. **<GR2> <7A> <14>**
3. Innkeeper's Statute: Provide governing authority's innkeeper's statute on room side of entry door.

B. Slip Resistance: Provide the following minimum static coefficient of friction for slip resistant walking surfaces:

1. Horizontal Surfaces: 0.6 wet or dry
2. Ramps: 0.8 wet or dry
3. Parking Structure Ramps: **<1>** 0.8 wet or dry, as appropriate to the slope, climate and function, and as required by governing codes
4. Stair & Step Treads: 0.6 wet or dry

C. Change in Elevation: Comply with accessibility design requirements, regulations, governing codes and the following for stairs, steps, ramps, guard rails, handrails, etc.

1. Exit Stairs: Comply with Module **<14>** Fire Protection & Life Safety Standards.
2. Exterior Stairs: **<1>** If stairs are required at walkways, provide a minimum of three risers.
3. Steps & Stairs: Make steps and stairs apparent and easy to use with the appropriate application of the following elements:
   a. Steps: Avoid one and two riser stairs - use ramps or flight of stairs with three risers minimum.

b. Tread Depth: 28 cm (11 inch) minimum.
c. Slip Resistance: Provide slip resistant step and stair treads; see criteria above.
d. Nosings: Identify tread edge for full width of stair tread.
e. Riser Height: 10 cm (4 inch) minimum and 17.8 cm (7 inch) maximum.
f. Contrast: Change floor color or materials to identify stair location.
g. Headroom: 2.03 m (6′-8″) minimum.
h. Handrails: At a minimum, provide graspable shaped handrails at both sides of stairs. Design and fasten to resist a minimum force of 0.73 kN/m (50 lbs./lf) and a single concentrated force of 0.89 kN (200 lbs.) applied in any direction.
i. Guard & Rail Assembly: Protect open areas at stairs and stair runs with guard and rail assembly; see design criteria below.
j. Lighting: Provide general illumination to identify stairs.
k. Stair Lights: Provide step lights or tread edge lights (if appropriate).

4. Guard & Rail Assembly: Provide guard and rail assembly protection at the following areas:
   a. Balconies: **<7A>** At open sides of balconies
   b. Stairs: See "Steps & Stairs above.
   c. Open Floors / Walkways: At open area level changes to prevent a person from accidentally stepping or walking off the upper floor.
   d. Site / Parking / Retaining Walls: In areas accessible to the public, provide guard and rail assemblies on open sides where the level exceeds 76 cm (30 inch); integrate with landscaping.
   e. Design Criteria: Provide for the following:
      - Height: 107 cm (42 inch).
      - Openings: Required to restrict the passage of a 10 cm (4 inch) diameter ball.
      - Bottom Rail: 5 cm (2 inch) maximum above floor.
      - Design to restrict climbing.
      - Design and fasten to resist a minimum force of 0.73 kN/m (50 lbs./lf) and a single concentrated force of 0.89 kN (200 lbs.) applied in any direction.
      - Design intermediate rails and panels to resist a horizontal load of 0.22 kN (50 lbs.) per 0.093 m^2 (1 sq. ft.).

5. Ramps: Provide where required by governing code and accessibility regulations.
   a. Handrails: **<2>** If slopes are steeper than 1:20, provide graspable shaped handrails. Use design criteria as required for stairs above.
   b. Rise: Do not exceed 77 cm (30 inch).
   c. Exterior Ramps: **<1>** When changes in elevation are required at walkways, accommodate whenever possible by ramps with slopes sufficiently shallow so that handrails are not necessary.
   d. Interior Ramps: **<2>** Maximum slope is 1:12 or 8%.
   e. Slip Resistance: Provide slip resistant ramps; see criteria above.

D. **Walkway, Doorway & Circulation Widths:** Design the following features to allow easy access for people and services.
1. Corridors & Aisles: **<7>** Generally guest area aisles and corridors require a minimum width of 1.5 m (5 ft.).
   a. BOH Areas: **<8> <9> <10> <11>** Back-of-House personnel service corridors are typically larger requiring 2 m (6.5 ft.) minimum for circulation with paths capable of accommodating pallet size deliveries.
   b. Banquet Service Corridors: **<6> <8>** Provide minimum of 3 m (10 ft.) clear width.
2. Door Widths: Provide door sizes with minimum widths as follows:
   a. Personnel Circulation: 0.91 m (3 ft.)
   b. BOH Service Circulation: 1.07 m (3.5 ft.) for moving materials, equipment, housekeeping carts and laundry carts.
   c. Equipment Movement: 0.91 m (3 ft.) each door of door pairs at locations requiring equipment movement for Queen Marys, hot boxes, boiler equipment, etc.
   d. F&B Refrigerated & Frozen Unit Storage: **<10>** Door pairs to accommodate pallet width.
3. Pool Decks & Terraces: **<4>**
   a. Paths to Pool: 1.5 m (5 ft.) wide
   b. Rescue Access: Deck width not less than 1.22 m (4 ft.) at entire perimeter.
   c. Whirl Pools: Separate from swimming pool minimum width of 1.22 m (4 ft.).
4. Parking Sidewalks: **<1>** Provide 1.5 m (5 ft.) minimum width sidewalks for primary circulation routes, and 1.22 m (4 ft.) minimum width for secondary routes.

5. Traffic Circulation Features: **<1>** Provide proposed property traffic and parking analysis for MI's acceptance.
   a. Sizes / Widths: Provide 2-way circulation with 90 degree parking in the following minimum widths:

Single Lane Driveways	3.6 m	(12 ft.)
Two-Way Drives	7.0 m	(24 ft.)
Curb-to-Curb	19.5 m	(64 ft.)
Wall-to-Wall	19.5 m	(64 ft.)

   b. Service / Delivery Entrance: Provide controlled service access designed to minimize vehicular conflict with pedestrians.

E. **Bathrooms:** Provide slip resistant bathroom floors and bathing facilities.
1. Bathroom Floors: Minimum of 0.6 (wet / dry) static coefficient of friction.
2. Bathing Facilities: Comply with ASTM F462 slip resistance, static coefficient of friction standard for bathtubs, shower floors and receptors.

F. **Grab Bars:** In guest bathrooms **<7>**, to mitigate slip and falls, mount and securely fasten grab bars to withstand a minimum of 113 kg (250 lbs.) force in any direction. Provide grab bars at the following locations:
1. Bathtub: Mount on "plumbing wall" or alternate position to assist with entering, exiting and maneuvering within the bathtub.
2. Shower Enclosure: When a foot rest is provided, mount grab bar on shower wall convenient to person using foot rest.

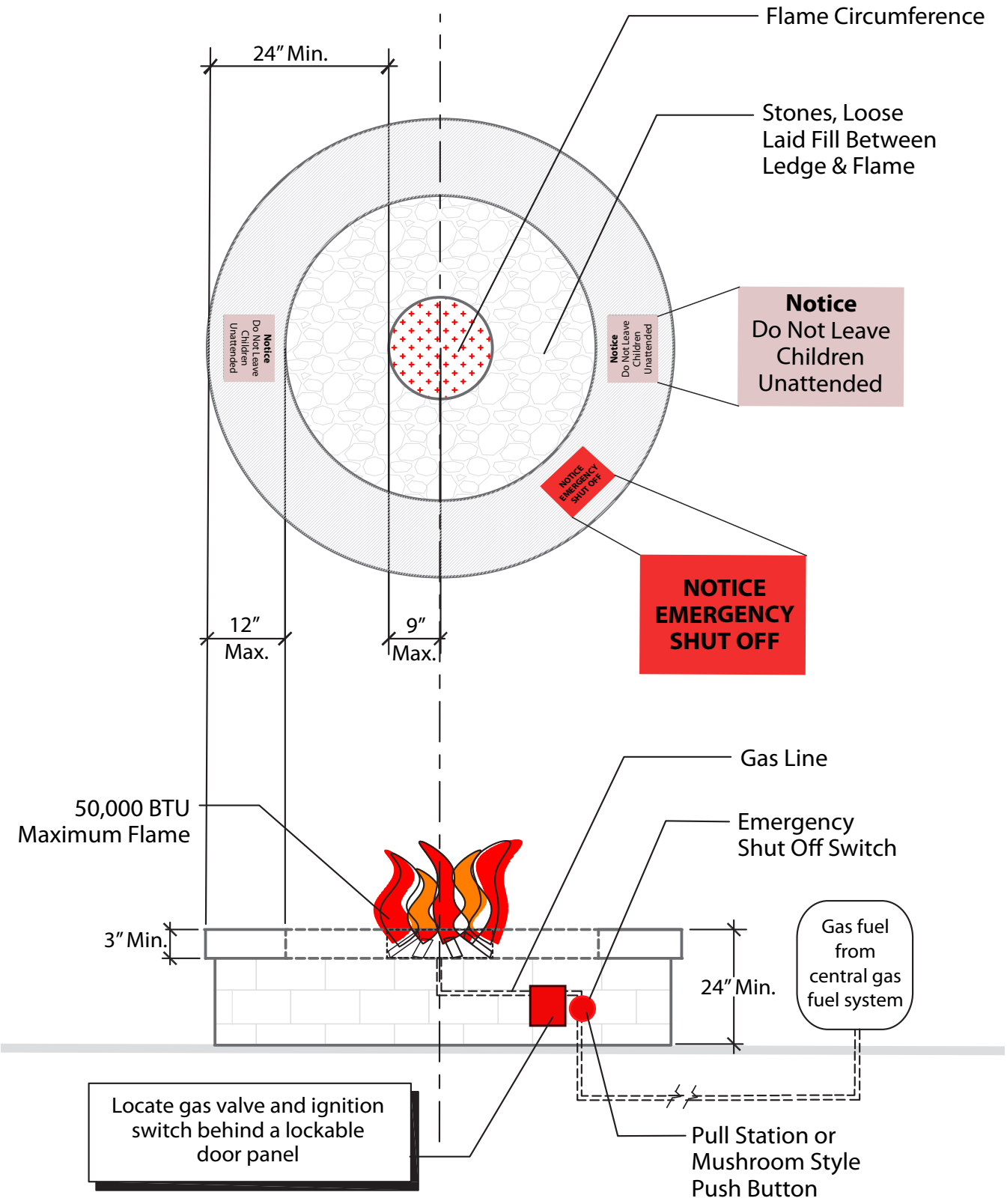
G. **Safety Glass & Glazing:** See Module **<GR>** for general glass and glazing applications and other Modules where designs and assemblies include glass and glazing. Provide Safety Glass & Glazing in compliance with the U.S. Consumer Product Safety Commission (CPSC) and governing codes at the following locations:
1. Human Impact: Provide tempered or laminated safety glass at locations subject to human impact. Examples include:
   - Doors and sidelights
   - Full height windows (without guard rails or curbs)
   - Balcony and patio doors and windows
   - Shower enclosures and glass doors
   - Bathtub surround and screens
   - Room dividers and doors
   - Mirrors (safety backing)

2. Skylights: In skylight and overhead assemblies above occupied spaces, provide laminated glass. If tempered glass, provide screening below skylight to prevent glass from falling on occupied areas.
3. Reference: U.S. Consumer Product Safety Commission, Title 16 - Commercial Practices, Chapter II - Consumer Product Safety Commission, Part 1201 - Safety Standard for Architectural Glazing Materials.

H. **Operable Windows:** Limit window operation to 10 cm (4 inch) maximum opening with manufacturer's restrictive safety stop integrated with the window fabrication (unless prohibited by code). Provide with manufacturer's "key" for maintenance operation.

I. **Emergency Response:** Provide the following system devices and equipment to alert occupants and employees to an emergency condition and allows them to mitigate the situation.
1. Shut Off: **<4>** Provide shut off devices in the following locations:
   a. Steam & Sauna Rooms: Provide high temperature shut off device in steam rooms and saunas.
   b. Whirl Pool: Provide emergency stop button to shut off whirl pool jets and pump. Locate control adjacent to 15 minute timer outside of reach from persons in the pool.
2. Eye Wash Stations: **<15B>** Connect units to tepid water pipe and drain systems. Reservoir types are not allowed. Install permanent units where chemicals are mixed, dispensed and used in concentrated form at the following locations:
   - Swimming / Whirl Pool Equipment Room **<4>**
   - Maintenance Shop **<9>**
   - Laundry Facilities **<11>**
   - Housekeeping Chemical Station **<11>**
   - Commercial Kitchen Warewashing **<15B>**
3. House Telephones: Provide telephones for guests and employees per Administrative Telephone Guidelines **<13B>**including the following locations:
   - Lobby Area
   - Fitness Center
   - Swimming Pool
   - Guest Laundry
   - Receiving Area
   - Remote outdoor recreation facilities
4. Emergency Electrical Systems: **<15C>** Provide emergency power for standby and backup electric power loads.
   a. Standby Power: **<14>** Maintains standby power for required Fire Protection and Life Safety systems.
   b. Backup Power: Maintains backup power for property Operations and Security per project and LP requirements.

***Figure ~~1~~2* - Fire Pit (Outdoor) Example Diagram**



J. **Water Safeguards:** Design water features and facilities to ensure water quality, and avoid splashing and spillage issues. Employ a consultant familiar with the proposed water features and facility designs.

1. Decorative Fountains & Ponds: **<2>** Design with sufficient horizontal dimension to prevent water splashing on adjacent walkways.
2. Swimming Pool / Whirl Pool: **<4>** Design and construct pool details, outlets, pumps and equipment to prohibit hazards that cause tripping, slipping, or suction entrapment of hair and people.
   a. Filtration: Provide separate systems for the pool, whirl pool and water features.
   b. Pool Suction Outlets: To avoid entrapping people in pool suction outlets, comply with the provisions of the governing authority and the U.S. "Virginia Graeme Baker Pool and Spa Safety Act" that include features such as:
      - Outlets Covers (grates): Provide with anti-entrapment devices or systems.
      - Suction Outlets: Two outlets located at least 92 cm (3 ft.) apart or an unblockable outlet.
      - Safety Vacuum Release System (SVRS): SVRS or other automatic pump shut off system.
   c. Rescue Assistance: Provide a minimum of 1.22 m (4 ft.) deck area at the perimeter of swimming and whirl pools.
3. Steam Room: **<4>** Position steam nozzle to avoid contact burns to occupants.

K. **Open Flame Features (Outdoor):** To mitigate potential risks associated with open flame features (fire pits, bowls, features, etc.), incorporate the following safeguards.

- Pipe the feature's gas fuel from the property's central gas fuel system.
- For outdoor use only - UL approved components.
- 50,000 BTU maximum flame.
- Gas valve and ignition switch behind lockable panel adjacent to and within line of sight of the open flame.
- Emergency shut off, readily visible and accessible.
- Automatic gas shut off, when flame is extinguished.
- Design with stormwater drain.
- No structure, coverings or decorative elements above the area defined by a 3 m (10 ft.) radius from the center of the open flame.
- Safety signage and graphics.
- Approval of fire and building agency having jurisdiction.

L. **Fireplaces:** Provide the following safeguards at fireplace locations:
   1. Carbon Monoxide (CO) Detector: Locate detector in room with fireplace including a sounder, connected to the fire alarm control panel; see Module **<14>**. Exceptions; all electric fireplaces.
   2. Access: Provide a raised or elevated fireplace platform or hearth to protect small children from accessing the fireplace opening and hot fuel and flame.
   3. Thermal Protective Screens: Equip fireplace opening with a barrier or screen (such as iron or steel mesh) to prevent children from access to hot surfaces.
   4. Wood Burning Fireplaces: Properly store wood in a dry and protected space, and away from heat and flame. Remove and dispose of ash in non-combustible containers.
   5. Timer: Provide a timer to automatically turn off fireplace after a reasonable time (usually 30 minutes). Exceptions; wood burning and public area fireplaces.
   6. Venting: Vent fuel burning fireplaces to the exterior. Ventless, fuel burning fireplaces are not accepted for sleeping rooms and other similar confined areas. Exceptions; all electric fireplaces.
   7. Signage & Graphics: Provide the following safety signage and graphics for guest operated fireplaces:
      a. Safe operation of the fireplace
      b. Caution regarding presence of children
      c. Timer operation
   8. Approvals: Provide fireplace units and construction that are certified by an independent agency and code authority.

M. **Electrical:** Provide emergency electrical service duplex outlets connected to the backup power source; see Module **<15C>**.

N. **Lighting:** **<15C>** Lighting is an important aspect of access control and safety management. Provide lighting types in compliance with the Standard lighting levels and criteria.
   1. Light Levels: The following locations require "average maintained" light levels. High risk areas may require higher levels per LP review.
      - Site Areas **<1>**
      - Walkways **<1>**
      - Parking Structures **<1>**
      - Building Entry Areas **<1>**
      - Back-of-House (BOH) **<8> <9> <10> <11>**
      - Outdoor recreation facilities **<4>**
   2. Public Restrooms: Provide lighting controls at remote electric panel board. **<15C>**

3. Parking Lots / Driveways: Locate light poles to minimize the need for impact protection. Do not block or obstruct illumination source with trees.

0. **Rooftop:** Comply with O.S.H.A. fall protection requirements.

16.5 Security Facilities

A. **Security Office:** Provide a Security Office for monitoring the property, Back-of-House (BOH) areas, entering employees, deliveries, inspecting packages, controlling products and materials entering BOH corridors, storing facility products and materials, issuing employee identification badges, key cards and hard keys.

1. Back Door Program: At smaller properties, consult MI Global Safety and Security Technical Services to determine if the Security Office can be minimized by augmenting security technology.
2. Location: Adjacent to Receiving Area and employee entrance where security monitors BOH entry of employees, visitors, vendors, maintenance and service providers, etc. and Receiving Area.
   a. If possible, within view of employee time clock, alcove area, adjacent to service corridor.
   b. Near Receiving storage area with accessibility to pallet jacks.
3. Deliveries: Provide Security Dispatcher with ability to monitor delivery personnel making deliveries through Receiving Area.

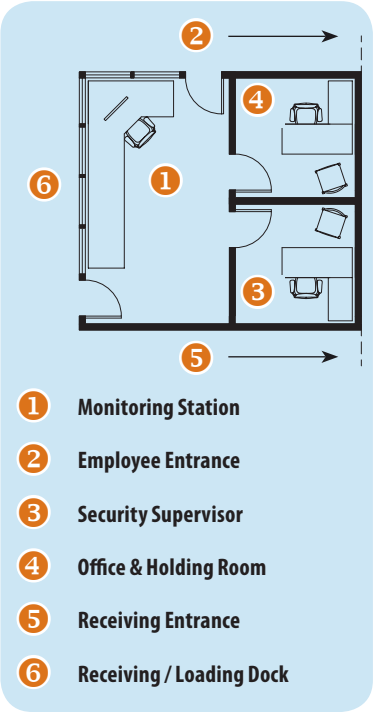


Figure ~~2~~3 - Security Office Example

4. Facility Features: Securable and climate controlled spaces.
   a. Entry: Via a dutch door. Provide a waterproof perimeter door seal if in or near a wash-down area, such as receiving / loading areas.
   b. Window: Include fixed and one sliding glass window from office to exterior dock area and sliding window to employee entrance area.
   c. VSS Monitoring: Design central monitoring console to allow security personnel to monitor cameras, employee entrance and Receiving Area simultaneously.
   d. Alarm Monitoring: Accommodate alarm systems noted below.
   e. Office / Holding Room: 4.6 m² (50 sq. ft.) minimum area with direct access from Security Office that doubles as an office and serves as a holding / storage area for parcels.
   f. Lost & Found: **<11>** Typically in Housekeeping, otherwise locate in or near Security Office.
5. Security System Components: In the Security Office, provide the following components and associated devices:
   a. Video Surveillance System (VSS)
   b. Alarm Systems:
      - Intrusion Detection / Alarm
      - Remote Fire Alarm Annunciator **<14>**
      - Elevator Monitoring Panel **<12>**
      - Generator Low Fuel Warning **<15C>**
   c. 2-Way Radio System
   d. Intercom
   e. Emergency Notification System
   f. Inspection Tour Recording System
   g. Electronic Lock System PC and Encoder

B. **Call Center:** **<2>** **<8>** Provides the Security Office with a secondary monitoring station having the following:
- VSS Cameras
- Intrusion Detection Alarm
- 2-Way Radio Dispatch
- Intercom
- Fire Alarm Annunciator **<14>**
- Building Automation System (BAS) alarms **<15>**
- Elevator Monitoring Panel **<12>**

16.6 Security Systems, Equipment & Design

A. Video Surveillance System (VSS): The general purpose of the VSS is asset protection. The Loss Prevention Review may also employ the VSS to mitigate risks associated with crimes against persons.

1. Monitoring: The Security Office is the primary location for monitoring the VSS. The property Call Center operators serve as a secondary monitoring location unless determined otherwise by the Risk Assessment Functional Requirements.
2. System Requirements: Comply with the following:
   a. Custom Console: Organize equipment with finish to match Security Office, Dispatcher area.
   b. Supplemental Equipment: Provide as required by system design and regional conditions, such as additional cameras.
   c. Motion Sensor: Provide with integrated detection and alarm alert feature. Provide capability to coordinate with the intrusion detection system.
   d. VSS Integration: Only allowed on the MI LAN when authorized by MI Information Resources per Information Resources Standard GFS-SE005.
   e. Covert Cameras: Not permitted without written authorization by MI Risk Management and MI Internal Investigations.
   f. Imitation (dummy) Cameras: Not permitted.
   g. Backup Operational Power: **<15C>** Required for continuous operation.
3. VSS Components & Devices: May employ the following:
   a. Color Digital Cameras
   b. Color Megapixel Cameras:
      - Fixed
      - 180 degree
      - 360 degree
   c. IP Digital Color Cameras
   d. Auto Dome Systems: Pan Tilt Zoom (PTZ) / auto focus / self-contained units
   e. Fixed Cameras: Auto iris / manual zoom
   f. Thermal Outdoor Cameras
   g. Camera Dome Enclosures: Required for cameras in pubic locations and some BOH locations.
   h. Monitors: LCD; color, 66 to 81 cm (26 to 32 inch) or larger if specified.

4. Digital Video Recorder:
   a. Range of Frames per Second: No less than 15 fps / channel with a maximum of 30 fps / channel
   b. Resolution: 4 CIF minimum per channel to 5 mega pixels maximum per channel
   c. Storage: 30 days minimum
   d. Transfer Ability: Transfer streaming video to a media device such as DVD, CD, etc.
   e. Video Management System (VMS): Provide for systems with more than 32 cameras. If live monitoring is required, provide intelligent software to alert dispatcher to predetermined activities.

B. **VSS Devices & Locations:** Maximize camera views as indicated for location and evaluate possible view obstruction such as soffits, chandeliers and lighting levels:
1. Lobby: **<2>** View lobby activity, full view of front desk, reception, identify persons entering and exiting the guestroom and public space elevators.
2. Front Desk: **<2>** Fixed camera at rear of front desk wall to identify guests and observe activity at the desk.
3. Retail Shop: **<2> <5>** View P.O.S. activity.
4. Public Entry Foyer: **<2>** Identify persons exiting.
5. Public / Meeting Space Elevator Foyers: To identify persons entering and exiting the elevators.
6. Luggage Storage: **<2>** Identify persons and luggage exiting room.
7. Guest Safe Deposit Boxes: **<2> <8>** Identify employees accessing guest safe deposit boxes from the safe.
8. Drop Safe: **<8>** Identify employee safe deposit boxes and cashier drop safe activity.
9. Receiving Area: **<9> <10>** View activity in Receiving Area. Provide second camera located to identify persons exiting the BOH corridor onto the Receiving Area.
10. Employee Entrance: **<8>** Identify persons entering and exiting.
11. Exit Stairs: **<7B>** Cameras with ability to identify persons exiting the perimeter exit doorways (interior cameras).
12. Computer Equipment Room: **<13A>** Identify persons accessing PMS system.
13. Back-of-House: **<8> <9>** Provide at perimeter egress doors to identify persons exiting (interior cameras).
14. Critical Assets: Provide at other locations with valuable assets such as at ATMs, valuable artwork and cash handling locations.

15. Security Office, Dispatcher: Provide the following:
    a. Monitor: 66 to 81 cm (26 to 32 inch)
    b. Digital DVR recorder located in a lock box at Computer Room
    c. Keyboard controller
16. Call Center: Provide the following:
    a. Monitor: 66 to 81 cm (26 to 32 inch)
    b. Keyboard controller
17. Supplemental Equipment: Provide as required for property design and regional conditions.
18. Acceptable Manufacturers: Provide equipment from one of the following:
    - *Tyco Integrated Security*
    - *Pelco* by *Schneider Electric*
    - *GE*
    - *Bosch*

C. Intrusion Detection / Alarm System

1. Application:
    a. Intrusion Alarm Panel: Integrate with access control and video surveillance system for ease of investigation.
    b. Live & Recorded Video: Display automatically on the access control workstation when intrusion alarms are detected.
    c. Recorded Video: Bookmark with the intrusion alarm information for ease of future investigation.
2. System Alarms: Not audible locally; locate in Security Office and Call Center **<2>**; monitored 24 hours by trained personnel.
3. Devices & Locations:
    a. Contact Alarm (Module): Perimeter exterior doors; Human Resources; critical Back-of-House doors, Shipping / Receiving and Storage, Liquor Storage and roof.
    b. Duress / Panic Alarm: Provide at the following locations:
        - Front Desk
        - Front Office Workroom
        - Executive Office Reception
        - GM Office
        - Cashiers Office
        - Human Resource Reception and Director Office
        - Nurse Office
        - Payroll
        - Guest Floor Lounge
        - Spa Reception Desk
        - Public P.O.S. (cash handling) areas
        - Saunas and Steam Room (mushroom style).

c. Motion Detector: Ceiling in Cashier's Office.
d. Alarm Zone Module: Each contact, duress / panic and motion alarm point; required for each door alarm, duress / panic alarm and motion detector location.
e. System Printer: Near Security Dispatcher and in Call Center.
f. System Control Communication Panel: Security Office.
g. Alpha Numeric Keypad: Security Office (dispatcher) and remote Call Center. Computer based graphic central integration system required if more than 50 door contacts.
h. Supplemental Equipment: As required by system design or regional conditions.

4. Acceptable Manufacturers:
   - *Radionics*
   - *Tyco Integrated Security*

D. **Radio System (2-way):** **<13B>** Multi-frequency, UHF or VHF, 2-way radio system utilized by property's security employees for routine and emergency communication.
1. Reception: Design system without dead areas within the building, the building exterior and property site.
2. Devices & Location: Provide the following devices in the Security Office:
   a. Repeater: Design to eliminate dead areas.
   b. Antenna: System designed specifically for project by an equipment manufacturer.
   c. Portable Radios: Issued to employees.
   d. Desktop / Wall Controller:
      - Security Office
      - Engineering Office
      - Call Center
      - Fire Command Room
   e. Supplemental Equipment: Provide as required by system design or regional conditions.
3. Backup Operational Power: **<15C>** Required for continuous system and repeater operation.
4. Acceptable Manufacturer: *Motorola*

E. **Intercom:** Provide remote, flush mounted units; hard wired to base stations.
1. Intercom System: Integrate with the access control system that provides graphical user interface, intercom station location identification and remote door unlocked functionality.
   The intercom master station provides accessible door or gate control from designated buttons on master station.

2. Remote Intercom Device Locations: Verify with MI's LP requirements for intercom locations; typically include the following:
   - Employee Entrance
   - Receiving Area
   - Parking Structure Elevator Foyer
3. Master Intercom: Control base station (multiple unit capacity).
   a. Master Station: Security Dispatcher.
   b. Sub-Master Station: Call Center; Front Desk if required by the Loss Prevention Review.
4. Acceptable Manufacturer: *Aiphone Corporation*

F. Wireless Emergency Notification System: Wireless handheld system. **<13B>**

1. Carried by designated employees assigned to emergency response duties.
2. Design system without dead spots.
3. Manufacturers: Provide from one of the following:
   - *Motorola*
   - *Nextel*
   - *Spectra Link*

G. Inspection Tour Recording System

1. Documentation: Electronic date and time stamped security employee patrol documentation system.
2. Tour Recording System Devices & Locations:
   a. Patrol Management System Software: Security Office
   b. Wand Home Base: Security Office
   c. Control Unit: Security Office
   d. Wands: Portable
   e. Batteries: *Nicad*
   f. Wand Holster: Portable
   g. Location Identifiers: Approximately 100 at strategic checkpoints throughout the property as established by Regional Director of Loss Prevention.
   h. Supplemental Equipment: As required by system design or regional conditions.
   i. Manufacturer: *Time Keeping Systems* - Guard-1.

H. Property Safes: In order to safeguard cash and property, provide the following:

1. Guestroom Safes: See Module **<7>**
2. Safe Deposit Boxes: See Module **<8>**
3. Cashier House Safe: See Module **<8>**
4. Deposit Safe: See Module **<8>**
5. Manufacturer: *Amphion*

I. **Electronic Key Management:** Automates key distribution functions utilizing an electronic key cabinet.
   1. Allows employees to access keys without security personnel involvement.
   2. Allows preset keys only to be removed.
   3. Removes ability to remove individual keys due to tamperproof key rings.
   4. Generates predefined reports on key usage.
   5. Vendor: *Morse Watchman* or equal

J. **Visitor Management:** Provides an automated visitor management solution that handles the following:
   - Registration
   - Scanning of identification
   - Photo taking as necessary
   - Printed authorized visitor passes with pertinent information
   - Customized check-in process
   - Vendor: *Lobby Guard* or equal

16.7 Systems Coordination

A. **Reference:** Coordinate with requirements of other Modules.
   - GR General Requirements
   - 1 Site / Building Exteriors
   - 2 Public Spaces
   - 3 Food & Beverage
   - 4 Recreation Facilities
   - 5 Retail Spaces
   - 6 Function Spaces
   - 7A Guestrooms & Suites
   - 7B Guestroom Corridors / Support
   - 8 Administration & Employee Facilities
   - 9 Engineering & Maintenance Facilities
   - 10 Food & Beverage Production Facilities
   - 11A Laundry Facility
   - 11B Housekeeping
   - 12 Elevators & Escalators
   - 13A Information Technology Infrastructure
   - 13B Telecommunications
   - 13C Audio / Visual
   - 14 Fire Protection & Life Safety
   - 15 Mechanical - Plumbing - Electrical

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