DISTRICT GUIDELINES + STANDARDS

Grossmont• Cuyamaca Community College
District 8800 Grossmont College Drive
El Cajon, CA 92020

GCCCD

District Guidelines + Standards
Document Team

Architect
HMC Architects

Program Manager
Gafcon Inc.

Acoustical Consultant
Waveguide

Audio Visual + Information Technology Consultant
Waveguide

Civil
Nolte

Door Hardware Consultant
Peter Campos

Electrical Consultant
Tanner Engineering

Landscape Architecture
KTU + A
LandLab

Lighting Consultant
Horton, Lees Brogden

Mechanical/Plumbing
SC Engineering

Waterproofing Consultant
Independent Roofing Consultants

GCCCD faculty and staff

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Grossmont College

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ACKNOWLEDGEMENTS

Staff and Faculty Committee Participants

Steering Committee

Ken Emmons
Bruce Farnham
Tim Flood
Sue Rearic
Arleen Satele
Katrina VanderWoude
Wei Zhou

Space/Room Guidelines

Vaunette Allen
Sherri Braaksma
Kurt Brauer
Tim Corcoran
Virginia Dudley
Ken Emmons
Bruce Farnham
Marsha Gable
Oralee Holder
Linda Jensen
Nicole Jones
Lisa Ledri-Aguilar
Barbara Loveless
Donna Marquez
Brian Nath
Mike Reese
Denise Schulmeyer
Peter Utgaard
Susan Working
Eddie Vasquez

Electrical Guidelines + Standards

Dan Cornett
Ken Emmons
Bruce Farnham
Ricardo Galicia
Jon Langteau
Douglas Platt
Beau Simi

Security + Hardware Guidelines + Standards

Dan Cornett
Cliff Diamond
Rick Davidson
Ken Emmons
Bruce Farnham
Tim Flood
Sue Gonda
Alicia Munoz
Brian Nath
Victor Perry
Sue Rearic
Arleen Satele
Denise Schulmeyer
Chris Weiss

Landscape + Civil Guidelines + Standards

Ken Emmons
Bruce Farnham
John Heimaster
Jack Newman
Donald Schultz

Plumbing + Mechanical Guidelines + Standards

James Duddy
Ken Emmons
Bruce Farnham
Sal Espiritu

Moisture + Roofing Guidelines + Standards

Kurt Brauer
Ken Emmons
Bruce Farnham
Sal Espiritu

Technology/AV + Acoustics Guidelines + Standards

Cynthia Bourget
Sherri Braaksma
Ken Emmons
Bruce Farnham
Tim Flood
Stan Malley
Brian Nath
John Oakes
Kerry Kilber Rebman
John Stephens
Dave Steinmetz
Evan Wirig

Finishes + Signage Guidelines + Standards

Joe Balestreri
Martin DuBord
Ken Emmons
Bruce Farnham

Gafcon + District Participation All Task Forces

Jim Davies
Larry Fugal
Aaron Golde
Dale Switzer
Randy Clark

INTRODUCTION

The GCCCD Design Guidelines & Standards document has been developed to support the Grossmont-Cuyamaca Community College District Facilities Master Plan 2013; the Design Guidelines & Standards will support the comprehensive master plan to assure that all new design, either remodel or new construction will have a framework that not only meets but exceeds basic architectural design standards and also integrates cost effective engineering and sustainable practices as outlined in the Facilities Master Plan 2013.

Given that Fiscal and Physical Resources is one of the Board's five strategic areas of focus for all planning, the planning councils established districtwide priorities related to fiscal and physical resources. Thus, to support the findings in the Facilities Master Plan 2013 it was decided to develop a cohesive Design Guidelines & Standards document to build on the District's record of responsible use of public resources to provide excellent learning and workforce development opportunities for the communities of eastern San Diego County.

The Design Guidelines & Standards enforce the unique campus' values from the Facilities Master Plan and provide standards and technical guidelines for the District. The intent is to provide a set of parameters to direct the design work for the design team and contractors. These guidelines and standards represent the level of quality and performance that is expected throughout the District. Also, this document is meant to be a living document that will be reviewed and updated as needed to incorporate new thoughts and/or design technology and sustainability.

Part A
USE OF GUIDELINES + STANDARDS

GUIDELINES

First of all it should be understood that this document contains both Guidelines and Standards. Guidelines are defined as a tool to develop the desired design parameters of the built environment, whether a building, a room or any physical feature. Guidelines are not prescriptive nor rigid. They imply an intent and a "guide" to develop a design. The Guidelines are described in Sections 2 & 3.

SECTION 2:
Section 2 is intended to communicate the foundational concepts that underlie the GCCCD Design Standards. They reflect both lessons learned from past experiences and emerging priorities. Section 2 provides the boundaries ensuring a cohesive campus identity unique to each college. This section augments the 2003 Architectural Design Guidelines that have been in use for the past decade.

SECTION 3:
Section 3 describes various spaces that will re-occur in buildings such as classrooms, offices, conference rooms, restrooms, corridors and support spaces. These guidelines are not intended to be prescriptive but allow the design of spaces to be flexible, functional, and adaptable allowing for changes that will occur in the future. Certain very specific uses such as Labs and specialized teaching spaces are not shown in our guidelines; they will be further developed by the designer and user groups and will be specific to that project.

STANDARDS

Standards are defined as a specific or prescriptive requirement that defines in much more detail than a guideline how a defined element of a building must perform. These performance standards are described in Section 4 and are developed into 'divisions' based on the Construction Specification Institute; this is a professional architect/ engineer standard used in the construction of facilities.

SECTION 4
Section 4 of this document is intended to outline performance criteria that are important to the District for the major building/site systems and materials in future construction projects. Although Section 4 is organized in Divisions based on the 2010 MasterFormat® it is not written as or intended to be considered as product specifications that would be included in a project manual but rather provide criteria, locations, and desired design approach for systems and materials that would be used in a project.

SUSTAINABILITY

Grossmont-Cuyamaca Community College District understands and encourages sustainability as an integral design process which cannot be isolated and should be applied to each and every discipline by each and every stakeholder. The adjacent icon is therefore used throughout the handbook to highlight key opportunities for sustainable measures.

It is important that sustainability be the hallmark of each new and modernized building in the District. These guidelines and standards do not include code requirements as they will change over time and the design professionals are required to meet codes and local regulations. The California Building Code is now incorporating efficient performance criteria such as CAL Green and new Title 24 energy standards. CAL Green reinforces the sustainability goals that are already stated in our Facilities Master Plan:

- Planning and Design
- Energy efficiency
- Water efficiency and reduction
- Material conservation and resource efficiency
- Indoor air quality
- Environmental quality

SUMMARY

It is expected that these Design Guidelines & Standards will be a time-saving and cost-saving benefit to the District, from design, through construction and continue to long-term maintenance. There will be a consistency of design and level of quality that is expected by each college and the District. The guidelines and standards are generic for the overall projects throughout the District. Specific design teams shall use them to assist in the design process while the design teams overlay detailed project specific detail to each design.

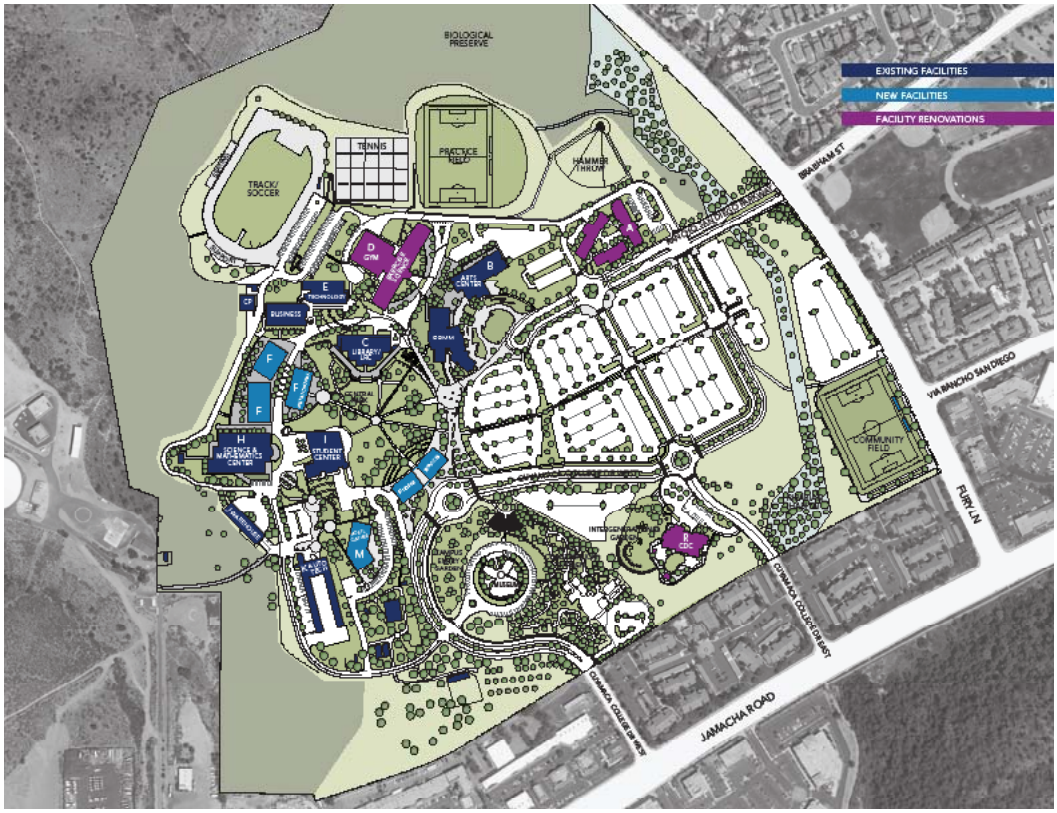
INTRODUCTION

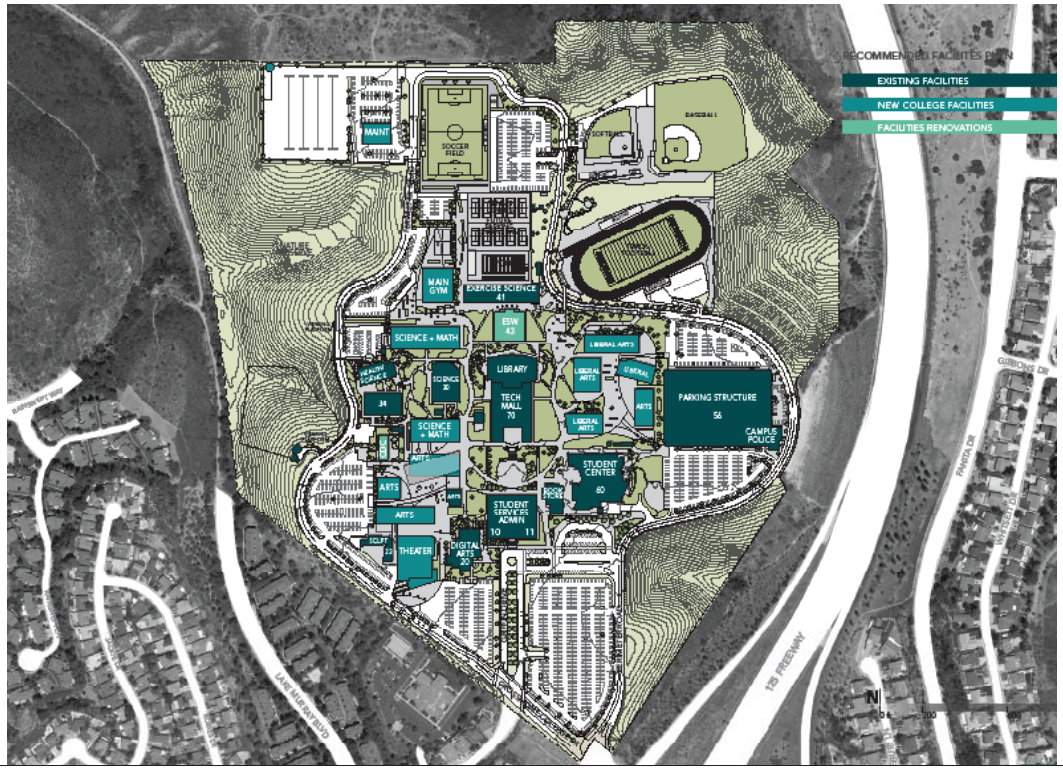
Section 2 is intended to communicate the foundational concepts that underlie the GCCCD Design Standards. These concepts are rooted in the District's decades-long experience with developing and operating facilities. They reflect both lessons learned from past experiences and emerging priorities. This section augments the 2003 Architectural Design Guidelines that have been in use for the past decade.

In 2003, the Grossmont-Cuyamaca Community College District adopted the Cuyamaca College Architectural Design Guidelines and the Grossmont College Architectural Design Guidelines developed by Ehrenkrantz Eckstut & Kuhn Architects in partnership with the District. Since that time, these documents have guided the design of numerous facilities on both college campuses and contributed ideas used in the recommendations of the 2013 GCCCD Facilities Master Plan. This section uses the 2003 Architectural Design Guidelines as the foundation and updates the original guidelines by incorporating the ideas, sustainability goals, and best practices that were developed further through the facilities master planning process and the design and operation of new facilities in recent years.

The purpose of the design guidelines is to provide direction regarding the physical design of the Cuyamaca College and Grossmont College campuses. These guidelines establish a minimum standard of design excellence. The goal of these guidelines is to provide design criteria for new facilities, renovations, and site improvements that are intended to enhance the quality and visual cohesiveness of the campus. An inviting image of each campus should be apparent when students, faculty, and staff first enter the campus grounds, and that conceptual image should be consistently reinforced throughout the entire campus.

2013
FACILITIES MASTER PLAN SUMMARY





SUMMARY

The 2013 GCCCD Facilities Master Plan (FMP) was created to translate the District's priorities for student learning and success into recommendations for the development of facilities at each college campus. Its specific purposes are to:

- Provide long-range guidance for the development of new facilities that will be needed to support the projected academic program of instruction and support services.
- Identify the needs for the refurbishment, repair, or replacement of existing facilities that will be needed to support current academic program of instruction and support services.
- Include and integrate current construction and maintenance plans.
- Describe the District's plans for environmental sustainability.

The Facilities Master Plan includes a chapter each for Cuyamaca College, for Grossmont College, and for District Services. It also includes a chapter on districtwide planning for sustainability and technology. As noted in one of the purposes listed above, sustainability is an important objective for the design and operation of all district facilities and the design guidelines have been updated to align with this objective.

The FMP documents the analysis of existing conditions and recommends a number of projects in the categories of new facilities, renovation + re-purposing, site improvements, and sustainability. The FMP provides a broadly held vision for the development of future facilities, but much work is needed prior to the construction of these recommended projects. These GCCCD Design Standards represent part of the detailed work that is required to support the successful implementation of the FMP. The two documents should be used in tandem to guide the development of each campus.

The process to develop the Facilities Master Plan was broadly participatory, involving interactive workshops. The master plan reflects input from many stakeholders who represent those who will be learning and working on these campuses in the coming years. Through this process, Development Concepts and Design Objectives were established to guide the programming, design, and operation of facilities on each college campus. One of the goals for this document is to update the District's architectural guidelines with these ideas. To accomplish this goal, a summary of the FMP Development Concept and the complete list of Design Objectives for each college have been included in Section 2. In addition, the Specific Design Guidelines have been expanded where appropriate to align with these design objectives.

HISTORY OF THE CUYAMACA COLLEGE CAMPUS

The environmental movement of the 1970s influenced the establishment of the existing campus building style, with the campus opening in 1978. The earliest buildings have a "ground-hugging" look intended to blend into the landscape. The existing older buildings are mostly single-story with direct access to outside from most classrooms. The fenestration is reflective and bronze-tinted glass. Flat and vaulted roofs and fascias are used. Even though the buildings have significantly different styles, they share a few common elements. One is the use of shaded pathways (roof cut outs, covered passageways and breezeways).

The majority of the campus buildings were either built or reconstructed since the year 2000. The designers of these buildings were guided by the 2003 Cuyamaca College Architectural Design Guidelines. Many have continued the tradition of building into the topography and reflecting the surrounding natural landforms with strong geometrical forms and earthy materials.

CUYAMACA CAMPUS SITE

The Cuyamaca College Campus has developed informally with spectacular panoramic views to the east and south. The adjoining lands are largely developed but buffered by a biological preserve around it. The central area of the campus has beautiful, sloping green open spaces with mature landscaping and trees. On the Cuyamaca College Campus, the surrounding views of the man-made green and the natural chaparral dominate the horizon. The campus is nestled up against the hillside, which provides significant opportunities, but also disadvantages. The natural hillside contour has directed the 'organic' nature of the buildings massing and shape. The disadvantage of the natural slope is the difficulty in crossing the topographic grade changes, where stairs are used and ADA compliant ramps are needed. In addition, the location of parking lots has been problematic, as it is not possible to place them in close proximity to the academic buildings.

Due to its steep natural slopes, approximately 40 acres of the 165 acre site are unsuitable for building, with existing buildings and fields created from significant grading cut and fill.

The Cuyamaca College Biological Preserve surrounds the Cuyamaca College Campus. Preservation of the fauna and flora on the steep hills is a requirement as are the riparian areas, precluding development.

STUDENT IMPRESSIONS

The location of the Cuyamaca Campus relative to the students' home and work is a significant advantage. The cost to attend is reasonable and the appearance of the campus is generally good. Campus areas, including parking lots are well lit and have a feeling of being secure. However, students feel that parking is not adequate. One disadvantage of the campus is the distance between the surface parking lots and the classroom/administration buildings.

CHARACTERISTICS OF COLLEGE CAMPUSES

Many campuses in Southern California have established a single architectural style to guide development and to promote a unified image of the campus. Some examples include the University of California at Santa Barbara, where the core buildings were designed in the 1950s and 1960s. In the 1970s and 1980s, a wide variety of different buildings were built, without reference to the original campus buildings. The campus started to look like a 'hodge-podge' of buildings rather than an institution. This changed significantly in the 1990s as the use of a family of materials, colors and architectural style was instituted. The UCSB campus today is an elegant institution, set within a spectacular landscape.

At Swarthmore College in Swarthmore, Pennsylvania, the campus is set within a sensitive landscape of an arboretum. A master plan and design principles guide how the campus and buildings relate to the landscape. Natural stone materials are used throughout the campus. The new buildings on campus are compatible with the historic buildings, within the natural setting. The same materials and colors are used to create a campus with a familiar tradition and fabric. Within the new buildings, the indoor and outdoor spaces are merged, enhancing the garden-like quality of this campus. Cuyamaca College has many of the natural setting issues found at Swarthmore.

The use of a cohesive building design promotes the identity and brand of a campus as a unique institution, different from other campuses. This visual integrity of design and materials promotes student connections to the college. Creating a beautiful campus also promotes the connections to the community and the use of the campus.

CAMPUS SETTING + CHARACTER

FIRST IMPRESSIONS

There are two entries to the campus. The first is an informal, winding route along Cuyamaca College Drive West (via Jamacha Road) from the south. Large trees complement the park-like, curving road. The second entry is along Rancho San Diego Parkway (via Fury Lane) from the east, and is formal and linear with views to the hills in the distance. This entrance is the primary auto entry, especially for first-time visitors. The vehicular access around the site is on a series of winding roads. The overall first impression from the car does not project a clear image of the campus layout.

A strong focal point and presence of an academic setting is not visible at each entrance to campus by a visually appealing structure. Cuyamaca College's goal is to enhance its image, academic reputation, and prominence in the community and to become a focal point for post-secondary education. The visual image should stress a college environment, academic activities, and vibrant college life. The campus is currently not adequately 'announced' with a monumental signage element, which incorporates the natural and man-made materials found on campus. The campus directional signage is not well-coordinated with the monumental signage. As a result, the academic image of the campus is not firmly established at the entry points.

CUYAMACA COLLEGE CHARACTERISTICS

The Cuyamaca College campus presents opportunities and challenges. Among its assets are the following.

- The campus is a hidden gem with a unique sense-of-place.
- The campus contains unique programs, features, and land uses, such as the Ornamental Horticulture Nursery, the Water Conservation Garden, and the Nature Preserve.
- The college is concluding a successful building program, which provided new and reconstructed facilities.

Certain characteristics are inherited from a time when the prevailing educational facilities design philosophy and the limitations of the available building technologies limited opportunities to open buildings up to their environment. Older buildings on the Cuyamaca College campus generally do not face outdoor recreational areas and do not take advantage of scenic views or maximize natural light. A lack of windows and an overly inward oriented design is typical of most of the earlier buildings developed on the campus. Older classrooms and labs generally face inward with semi-open corridors and smaller high windows for natural light. The newer structures developed under the 2003 Campus Design Guidelines in the last building program do consider outdoor views and open up onto public spaces. This design approach should be continued with facilities added to the campus. In general, spaces on campus should de-emphasize the distinction between inside space and outside space.

Entrances to older building groupings are unclear. Parking often dominates the first impression of the campus and is often confusing and disorienting. Aligning future campus development with the 2013 Facilities Master Plan will address these issues.

CAMPUS DEVELOPMENT CHALLENGES

The core elements of the Cuyamaca College design guidelines are intended to address identified campus challenges and include:

- Strengthen the campus' visibility and physical connections to the community.
- Strengthen the connections among campus facilities, parking, and site improvements.
- Create a collegiate environment through the use of institutional quality buildings that enhance the academic image of the campus.
- Emphasize a vibrant academic presence with visually prominent architecture.
- Make visible from public open spaces various campus activities such as library, reading rooms, bookstore, cafeteria, faculty offices, message boards, or galleries on the ground floor.
- Create a cohesive campus environment through the use of consistent geometric roof cut-outs/openings, linkage structures, and overhang elements.
- Minimize placement of doors and openings on the outer perimeter of the campus.
- Use a building breezeway to connect courtyards or serve as a building pass-through.
- Draw students quickly to the core of the campus, directly from the perimeter parking areas.
- Create engaging outdoor gathering space, placed and designed to enhance campus pedestrian linkages and activities.
- Address the significant changes in topographical elevation and the need for universal accessibility.
- Seamlessly integrate collegiate buildings into the campus topography while remaining sensitive to the natural surroundings.
- Integrate sustainability and environmental quality, comfort, and security into the design of the campus.

SUMMARY OF THE CAMPUS DEVELOPMENT CONCEPT

The Cuyamaca College campus began with a clustering of buildings along the eastern slopes of its topographical hillside. It has relatively new buildings that form more clusters and traverse the topography with entries at varying elevation levels reminiscent of an Italian hill town. The development concept takes advantage of the work done to date on campus, yet affords another layer of planning and organization that focuses on central quad formation and connectivity.

"Front porches" append existing building clusters at the lower level to frame the existing newly renamed "Central Park." The "back porch" of each building is a level higher and it is this upper campus plaza zone that will provide clear connections that link to plazas. Building sites within these plaza nodes are defined in the 2013 Facilities Master Plan. Central Park is a "green plaza," which serves as a central organizing device for the campus.

The pathways that link the urban hill town plazas create an upper campus, which will transition from a mix of cars and pedestrians to a purely pedestrian zone. Vehicular traffic is rerouted to the north edge of the existing Building A, to create a more direct and safe route to the upper campus parking. (Reference 2013 GCCCD Facilities Master Plan)

Key Elements of the Cuyamaca College Campus Development Concept:

- Multiple buildings with entries at varying elevations; the concept provides clarity to entry and way-finding by simplifying circulation.
- Reordering exterior SPACE to create a civic PLACE by adding new facades to existing buildings—buildings are defined edges to the exterior plaza.
- Central plaza aligned with architectural elements.
- Paths of the medieval city link to the central civic plaza—the "streets are bent" so that one sees first a narrow shaft of space focused on the central plaza.

Part B
GOALS + OBJECTIVES

DESIGN GOALS

Campus design should be academically focused but designed to be appropriate to the individual campus setting. Spaces should be student-centric and cater foremost to the needs of students.

Buildings should be architecturally significant within the constraints of the funding and operational efficiencies for community college buildings. They must be visionary-able to accommodate the technology of the present but remain flexible for the technology of the future. Designs should be fiscally responsible and completed within the scope and funding standards. Design components should always consider minimizing future operating costs—this should be worked into the planning and design of the campus. Facilities and open spaces should be resilient—resistant to activities such as skateboarding and vandalism. In this respect, spaces should always promote the safety and security of students, faculty, staff, and visitors.

CAMPUS DESIGN OBJECTIVES

A primary goal of these guidelines is to direct the design of new buildings and open spaces to build upon the unique visual drama and beauty of the natural surroundings as well as reinforce a collegiate environment. These design guidelines establish the foundation for the development approach for new buildings and open space. As campus buildings are added, a consistent approach to building siting, connected covered walks, and colors/materials will result in a campus that is inviting to students and retains a significant and coherent visual impression.

As part of the 2013 facilities master planning process, the following Campus Design Objectives were updated through discussions with the Cuyamaca College Extended Master Plan Task Force. The input of the Task Force expresses the needs and insights of stakeholders with day-to-day experience with working and learning on the campus.

- Create a strong academic character for the campus through the design of collegiate-quality buildings.
- Design the campus so that as a whole, it is largely defined and perceived by its buildings in harmony with lush open spaces and the natural environment.
- Provide a strong sense of "entry," a gateway to the campus, to enhance community relations.
- Reinforce the "heart" of the campus, the "Central Park", as the principal open space for gathering.
- Establish the existing LRC, new Student Center, and Communication Arts buildings as the primary buildings focused on the Central Park.
- New buildings should be respectful of and compatible with the significant aspects of the original campus buildings and open spaces.
- Use design elements, building materials, landscaping and walkways to emphasize a cohesive and connected, as well as outwardly focused campus.
- Make public spaces attractive, and where appropriate, expand spaces to be used for public events.
- Enhance the connection to the immediate surrounding uses (the Water Conservation Garden and Museum), establishing view corridors to significant buildings, entrances and the hills.
- Provide safe and comfortable pathway connections from parking to the campus core.
- New buildings and development should ensure the financial viability of the College as a whole, i.e. new buildings should be cost-effective to build and maintain.
- Design for the sustainable and high-performance operation of open spaces and buildings.
- Create quality indoor environments for students and employees—considering aesthetics, ergonomics, flexible use, acoustics, indoor air quality, and resource efficiency.
- Support learning anytime and anywhere throughout the campus.
- Incorporate student and public art into the campus environment.
- Create welcoming, human scaled outdoor and indoor gathering spaces to promote collaborative learning and student engagement. Provide appropriate furniture and technology connectivity.
- Design with an awareness of environmental conditions to efficiently maximize comfort and health.
- Design for universal accessibility to all facilities and services.
- Design to promote safety and security, including fire safety of the site.

Part C
SPECIFIC DESIGN GUIDELINES

Cuyamaca Campus opened in 1978 and has had the opportunity to establish itself as a visually coherent, vibrant academic institution with a definitive campus style as distinctive as its name: Cuyamaca - "a place where the rain comes from heavens." The campus environment should emphasize a collegiate atmosphere, quality instruction, and vibrant college life. The college's vision of "Learning for the Future" and its core values of Equitable Access, Individual Student Success, Academic Excellence, Innovation and Creativity, Diversity and Social Harmony, Environmental Stewardship and Sustainability, and Strong Community Relations, should be reflected in its physical environment. The physical design and development of the campus should continue to promote the college's visibility and identity within the community, and should enhance the academic image, reputation, and prominence of the college.

The campus environment is relaxed and casual, an informal arrangement of buildings and open spaces within a 165-acre hillside setting. Currently, the campus includes four newer and successful buildings completed under the last building program and developed under the 2003 Campus Design Guidelines. Older buildings also remain on campus and may be replaced or renovated as outlined in the 2013 Facilities Master Plan. Future new and relocated facilities present an opportunity to continue the development of a physical environment that enhances the academic presence with well-designed educational buildings that support high-quality academic programs and promote student success.

SITE DESIGN

EDUCATIONAL RESOURCES

Flexible outdoor Classrooms

- Integrate the academic programming of indoor and outdoor space.
- Provide a range of flexible spaces to accommodate a variety of learning activities.
- Provide appropriate support utilities and technology connectivity.
- Highlight sustainable campus facilities and operations with displays and interpretive signage.

Nature Preserve

- Emphasize adjacencies to Nature Preserves through the use of view corridors and the strategic placement of plazas, outdoor rooms, and trail heads.
- Provide interpretive pathway signage.
- Restore and preserve adjacent habitat with endemic plant materials.
- Do not specify invasive or non-native plant species of any type in areas adjacent to nature preserves and riparian habitats.
- Do not specify excessively bright and unshielded lighting in adjacent areas.
- Locate educational and interpretive signage along pedestrian pathways.
- Locate outdoor classrooms adjacent to the Nature Preserve and Riparian Habitat.

CAMPUS GATEWAYS

- Locate monument signage, planting species and hardscape elements that unify the exterior visual and physical appeal of the campus with the total landscape character at all access points along major roadways.
- Incorporate regional materials, such as boulders or stone for signage.
- Ensure that signage is well lit and oriented towards roadways for maximum visibility.

Entering the Campus

- Provide safe, clear, accessible paths for pedestrians entering and exiting the campus in both day-to-day and emergency situations.
- Ensure that pedestrian entrances are well lit and include appropriate signage for way-finding.
- Provide universally accessible paths of travel.
- Provide linkages that anticipate the shortest path of travel between entries, campus open spaces, and buildings.

PEDESTRIAN LINKAGES

- Strengthen the pedestrian linkages and provide universal accessibility between all campus facilities and open spaces.
- Design the campus system of pedestrian linkages in a holistic manner, establishing a logical hierarchy that is integrated with a robust way-finding system.
- Design pedestrian linkages to accommodate the anticipated level of use.

Traversing Parking Areas

- Provide pedestrian paths that are separated from vehicular routes for safe circulation through parking lots.
- Employ consistent use of iconic plant material or vertical elements and lighting to visually identify pedestrian paths.
- Minimize crossing of pedestrian and vehicular paths and design necessary crossing points to promote safety.
- Provide shaded seating at intervals along pedestrian paths through large parking lots.

Linking the Campus Core

- Create direct relationships between well-defined areas of campus through the use of unified and consistent paving, lighting, and landscape furnishings.
- Implement shade trees and trellises along pedestrian pathways for comfort but maintain clear sight lines.
- Provide water bottle filling stations and shaded seating at regular intervals.
- Integrate emergency access routes into the landscape design by using alternative paving surfaces where applicable to reduce visual impact of vehicular path.
- Allow paths to frame and focus views of destinations as pedestrians approach elements such as plazas and portals.

Portals

- Define through the use of a strong linear axis, consistent paving, lighting, textures, colors, and planting.
- Place signage to clearly define building names, entries, and accessible paths.
- Define portals through use of vertical elements .
- Frame pedestrian views and visual connections across campus.

Vertical Linkages
- Locate vertical linkages in exterior locations that can be accessed when buildings are closed.
- Provide exterior building elevators and stairs in locations that are adjacent or part of major pedestrian links and portals.
- Provide signage that clearly illustrates the accessible links to all campus plateaus.

OPEN SPACES
- Respect the informal nature of open space and building settings.
- Soften/integrate buildings and open spaces by using landscaping and transitional elements such as trellises.
- Orient building entrances toward plazas.
- Provide opportunities for a diverse range of activities.
- Maintain consistency with common materials, street amenities, and site furnishings.
- Make public open spaces inviting, during the day and at night.
- Capture views to the surrounding hills and valleys between buildings.
- Recognize the arid nature of the environment and minimize the use of water. (e.g. water conservation gardens).
- To the extent that it is practical, ensure that open spaces are universally accessible.

Central Park
- Ensure universal accessibility to all areas of Central Park and to the surrounding buildings.
- Support a variety of uses and gathering activities.
- Define passive and active recreation areas using open turf areas, tree placement, shade, and ground cover selection.
- Use pervious walking surfaces with appropriate sub-base and drainage for plazas.
- Plant drought-tolerant borders and less thirsty turf varieties to reduce the need for irrigation while maintaining a park-like quality.
- Preserve existing trees to maintain the "arboretum" quality of Central Park.
- Identify native and adapted specimen trees using interpretive signage where appropriate.

Plazas
- Orient buildings with corridor views facing open spaces.
- Use intimate-scaled courtyards to promote multi-level student, faculty, and community interaction.
- Implement a consistent landscape palette using identified appropriate plants (section 4).
- Use pervious surfaces for walking and to accommodate emergency vehicles where appropriate.
- Maximize solar orientation of seating areas for morning sunlight and minimize the exposure to prevailing winds and afternoon sun.
- Ensure that plazas are well lit for typical night time use and special events. Include sufficient electrical connections per program.
- Ensure good visibility for supervision and security.

ACTIVE GROUND-FLOOR USES
- Make visible from public spaces various campus activities: library, reading rooms, bookstore, cafeteria, professor offices, message boards or galleries on the ground floor, towards public spaces.
- Create any exterior entrances to classrooms from within courtyards.
- Draw students directly to the core of the campus from parking areas.

VIEW OPPORTUNITIES
- Combine new points of entry to capitalize on views.
- Capture views to the surrounding scenery from plazas and building interiors.

TREES AND LANDSCAPING
- Use appropriate trees as a part of new building and open space planning (Refer to Section 4) (for acceptable species).
- Design landscaping to protect and frame sight line views to the surrounding hillsides and other scenic areas.

ARCHITECTURAL DESIGN

BUILDING MASSING + ORIENTATION
- Continue the use of bold geometries that manipulate light and shadow.
- Use asymmetrical building forms when appropriate.

BUILDING STYLE
- Advocate a contemporary architectural style with key elements preserved.
- Continue the use of bold and curvilinear building forms.
- Avoid overly inward-focused building designs.
- Maximize natural light using windows.
- Use asymmetrical building forms when appropriate.

BUILDING ENTRANCES

- Use a single, grand-scale entrance or place prominent entrances at main sides of buildings if appropriate.
- Place entrances to open onto plazas or portals that form a strong connection to primary pedestrian linkages.
- Ensure that entrances are well-lit.
- Encourage articulated rather than flat facades.
- Do not use dark or reflective glass, which creates an uninviting appearance.
- Make building entrances obvious and visible from the Central Park.

EXPRESSION LINES

- Emphasize the horizontal when designing building walls.
- Use lightweight materials for the top section of walls.
- Emphasize horizontal lines in two- and three-story structures.
- Avoid large blank walls that face plazas or core activity areas on campus.

ROOFTOPS

- Use large overhangs to provide shade from the summer sun and allow passive heating in the winter.
- Use high-albedo "cool" roofing surface materials.
- Consider views of lower roofs from higher levels, balconies, and windows.
- Minimize visibility of obtrusive equipment.
- Design roofs to use daylight harvesting strategies.

COVERED WALKWAYS

- Use covered or shaded structures to alleviate sun and heat.
- Use shaded walkways to link buildings and primary open spaces at appropriate adjacencies.
- Use skylights to bring natural light back to areas darkened by overhangs.
- Use covered or shaded structures to provide student gathering areas.
- Do not obscure or block overhang passageways.
- Do not locate planters within overhang drip lines.
- Integrate covered walkways and canopies with architectural design styles and building design.
- Covered walkways should be constructed using low-maintenance materials. Powder-coated metals are preferred over wood or wood substitutes.

OTHER DESIGN FEATURES

- Incorporate visually identifiable vertical elements, sculpture, and other public art into the campus design.

MECHANICAL EQUIPMENT

- MEP equipment should not be openly visible.
- Roof-mounted equipment should be shielded from all view.

VENDING MACHINES

- Vending equipment should not be visually intrusive
- Vending areas should be shielded from the sun and weather
- Vending should be safe, secure, and well lit.
- Avoid placement in deep alcoves or secluded areas for security.

TRASH ENCLOSURES + LOADING FACILITIES

- Locate trash and recycling bins in enclosures.
- Plan the location of trash and recycling facilities to allow easy cleaning and management.

INDOOR ENVIRONMENTAL QUALITY

- Design to a high standard of aesthetic quality.
- Design for universal accessibility and clear way-finding throughout all spaces.
- Reduce sources of indoor air pollution such as cleaning and pest control chemicals and building materials, equipment, and furniture that emit volatile organic compounds and other pollutants.
- Design for effective ventilation and thermal comfort.
- Design acoustic environments that reduce distracting noise and improve aural communication.
- Design for optimal lighting quality and reduced glare.
- Design for ergonomic comfort.
- Provide occupants with a connection to the outdoors by providing glare-free natural lighting and views.
- Design buildings to be safe and secure environments for learning using CPTED principles.
- Equip buildings for monitoring and optimizing the indoor environment.

ENERGY + WATER

- Design in accordance with the GCCCD standards for energy and water use intensity.
- Employ the building occupants at the start of the programming process for input.
- Explore and select strategies that take advantage of synergies to optimize building performance.
- Equip buildings for monitoring and optimizing energy and water using systems.
- Explore opportunities to integrate photovoltaic systems into the design of facilities.

SPECIFIC DESIGN GUIDELINES

ENVIRONMENTALLY PREFERRED MATERIALS

- Build and furnish with durable and easily maintained materials.
- Build with materials that are locally sourced, rapidly renewable, contain recycled content, and are likely to be recycled or reused.
- Maintain healthy indoor air quality by selecting appropriate building materials and furnishings, with a proven track record of lantern performance

WASTE REDUCTION + MANAGEMENT

- Follow best practices for the management of demolition materials and construction waste.
- Explore on-campus opportunities to reuse materials from demolished facilities and site work.
- Design buildings with space to support the campus recycling plan.

EXTERIOR BUILDING MATERIALS

CONCRETE BLOCK WALLS, CONCRETE COLUMNS, OTHER BUILDING MATERIALS

- Stone walls and detailing where appropriate
- Smooth wall materials, including concrete/masonry walls
- Textured material
- Lighter palette of color for major massing
- Articulated simple roof structures with standing seam metal roofs
- Round concrete columns
- Large glass elements

FENESTRATION + GLASS WALLS

- Use clear anodized aluminum mullions with double pane low-e glass.
- Use large expanses of glass at building entrances if appropriate.

EXTERIOR LIGHTING

- Lighting fixtures should be LED fixtures or other proven energy efficient lighting systems can also be considered. Other options should be reviewed with District.
- Provide lighting for safe and secure night time use of the campus . Include consistent lighting on circulation pathways with a fixture every 25-30 ft providing illumination of a person's face 30 ft away.
- Use increased lighting levels at primary entrances.
- Avoid the use of in-ground lights.
- Locate lights in area where they can be easily maintained.
- Avoid placing lights in ceilings over stairs.
- Make provisions for lighting special outdoor performances, activities, and events.
- Design site lighting to minimize or shield light from adjacent neighborhoods and nature preserves.
- Prohibit exposure of habitat and astronomical observation areas to high-frequency spectrum lighting.

HANDRAILS

- Choose railing styles that add to the cohesive quality of the campus.
- Use bent tube steel in simple shapes and forms.
- Avoid painted handrails.

CONCRETE STAIRS + PAVING

- Integrate stairs, planter walls, and seating into paving design.
- Use edge detailing on integral colored concrete.
- Implement long lasting durable materials that require minimal maintenance.
- Use integral color in concrete. Do not use stain concrete or applied coatings.
- Minimize use of large aggregated textured paving due to maintenance issues.

GRAPHICS + SIGNAGE

CAMPUS WAY-FINDING + SIGNAGE

- Understand the campus-wide way-finding plan and how it addresses the requirements for all facilities and elements of the campus circulation systems.
- Understand how each building and site improvement project functions as a part of the campus-wide fabric and include the appropriate way-finding elements in the project scope.
- Support clear way-finding and direct connectivity for users with mobility limitations.
- Use trees and plant material and architectural elements to assist in campus way-finding.
- Incorporate educational and interpretive signage to highlight public art, sustainable facilities, and other features.

BUILDING NAMES, WAY-FINDING, + SIGNAGE

- Place building names in highly visible areas of exterior building walls with consistent type font established for the campus.

CAMPUS SITE FURNITURE

FURNITURE

- Integrate campus furniture with the landscape and hardscape when appropriate.
- Be consistent with campus architectural elements when choosing furnishing styles.
- Place movable outdoor furniture only in courtyards or controlled and highly visible areas.
- Provide convenience outlets into adjacent walls.
- Provide trash and recycling receptacles along main circulation routes and building entrances.
- Use trash and recycling receptacles that are consistent with campus standards (Section 4).
- Use metal mesh loose outdoor tables and chairs. Avoid pedestal base on tables.
- Skateboard deterrents shall be a part of any bench design, not applied hardware afterwards.

SHADE STRUCTURES

- Consider the location of shade trees and building overhangs when planning the location of shade structures and use these elements in concert to provide the desired level of shading along pedestrian linkages and in outdoor gathering spaces.
- Avoid shading gathering spaces from the morning sun, especially during the cool weather season.
- Be consistent with campus architectural elements when designing shade structures.
- Use shade structures to provide intermittent resting points along exposed primary pathways.
- Integrate overhead shade structures at dining plazas and gathering spaces when shade is needed.
- Soften/integrate building and open space with trellis elements.

STUDENT + PUBLIC ART

- Provide opportunities for the display of art in buildings, courtyards, and gathering areas throughout campus.
- Integrate art within the landscape and public spaces.
- Locate in a highly visible and secure area.
- Provide interpretive signage and lighting.
- Provide support for technology, audio/visual, and lighting for outdoor performance venues.

PARKING + CIRCULATION

DRIVEWAYS

- Place primary vehicular routes away from primary pedestrian circulation.
- Employ round-abouts to improve flow at busy intersections.
- Separate pedestrian and bicycle circulation from vehicular routes.
- Minimize pedestrian crossings.
- Design driveways to maximize storm water runoff capture into adjacent detention areas.

PASSENGER LOADING ZONES + BUS STOPS

- Separate loading zones from main vehicular routes.
- Provide adequate stacking space to accommodate waiting vehicles.
- Provide seating, shade, refuse receptacles, and access to restrooms.

BICYCLE PATHS + STORAGE

- Connect to the public network of bicycle paths.
- Provide bicycle routes throughout the campus.
- Separate bicycle routes from vehicular and pedestrian circulation.
- Provide consolidated bicycle storage at key portals on campus and integrated with new and existing facilities.
- Use bicycle storage that is consistent with campus standards (Section 4).
- Place bicycle storage in hardscape or gravel.

PARKING

- Provide adequate stacking space and multiple entrances/exits to parking areas.
- Direct pedestrians to walkways that connect parking areas to campus portals.
- Screen parking areas with landscape elements.
- Use appropriate trees and other landscape elements to break up large expanses of surface parking.
- Orient parking lots to maximize storm water runoff capture into adjacent detention areas.
- Orient parking lots to maximize accessibility to buildings and major areas of campus.
- Locate canopy trees along walkways to provide relief the sun and reduce the heat island effect.
- Provide preferred parking for carpools and alternative fuel vehicles.
- Provide electric vehicle charging stations.

Part D
SITE DESIGN

EDUCATIONAL RESOURCES

Every square foot of the campus has the potential to enrich the education of students and the campus site design should provide and support learning opportunities. Provide connectivity to technology and explore opportunities for outdoor teaching and active learning spaces. Health, wellness and exercise science activities, expression and exhibition of learning in the academic disciplines that is occurring throughout the campus should also be explored. Demonstrate sustainable facility and site design principles and design places to feature public and student art.

Both college campuses manage substantial areas within their boundaries which are maintained as natural habitat and learning resources. There are opportunities to reintroduce native plant material, natural or constructed shelters, and water and food sources into the campus core to extend and support the adjacent natural habitat. Educational signage shall designate restoration areas for both public awareness and protection of newly established plants.

FLEXIBLE OUTDOOR CLASSROOMS

Many areas of campus are often used as outdoor classrooms, whether they feature or facilitate the study of elements that relate to academic disciplines or merely provide a comfortable and stimulating outdoor venue for learning. Continue this tradition by seeking opportunities to collaborate with faculty and align the campus site design with the college's academic programming.

- Integrate the academic programming of indoor and outdoor space.
- Provide a range of flexible outdoor spaces to accommodate a variety of learning activities.
- Provide appropriate support utilities and technology connectivity.
- Highlight sustainable campus facilities and operations with displays and interpretive signage.

NATURE PRESERVE

The design of buildings and exercise science fields near the nature preserve should minimize changes to the existing topography. The nature preserve should be shielded from site lighting. For the adjacent open space, comply with County of San Diego brush management requirements. Periodically and selectively remove high fuel load plant species to reduce the wildfire potential. Limit clearing and grading of native vegetation to the minimum amount.

- Emphasize adjacencies to Nature Preserves through the use of view corridors and the strategic placement of plazas, outdoor rooms, and trail heads.
- Provide interpretive pathway signage .
- Restore and preserve adjacent habitat with endemic plant materials.
- Do not specify invasive or non-native plant species of any type in areas adjacent to nature preserves and riparian habitats.
- Do not specify excessively bright and unshielded lighting in adjacent areas.
- Locate educational and interpretive signage along pedestrian pathways.
- Locate outdoor classrooms adjacent to the Nature Preserve and Riparian Habitat.

CAMPUS GATEWAYS

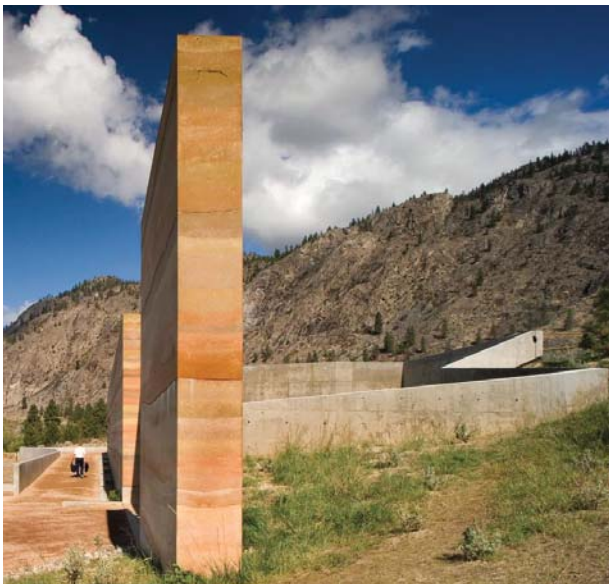
Strengthen the Cuyamaca College's presence within the community and enhance way-finding to the campus by providing entry monument signs and gateway features. Design the gateways and wayfinding features to welcome pedestrians and bicyclists.

- Locate monument signage, planting species and hardscape elements that unify the exterior visual and physical appeal of the campus with the total landscape character at all access points along major roadways.
- Incorporate regional materials, such as boulders or stone for signage.
- Ensure that signage is well lit and oriented towards roadways for maximum visibility.

ENTERING THE CAMPUS

All who enter the campus must be equally welcomed and accommodated. Provide safe separation between pedestrians and vehicular and bicycle circulation.

- Provide safe, clear, and accessible paths for pedestrians entering and exiting the campus in both day-to-day and emergency situations.
- Ensure that pedestrian entrances are well lit and include appropriate signage for way-finding.
- Provide universally accessible paths of travel.
- Provide linkages that anticipate the shortest path of travel between entries, campus open spaces, and buildings.



PEDESTRIAN LINKAGES

Strengthening pedestrian linkages between all campus destinations is a key element of the campus development concept. Careful consideration must be given to their placement and design—with regard to safety and security, universal accessibility, comfort and protection from the elements, and aesthetic quality. The network of linkages must be designed holistically to reflect a logical hierarchy, to accommodate the level of anticipated use, and to be supported by a campus-wide way-finding system.

- Strengthen the pedestrian linkages and provide universal accessibility between all campus facilities and open spaces.
- Design the campus system of pedestrian linkages in a holistic manner, establishing a logical hierarchy that is integrated with a robust way-finding system.

TRAVERSING PARKING AREAS

Provide safe and universally accessible means for pedestrians to traverse parking lots and reduce conflicts that interfere with the flow of vehicles. In large parking areas, provide tree-shaded and well lit paths to the campus core. Minimize vehicular crossings and design necessary crossings to maximize the visibility of pedestrians to approaching drivers.

- Provide pedestrian paths that are separated from vehicular routes for safe circulation through parking lots.
- Employ consistent use of iconic plant material or vertical elements and lighting to visually identify pedestrian paths.
- Minimize crossing of pedestrian and vehicular paths and design necessary crossings for safety.
- Provide shaded seating at intervals along pedestrian paths through large parking lots.
- Provide clear sight lines across parking lots and along pathways for security.

LINKING THE CAMPUS CORE

The campus development concept provides organizing principles to strengthen the linkages between facilities and site destinations. Remove ordinary vehicular traffic from pedestrian linkages. Cluster facilities and site destination around a series of plazas and clear pathways that traverse the campus in a perpendicular direction across the main slope.

- Create direct relationships between well-defined areas of campus through the use of unified and consistent paving, lighting, and landscape furnishings.
- Implement shade trees and trellises along pedestrian pathways for comfort but maintain clear sight lines.
- Provide water bottle filling stations and shaded seating at regular intervals.
- Integrate emergency access routes into the landscape design by using alternative paving surfaces where applicable to reduce visual impact of vehicular path.
- Allow paths to frame and focus views of destinations as pedestrians approach elements such as plazas and portals.

PORTALS

Portals shall indicate the point of arrival from pedestrian linkages to all destinations such as the Central Park, plazas, clusters of buildings, and exercise science fields. Develop a consistent design vocabulary to celebrate these important points of arrival throughout the campus. Facilitate the use of portals as decision points for way-finding by grouping horizontal and vertical linkages in their proximity.

- Define through the use of a strong linear axis, consistent paving, lighting, textures, colors, and planting.
- Place signage to clearly define building names, entries, and accessible paths.
- Define portals through use of vertical elements.
- Frame pedestrian views and visual connections across campus.

VERTICAL LINKAGES

The campus extends across many topographic plateaus. Provide accessible connections through the use of elevators and stairs at multi-level buildings that link adjacent levels. Signage should be included to indicate vertical linkages and locations of elevators to traverse different topographic elevations grade changes.

- Locate vertical linkages in exterior locations that can be accessed when buildings are closed.
- Provide exterior building elevators and stairs in locations that are adjacent or part of major pedestrian links and portals.
- Provide signage that clearly illustrates the accessible links to all campus plateaus.

SITE DESIGN

OPEN SPACES

The current layout of the Cuyamaca College Campus is informal and naturalistic. The "Central Park" is the primary organizing feature of the campus and its buildings. Open spaces should be incorporated with the development of new buildings to further reinforce the structure of the campus and its internal circulation. Open spaces surrounding buildings should be used to orient buildings, entrances, and connections to the surroundings. Views of primary building elements from the "Central Park" should be maintained as a primary ordering and orienting device. The physical environment, combining significant academic buildings and open spaces, should be designed to promote a collegiate campus atmosphere.

In the campus development concept gathering spaces serve as connectors between exterior space and building clusters. The plaza focuses and organizes the approach to each building that surrounds it. For the buildings that surround the "Central Park", "front porches" append the building clusters at the lower level to frame the "Central Park". The "back porch" of each building is a level higher, embracing upper campus plazas that link to other plazas in adjacent building clusters. Arising through these strong connections, the activity of campus life will naturally infuse these gathering spaces if they are designed to satisfy the need for seating, connectivity to technology, thermal comfort, and security and safety.

- Respect the informal nature of open space and building settings.
- Soften/integrate buildings and open spaces by using landscaping and transitional elements such as trellises.
- Orient building entrances toward plazas.
- Provide opportunities for a diverse range of activities to ensure open spaces are utilized.
- Maintain consistency with common materials, street amenities, and site furnishings.
- Make public open spaces inviting, during the day and at night.
- Capture views to the surrounding hills and valleys between buildings.
- Recognize the arid nature of the environment and minimize the use of water (e.g. water conservation gardens).
- To the extent that it is practical, ensure that open spaces are universally accessible.

CENTRAL PARK

At the heart of the campus, this unique amenity often referenced as the Grand Lawn, serves as a multipurpose civic-scaled "green plaza" that welcomes pedestrians coming from the main parking areas. Providing a generously sized main plaza at the portal from the main parking area and "front porch" plazas appended to the surrounding buildings, will allow for a greater variety of uses that must be programmed and supported by the utility infrastructure.

- Ensure universal accessibility to all areas of Central Park and to the surrounding buildings.
- Support a variety of uses and gathering activities.
- Define passive and active recreation areas using open turf areas, tree placement, shade, and ground cover selection.
- Use pervious walking surfaces with appropriate sub-base and drainage for plazas.
- Plant drought-tolerant borders and less thirsty turf varieties to reduce the need for irrigation while maintaining a park-like quality.
- Maintain the "Arboretum" quality of Central Park.
- Identify native and adapted specimen trees using interpretive signage where appropriate.

PLAZAS

Where plazas are defined by the facades and entrances to surrounding buildings, they provide a more formal transition to these buildings. They are enlivened by the indoor-outdoor connection and the expression of the learning that occurs in adjacent buildings. These plazas should provide protected, safe, and comfortable spaces for a variety of activities.

- Implement a consistent landscape palette using identified appropriate plants (see Section 4).
- Use pervious surfaces for walking and to accommodate emergency vehicles where appropriate.
- Maximize solar orientation of seating areas for morning sunlight and minimize the exposure to prevailing winds and afternoon sun.
- Ensure that plazas are well lit for typical night time use and special events.
- Ensure good visibility for supervision and security.
- Orient buildings with corridor views facing open spaces.
- Use intimate-scaled courtyards to promote multi-level student, faculty, and community interaction.

SITE DESIGN

ACTIVE GROUND-FLOOR USES

Encourage active uses opening onto or with strong visual connections to the open spaces while providing a self policing or eyes-on-the-street approach to creating a secure environment.

- Make visible from public spaces various campus activities: library, reading rooms, bookstore, cafeteria, offices, message boards, and galleries on the ground floor, toward public spaces.
- Create any exterior entrances to classrooms and other spaces from within the courtyards/ quadrangles.
- Draw students directly to the core of the campus from the perimeter parking areas.

VIEW OPPORTUNITIES

Within the context of the Facilities Master Plan, establish strong, direct views throughout the campus, providing visual connections to the surrounding environment.

- Establish strong, direct views throughout campus.
- Capture views between buildings to the surrounding scenery from plazas and building interiors.

TREES AND LANDSCAPING

The use of trees on campus has enhanced the image of this garden campus. The largest specimens are located in the "Central Park". The trees are used in informal grid, with no strong groupings. Careful consideration has been given to the selection of species that are deemed appropriate for the campus. The use of trees should be enhanced throughout the campus as a part of new building and open space planning.

In new landscape designs, ground-hugging shrubs should be kept to a minimum. Shrubs that can be trimmed and are off the ground will eliminate attractive places for snakes, an occasional problem on the Cuyamaca College campus.

The hillside, views, and native chaparral are what make the setting of the campus spectacular. The campus is nestled into the hillside on two sides. The views toward the hills and native chaparral should be both protected and enhanced.

- Use appropriate trees as a part of new building and open space planning (refer to Section 4 for acceptable species).
- Design landscaping to protect and frame sight line views to the surrounding hillsides and other scenic areas.

Part E
ARCHITECTURAL DESIGN

BUILDING MASSING + ORIENTATION

The majority of the existing buildings are single-story, some with large footprints. The massing is primarily horizontal in nature and the roofs are primarily flat. The massing of new buildings should continue the use of bold and curvilinear forms.

• Continue the use of bold geometries that manipulate light and shadow.

BUILDING STYLE

The campus style of Cuyamaca College should be contemporary, but sensitive to the materials of the region (e.g. natural stone) and reflect the arid nature of the environment.

The contemporary style for Cuyamaca College should include bold or curvilinear geometry and deep roof overhangs. New buildings will make use of current architecture technology, materials and construction techniques. Overhangs should more often be curvilinear at their perimeters.

• Advocate a contemporary architectural style with key elements preserved.
• Continue the use of bold and curvilinear building forms.
• Avoid overly inward-focused building designs.
• Maximize natural light using windows.
• Use asymmetrical building forms when appropriate.

BUILDING ENTRANCES

Building entrances should be obvious and visible from the "Central Park" and approaching pathways as much as possible. The current campus layout provides a multitude of entries to the campus precinct and individual buildings, creating a security/management challenge. A secure approach needs to be established using clear, inviting entrances and limiting the number of primary entry points to each building. Building entrances should be located to tie into the system of pedestrian linkages. For example, the Student Center has prominent entrances on both sides of the building, unifying the adjoining building groups and linking the "Central Park" to the Main Quad.

The design of buildings on campus should encourage inside-outside connections. These connections can be made in a variety of ways, including wide doorways to classrooms that can be held open, breezeways, and courtyards. Creating a "front porch" area immediately outside a building entrance creates a transition zone and potential gathering place. Signage should be incorporated into the design of building entrances to facilitate way-finding.

- Use a single, grand-scale entrance or place prominent entrances at main sides of buildings if appropriate.
- Place entrances to open onto plazas or portals that form a strong connection to primary pedestrian linkages.
- Ensure that entrances are well-lit.
- Provide articulated rather than flat facades.
- Do not use dark or reflective glass, which creates an uninviting appearance.
- Make building entrances obvious and visible from the Central Park.

ARCHITECTURAL DESIGN

EXPRESSION LINES

The exterior building walls should consist of three elements: base, middle and top. The base should have a strong ground-hugging emphasis and consist of natural stone, rock or masonry elements without compromising the use of glazed walls. The middle should consist primarily of concrete/masonry, with window openings. The top should be open and lightweight, emphasizing shaded roof elements.

- Emphasize the horizontal when designing building walls.
- Use lightweight materials for the top section of walls.
- Emphasize horizontal lines in two and three story structures.
- Avoid large blank walls that face core plazas or activity areas on campus.

ROOFTOPS

Roofing is highly visible and provides a significant amenity. It should be designed with consideration for use and to be visually attractive when viewed from locations and above.

Roofing should be designed as simple elements and integrated with shade devices. Park-like, shaded roof elements include trellis features used over walkways in front of buildings and breezeways through buildings.

- Use large overhangs to provide shade from the summer sun and allow passive heating in the winter.
- Use high-albedo cool roofing surface materials.
- Use lightweight, airy materials.
- Consider views of lower roofs from higher levels, balconies, and windows.
- Minimize visibility of obtrusive equipment.
- Design roofs to use daylight harvesting strategies.

COVERED WALKWAYS

Covered or shaded structures enhance the quality of spaces at and adjacent to building entrances. They are a method of providing clear linkages between buildings and other areas. Student interaction is enhanced, and indoor/outdoor functions come together.

- Use covered or shaded structures to alleviate sun and heat.
- Use shaded walkways to link buildings and primary open spaces at appropriate adjacencies.
- Use skylights to bring natural light back to areas darkened by overhangs.
- Use covered or shaded structures to provide student gathering areas.
- Do not obscure or block overhang passageways.
- Do not locate planters within overhang drip lines.
- Integrate covered walkways and canopies with architectural design styles and building design.
- Covered walkways should be constructed using low-maintenance materials. Powder-coated metals are preferred over wood or wood substitutes.

OTHER DESIGN FEATURES

When possible, some special design features should be incorporated into buildings across the Cuyamaca College campus to provide additional architectural interest.

Vertical visual elements assist students and visitors with way-finding. These structures become associated with the character of the campus and oftentimes become the signature for the college. Elements such as time clocks and vertical sculptures should be considered.

Sculptures, obelisks, and other public art elements are other focal points that add to the campus experience.

- Incorporate visually identifiable vertical elements, sculpture, and other public art into the campus design.

MECHANICAL EQUIPMENT

Mechanical equipment (including all mechanical, electrical, plumbing, fire/life safety, security, data, telephone, etc) and parapets should be hidden from view.

- MEP equipment should not be openly visible.
- Roof-mounted equipment should be shielded from all view and sight from windows and balconies of adjacent buildings.

TRASH ENCLOSURES + LOADING FACILITIES

Trash bins should be housed in easily locatable enclosures but hidden from view. Areas should be designated for trash (including green waste) and recycling. Access should be from the perimeter access road or other service road. Bins should not be placed adjacent to pedestrian walkways.

Loading facilities and docks should be placed adjacent to the service access roads. Careful planning should consider the ability to clean the trash and loading areas, including the management of trash and recycling. Wind should be considered in the location and orientation to prevent wind blown trash.

- Locate trash and recycling containers in enclosures.
- Plan the location of trash and recycling facilities to allow easy cleaning and management.

VENDING MACHINES

Vending machines should be located in shallow alcoves, visually shielded from main pathways, however, not so secluded that they provide a security issues. Vending areas should have roof protection, providing sun and weather protection for students. The location of vending areas should be reviewed and integrated into the design of new buildings if determined to be appropriate. Vending equipment should support student and staff needs so locations and ease of access must be considered.

- Vending equipment should not be visually intrusive.
- Vending areas should be shielded from the sun and weather.
- Vending should be safe, secure, and well lit.
- Avoid placement in deep alcoves or secluded areas for security.

TEMPORARY STRUCTURES

Temporary structures have been used to provide needed facilities on campus. These structures should be removed as quickly as possible and replaced with permanent buildings. The use of portable toilets, storage bins and other temporary buildings should be sheltered with landscape elements, to reduce their visibility and ugly nature.

- Replace temporary structures with permanent buildings.

INDOOR ENVIRONMENTAL QUALITY

Indoor environmental quality is a key measure of sustainability and building performance. Design quality indoor environments that contribute to the health, safety, and comfort of building occupants and enhance learning and productivity over the life-span of the campus facilities.

- Design to a high standard of aesthetic quality.
- Design for universal accessibility and clear way-finding through all of the indoor public spaces.
- Reduce sources of indoor air pollution such as cleaning and pest control chemicals and building materials, equipment, and furniture that emit volatile organic compounds and other pollutants.
- Design for effective ventilation and thermal comfort.
- Design acoustic environments that reduce distracting noise and improve aural communication.
- Design for optimal lighting quality and reduced glare.
- Design for ergonomic comfort.
- Provide occupants with a connection to the outdoors by providing glare-free natural lighting and views.
- Design buildings to be safe and secure environments for learning using CPTED principles.
- Equip buildings for monitoring and optimizing the indoor environment.

ENERGY + WATER

Design new facilities, major renovations, and site improvement projects to minimize the use of water and energy, including electricity and fuel. Use technology to measure and improve energy and water conservation.

- Design in accordance with the GCCCD standards for energy and water use intensity.
- Employ the building occupants at the start of the programming process for input.
- Explore and select strategies that take advantage of synergies to optimize building performance.
- Equip buildings for monitoring and optimizing energy and water using systems.
- Explore opportunities to integrate photovoltaic systems into the design of facilities.

ENVIRONMENTALLY PREFERRED MATERIALS

Design new facilities, major renovations, and site improvement projects to use environmentally preferred materials.

- Build and furnish with durable and easily maintained materials.
- Build with materials that are locally sourced, rapidly renewable, contain recycled content, and are likely to be recycled or reused.
- Maintain healthy indoor air quality by selecting appropriate building materials and furnishings.

WASTE REDUCTION + MANAGEMENT

Design and equip new facilities, major renovations, and site improvement projects to support campus programs to reduce and divert waste from landfills.

- Follow best practices for the management of demolition materials and construction waste.
- Explore on-campus opportunities to reuse materials from demolished facilities and site work.
- Design buildings with space to support the campus recycling plan.

Part F
EXTERIOR BUILDING MATERIALS

CONCRETE/MASONRY WALLS, COLUMNS, + OTHER NATURAL BUILDING MATERIALS

The materials listed in the guidelines below should be used with new (and redesigned existing) buildings and open spaces on campus. The use of materials should be designed in a contemporary manner, with reference to the method of application within the existing campus buildings. The use of 'stucco' is generally acceptable in certain areas where the material will not get damaged or abused.

CONCRETE/MASONRY WALLS & CONCRETE COLUMNS

The use of smooth wall materials, such as concrete/masonry, should be prominent throughout new campus buildings as well as remodeled existing buildings. Concrete/masonry should be painted in a buff color or earth tones with some accents. Building materials should reflect an institutional quality and feeling. Expressed columns should be used on the exterior of buildings.

OTHER BUILDING MATERIALS

Other materials, in earth tones, can be introduced into the building and landscape design. Materials such as stone and limestone can be used in horizontal banding, to provide a cap to landscape or stair walls and to create a horizontal line at the base of buildings

The following materials should be used:

- Stone walls and detailing where appropriate
- Smooth wall materials, including concrete/masonry walls
- Textured material
- Lighter palette of color for major massing
- Articulated simple roof structures with standing seam metal roofs
- Round concrete columns
- Stone wall application, in buff or natural earth tones
- Large glass elements

FENESTRATION + GLASS WALLS

The fenestration used in buildings should include large expanses of glass at building entrances. Mullions should be colored to match the tradition of clear anodized aluminum mullions, with blue tinted low-e glass. Glass should be used in the entrance doors, with sidelights and clerestory glass above. The entrance to the Child Development Center is an excellent example of the use of glass at the entrance.

Fenestration within the buildings emphasizes the horizontal character of buildings with the addition of clearstory glass in classrooms and other spaces. The clearstory glass should be at least 3' high, to allow adequate light to enter classrooms. Glass should be used at entrance doors and other areas where views into rooms, or to outdoor scenery are desired. Use of glass is also an effective solution for breaking up the monotony of passageways.

The glass used in windows should be low-e glass. Reflective glass should not be used.

- Use clear anodized aluminum mullions with double pane low-e glass.
- Use large expanses of glass at building entrances if appropriate.

EXTERIOR LIGHTING

Consistent light fixture types or family of light fixtures in the same finish, light color, and light level should be used for walkways, parking, and open spaces throughout the campus to provide an unified campus. Building lighting should include increased lighting at primary entrances to emphasize the entries and assist with wayfinding at night. Exterior lighting should provide illumination for secure circulation throughout the campus in the evenings. Lights will be on motion sensors and maintain lower light levels when areas are not occupied. Lighting should illuminate the space from the ground to 6 feet above to allow for observation of approaching individuals. Building lighting should include increased lighting at primary entrances to emphasize the path to the buildings at night. Parking lot lighting should provide consistent illumination for pedestrian and vehicular circulation and allow for clear camera monitoring of all areas of the lots.

- Lighting fixtures should be LED fixtures or other proven energy efficient lighting systems can also be considered. Other options should be reviewed with District.
- Provide lighting for safe and secure night time use of the campus. Include consistent lighting on circulation pathways with a fixture every 25-30 ft. providing illumination of a person's face 30 ft. away.
- Use increased lighting at primary entrances.
- Locate lights in areas where they can be easily maintained.
- Avoid placing lights in ceilings over stairs.
- Make provisions for lighting special outdoor performances, activities, and events.
- Design site lighting to minimize or shield light from adjacent neighborhoods and nature preserves.
- Prohibit exposure of habitat and astronomical observation areas to high-frequency spectrum lighting.
- Refer to Section 4 for specific light standards.

HANDRAILS

The use of tube steel handrails around campus creates a cohesive design approach along stairs and ramps. New handrails should be similar in nature, using bent tube steel, in simple shapes and forms. Rails can be filled with stainless steel cables or horizontal stainless steel members. The design emphasis should remain as a horizontal element.

- Choose railing styles that add to the cohesive quality of the campus.
- Use bent tube steel in simple shapes and forms.
- Avoid painted handrails

CONCRETE STAIRS + PAVING

Concrete is typically used for walkways and stairs. Color, detailing, or use of alternate materials can enhance the quality of design. Integral colored concrete walkways (buff color), with edge detail such as a rough-cut stone block can enhance the level of quality. Concrete pavers, in natural buff colors can also enhance the hardscape but must be easy to maintain. Stairs, planter walls and areas for seating should be integrated into the paving design. The design team should design integral impediments to destructive behavior (i.e. 'v' grooves in low walls) and not rely upon 'after the fact' solutions (i.e. development of skateboard blocks) to solve these types of problems.

- Use edge detailing on colored concrete.
- Integrate stairs, planter walls, and seating into paving design.

Part G
GRAPHICS + SIGNAGE

CAMPUS WAY-FINDING + SIGNAGE

By its nature, campus way-finding must be designed holistically and be aligned with the system of campus gateways, circulation linkages, and destinations. Because campuses are developed incrementally, it is important for each design team to understand how specific campus facilities and circulation elements function to welcome students and visitors into the campus and convey them to their destinations. It is especially critical to emphasize clear communication of universally accessible routes and alternatives.

- Understand the campus-wide way-finding plan and how it addresses the requirements for all facilities and elements of the campus circulation systems.
- Understand how each building and site improvement project functions as a part of the campus-wide fabric and include the appropriate way-finding elements in the project scope.
- Support clear way-finding and direct connectivity for users with mobility limitations.
- Use trees and plant material and architectural elements to assist in campus way-finding.
- Incorporate educational and interpretive signage to highlight public art, sustainable facilities, and other features.

BUILDING NAMES, WAY-FINDING, + SIGNAGE

BUILDING NAMES

The current building graphics system is based upon a letter and numbering system and was designed to facilitate student orientation on campus. The College should maintain a consistent approach to its building designation system and may want to consider a system which designates buildings by a functional name. Typically on college campuses, buildings are referred by their name, i.e. Smith Hall or Science Technology Mall then by the room number. This is a much friendlier way to find buildings on campus.

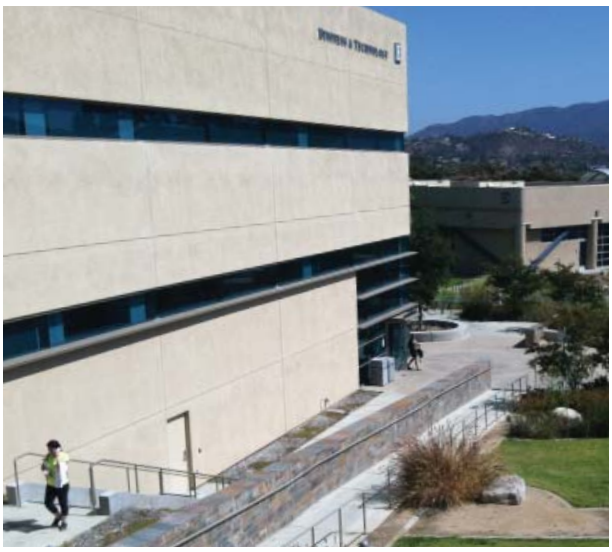
SIGNAGE

Signage throughout campus should be consistent, using the same format, font, scale and organization. An overall set of standards should be developed for use by staff, designers, architects and other personnel. For additional information and details. (see Section 4)

TYPOGRAPHY

Typography should be consistent and harmonize with other building elements. All interior signage uses the same font and consistent layout. Additional information will be provided in Section 4.

- Place building labels in highly visible areas of exterior building walls with consistent type font established for the campus.



Part H
CAMPUS SITE FURNITURE

FURNITURE

The furniture used on campus should have a common theme of a 'setting in the park'. Benches and site furniture should be placed along covered walkways, adjacent to major building entrances and in areas where students naturally congregate. The benches used within the "Central Park" are concrete, with a style from the 1970s.

Natural rock ledges or natural rock benches should continue to be used within the "Central Park" and extending into the hillside and building entrances. These areas provide 'outdoor classroom' experiences for the students and add significantly to the natural setting of the campus. Additional information will be provided in Section 4.

- Integrate campus furniture with the landscape and hardscape when appropriate.
- Be consistent with campus architectural elements when choosing furnishing styles.
- Place movable outdoor furniture only in courtyards or controlled and highly visible areas.
- Provide convenience outlets integrated into adjacent walls.
- Provide trash and recycling receptacles along main circulation routes and building entrances.
- Use receptacles that are consistent with campus standards (see Section 4).
- Use metal mesh with 2 matte finish loose outdoor tables and chairs. Avoid pedestal base on tables.
- Skateboard deterrents shall be a part of any bench design, not applied hardware afterwards.

SHADE STRUCTURES

Provide shades structures at key locations to help create comfortable outdoor gathering and resting places, especially during the hottest time of the day and year.

- Consider the location of shade trees and building overhangs when planning the location of shade structures and use these elements in concert to provide the desired level of shading along pedestrian linkages and in outdoor gathering spaces.
- Avoid shading gathering spaces from the morning sun, especially during the cool weather season.
- Be consistent with campus architectural elements when designing shade structures.
- Use shade structures to provide intermittent resting points along exposed primary pathways.
- Include overhead shade structures at dining plazas and gathering spaces when shade is needed.
- Soften/integrate building and open space with trellis elements.

STUDENT + PUBLIC ART

Seek opportunities to collaborate with faculty, students, and the community to develop public art exhibits and installations and integrate venues for the performing arts into building and site improvement projects. Art should be planned into each project with specific locations and concepts determined.

- Provide opportunities for the display of art in buildings, courtyards, and gathering areas throughout campus.
- Integrate art within the landscape and public spaces.
- Locate in a highly visible and secure area.
- Provide interpretive signage and lighting when appropriate.
- Provide support for technology, audio/visual, and lighting for outdoor performance venues.

Part I
PARKING + CIRCULATION

Adequate parking and good circulation flow are key factors that benefit students daily and promote their access to the educational opportunities at Cuyamaca College. The design of the campus parking and circulation system presents many opportunities for sustainable design. Focus on reducing the use of energy and resources, reducing heat islands, maintaining local and regional water quality, facilitating alternate means of transportation, and providing for the comfort and safety of students and employees.

DRIVEWAYS

- Place primary vehicular routes away from primary pedestrian circulation.
- Employ round-abouts to improve flow at busy intersections.
- Separate pedestrian and bicycle circulation from vehicular routes.
- Minimize pedestrian crossings.
- Design driveways to maximize storm water runoff and capture into adjacent detention areas.

PASSENGER LOADING ZONES + BUS STOPS

- Separate loading zones from main vehicular routes.
- Provide adequate stacking space to accommodate waiting vehicles.
- Provide seating, shade, refuse receptacles, and access to restrooms.

BICYCLE PATHS + STORAGE

- Connect to the public network of bicycle paths.
- Provide bicycle routes throughout the campus.
- Separate bicycle routes from vehicular and pedestrian circulation.
- Provide consolidated bicycle storage at key portals on campus and integrated with new and existing facilities.
- Use bicycle storage that is consistent with campus standards (see Section 4).
- Locate bicycle storage on hardscape or gravel.

PARKING

Surface parking lots are located on the eastern side of campus, while most buildings are on the west side. Staff and students currently must walk long distances to the "Central Park". Pathways within parking lots should be added, with shade trees and other elements to help safely guide people to campus. Multiple smaller parking lots should also be designed in association with specific buildings for accessible and short-term zone parking. Directional and informational signage should be integrated into the surface parking lot designs.

- Provide adequate stacking space and multiple entrances/exits to parking areas.
- Direct pedestrians to walkways that connect parking areas to campus portals.
- Screen parking areas with landscape elements.
- Use appropriate trees and other landscape elements to break up large expanses of surface parking.
- Orient parking lots to maximize storm water runoff capture into adjacent detention areas.
- Orient parking lots to maximize accessibility to buildings and major areas of campus.
- Locate canopy trees along walkways to provide relief the sun and reduce the heat island effect.
- Provide preferred parking for carpools and alternative fuel vehicles.
- Provide electric vehicle charging stations.

HISTORY OF THE GROSSMONT COLLEGE CAMPUS

The Grossmont College campus was originally developed on a hilltop site. The hill was graded to create a flat mesa, and spectacular panoramic views can still be seen to the east and west. The majority of the adjoining lands are undeveloped with one exception. A residential neighborhood has been developed south of the campus. The central area of the campus has been landscaped with beautiful plantings and mature trees. The campus is surrounded with surface parking lots and a perimeter access road. Approximately 46 acres of the site are undeveloped due to steep slopes. Much of this land was the result of the fill created when the hill was leveled for development. Mission Trails Regional Park borders the Grossmont College campus to the west. Preservation of the flora and fauna on the steep hill is a goal.

ORIGINAL ARCHITECTURE STYLE

The existing campus was developed during the 1960s when the site design style of low-density 'garden cities' was in fashion. The two central buildings on campus are the Student Services/Administration Building and the Library/Tech Mall, with a formal geometry and monumental scale elements. Many of the buildings on campus are all single story with many doors, providing direct access to rooms from the outside.

Buildings have a distinct horizontal emphasis and 'ground-hugging' look, with wide overhangs extending out to landscapes. Courtyards are commonly used and buildings are used to form outdoor rooms of different scale and quality.

Fenestration typically emphasizes the horizontal quality of the buildings and bronze-tinted glass is often used. The Bermuda style roof is most commonly used and is essential to the image of the campus. Primary materials include concrete structure, roofs and walls, steel beams, asphalt shingle roofings, concrete block walls and planters, metal grillwork, and tile accents.

Since the year 2000, several of the original buildings have been reconstructed and new buildings have been constructed. The designers of these building projects were guided by the 2003 Grossmont College Architectural Design Guidelines. As a result, the campus architecture is evolving.

STUDENT IMPRESSIONS

Grossmont College is a commuter school. The students enjoy the location of the campus relative to home and work. To students, the campus feels secure, the cost to attend is reasonable, and the general campus appearance is pleasant. The 2003 Architectural Design Guidelines reported that at the beginning of the term, students are frustrated at the lack of adequate and convenient parking. Since that time, the construction of the campus parking structure has significantly increased the campus parking capacity.

CHARACTERISTICS OF COLLEGE CAMPUSES

Many campuses in Southern California have returned to their core historical design to promote a unified image of the campus. Examples include the University of California at Los Angeles campus, where the core buildings in the central quad were designed in the Romanesque style in the 1920s. Within the last 10 years, UCLA has been using the brick and limestone detailing within new buildings and paving. The use of arched passageways, vertical window emphasis, horizontal brick details, limestone at the building base and windowsills, as well as the use of similar paving material, has tied the newly developed edges of the campus to the central core.

Similarly, at the Claremont Colleges, the historic buildings are a combination of two-story courtyard buildings connected with a formal grid of open spaces and gardens. The use of landscaping and hardscape paving and walls connects the individual campuses. The buildings are off-white plaster with Spanish tile roofs. These design techniques and materials have been repeated throughout the campuses, with the result of a cohesive and spectacular visual image. At the Claremont Colleges, the local community uses the gardens and facilities for events and weddings; they attend lectures and visit the galleries and museums. The colleges have become a focal point within the town.

The use of a cohesive building design promotes the identity of a campus as a unique institution, different from other campuses. This visual integrity of design and materials promotes student, faculty, staff, and alumni connections to the college. Creating a beautiful campus also promotes the connection to the community and their use of the campus.

CAMPUS SETTING + CHARACTER

FIRST IMPRESSIONS

The formal entrance to campus at Campus and Highwood Drives is a strong 'first impression' for visitors to the campus. The street is lined with an allée of trees, a grass lawn and historic pedestal mounted light fixtures. Unfortunately, few students never see it since the primary auto arrival is from the 125-Freeway exit. All entrances do not adequately welcome students, staff, and community members or create a positive first impression.

Presently, the primacy of the central quad of the campus is not evident, nor is it a formal entrance. For those who use the 125-Freeway exit, a 'sea' of surface parking that surrounds the campus buildings is the first impression of the College.

GROSSMONT COLLEGE CHARACTERISTICS

The Grossmont College campus presents opportunities, and challenges. Among its assets are the following.

- The campus is very visible and presents an attractive face to the community.
- The campus is well zoned and circulation is clearly organized.
- The college is concluding a successful building program, which provided new and reconstructed facilities.

Most classrooms currently open directly to the landscape, open space and courtyards. These openings of the building in a central courtyard enhance the cohesive feeling of being on a college campus. Openings surrounding the buildings are convenient to the student, but also encourage students to 'go to class and then leave'. Although some students prefer to attend class and then leave for the day, others desire to remain on campus between and after classes. A campus that promotes student activities and creates an atmosphere for students who choose to stay is desirable.

Currently, building groupings on campus do not have a main entrance and courtyards do not have multiple, clear entrances. Many buildings do not include uses on the ground floor that connect students from inside buildings to outdoor spaces. Ideally, students should be seen studying together at a library table, browsing books at the bookstore, or getting coffee at the café. This is where campus life (student interaction and connections) are made.

CAMPUS DEVELOPMENT CHALLENGES

To prepare for the future and encourage student life on campus, the campus must be designed to address these challenges.

- Make visible from public open spaces various campus activities: library, reading rooms, bookstore, cafeteria, faculty offices, message boards and galleries on the ground floor.
- Create buildings which reinforce courtyards with entrances to classrooms and other spaces from within the courtyard.
- Minimize placement of doors and openings on the outer perimeter of the campus.
- Draw students quickly to the core of the campus from the perimeter parking areas.
- Use a building breezeway to connect courtyards or serve as a building pass-through.
- Emphasize existing pedestrian routes by orienting new building entrances with them.
- Maximize functional space and eliminate non-functional space, focusing on the replacement of temporary facilities and aged permanent facilities.
- Accommodate future growth on the available campus land area by increasing the density of campus development.
- Build upon and extend campus circulation, connectivity, and universal accessibility; to better serve areas along the edges of the campus.
- Create outdoor gathering space that is scaled for student engagement and interaction.
- Integrate sustainability and environmental quality, comfort, and security into the design of the campus.

SUMMARY OF THE CAMPUS DEVELOPMENT CONCEPT

Grossmont College has developed over time into a well-organized campus, built around primary north-south and secondary east-west pedestrian axis. Recent projects have transformed the Library/Tech Mall and other buildings that occupy the central zone of the campus core and created an intimate quad in the Health Sciences Complex off the more formal public green area of the central zone. This is reminiscent of the Jeffersonian Academic Village Plan at the University of Virginia. The Jeffersonian Plan is centered on a primary axis that terminates at the library. Major circulation is parallel to this axis while cross circulation is perpendicular to this axis and links the formal central lawn with more intimate quads that serve the classrooms (reference the 2013 GCCCD Facilities master plan).

Key Elements of the Academic Village Concept:

- The library is the heart of the campus. It is centrally located and surrounded by interdisciplinary building clusters.
- Major circulation is parallel to the formal campus axis through pathways along the edges of the library and formal library side yards.
- Cross-disciplinary circulation is perpendicular to the major axis and connects the major academic quads.
- Academic exterior zones are adjacent to classrooms and are program-specific to each building cluster.
- Building clusters are accessed from the academic quads and are connected to the formal north-south paths creating a logical campus circulatory fabric.

Part B
GOALS + OBJECTIVES

DESIGN GOALS

Campus design should be academically focused but with design appropriate to the individual campus setting. Spaces should be student-centric and cater foremost to the needs of students.

Buildings should be architecturally appropriate within the constraints of the funding for community college buildings. They must be technologically visionary-able to accommodate the technology of the present but remain flexible for the technology of the future. Designs should be fiscally responsible and completed within the scope and funding standards. Future operating costs should be minimized and this should be worked into the planning and design of the campus. Facilities and open spaces should be designed to deter and discourage inappropriate activities. In this respect, spaces should always promote the safety of students, faculty, staff, and visitors.

CAMPUS DESIGN OBJECTIVES

The purpose of these design guidelines is to build upon the unique visual history of the campus buildings built since the 1960s, as well as the beauty of the natural surroundings. These design guidelines set conceptual standards for new buildings and open space and are intended to be an evolving document. As campus buildings are added, a consistent approach to building siting, connected covered walks, and colors/materials will result in a unified, coherent campus that is inviting to students and retains a significant visual impression.

As part of the 2013 facilities master planning process, the following Campus Design Objectives were updated through discussions with the Grossmont College Extended Master Plan Task Force. The input of the Task Force expresses the needs and insights of stakeholders with day-to-day experience with working and learning on the campus.

Campus Design Objectives include:

- New buildings should fit within the campus community, creating a sense of visual unity with the buildings from the 1960s.
- New buildings should be respectful of and compatible with the historical aspects of the original campus buildings, designed in a contemporary manner.
- Design elements and materials of building, landscaping and walkways should place emphasis on creating a cohesive and connected campus design.
- New buildings and development should ensure the financial viability of the College as a whole, i.e. new buildings should be cost effective to build and maintain.
- Create a unique destination that reflects Grossmont College's heritage, quality, and students.
- Provide reinforcement to Central Campus, a place where students gather - a natural meeting place.
- Make public spaces attractive (safe, convenient, clean, interesting, human-scaled); design existing spaces to be used for new and existing public events. Provide appropriate furniture and technology connectivity.
- Enhance the connection to surrounding uses, establishing view corridors to significant buildings and entrances.
- Enhance the connection to the environment, the surrounding hills, and valley vistas.
- Design for the sustainable and high-performance operation of open spaces and buildings.
- Increase the development density of the campus to use the limited land area efficiently.
- Design for a collegiate-scaled campus.
- Create quality indoor environments for students and employees—considering aesthetics, ergonomics, flexible use, acoustics, indoor air quality, and resource efficiency.
- Support learning anytime and anywhere throughout the campus by integrating academic and facilities programming and creating interactive landscapes.
- Incorporate student and public art into the campus environment.
- Design with an awareness of environmental conditions to maximize comfort and health.
- Design for universal accessibility to all facilities and services.
- Design the campus to promote safety and security, including fire safety of the site.

Part C
SPECIFIC DESIGN GUIDELINES

SPECIFIC DESIGN GUIDELINES

Grossmont College has a unique opportunity. Many buildings around Southern California from the 1960s are being torn down or modernized. This is happening at the same time that the 'mid-century Modern' design is finally being recognized as a significant architectural movement.

The core of buildings at Grossmont College contains quality design elements with important architectural features. These original campus buildings from the 1960s were designed with both a formal geometry and with similar materials. Given this opportunity, new campus buildings should follow the precedent set by these historic buildings. New buildings and open spaces should be designed, not to replicate or be constrained by history, but in a contemporary context with elements of the campus history.

The design elements that are repeated include the two-story columns with the horizontal roof line, wide overhanging eaves. Materials such as buff-colored concrete block, painted concrete structures, tile, anodized aluminum window mullions, and glazing should be used.

SITE DESIGN

EDUCATIONAL RESOURCES

Nature Preserve

- Create overlooks for users to enjoy the Preserve.
- Restore native habitat at Preserve perimeters as part of the campus landscape.
- Create/restore trailhead connections to the Grossmont campus.
- Integrate interpretive and educational signage at trailheads and overlooks.
- Create opportunities for students to restore and maintain the Nature Preserve through class curriculum or as part of extracurricular groups.

Learning Gardens + Flexible Outdoor Space

- Emphasize the use of low water use, low maintenance native and Mediterranean material.
- Demonstrate storm water management elements at landscape edges and within landscape areas.
- Integrate the academic programming of indoor and outdoor space.
- Provide a range of flexible spaces to accommodate a variety of learning activities.
- Provide appropriate support utilities and technology connectivity.
- Highlight sustainable campus facilities and operations with displays and interpretive signage.

CAMPUS GATEWAYS

Entering the campus

- Use specimen trees to provide a ceremonial entrance to campus.
- Provide complimentary and accent planting at campus monumentation.
- Provide safe, clear, and accessible paths for pedestrians entering and exiting the campus in both day-to-day and emergency situations.
- Use consistent paving types, colors and patterns to delineate pedestrian entrances into campus.
- Orient pedestrian entries to maximize pedestrian safety.
- Ensure that pedestrian entrances are well lit and include appropriate signage for way-finding.
- Provide universally accessible paths of travel.
- Provide linkages that anticipate the shortest path of travel between entries, campus open spaces, and buildings.

PEDESTRIAN LINKAGES

- Build upon the existing system of pedestrian linkages and provide universal accessibility between all campus facilities and open spaces.
- Strengthen and integrate the way-finding system to align with the hierarchy of pedestrian linkages.
- Design pedestrian linkages to accommodate the anticipated level of use.

Traversing Parking Areas

- Provide pedestrian paths that are separated from vehicular routes for safe circulation through parking lots.
- Employ consistent use of iconic plant material or vertical elements and lighting to visually identify pedestrian paths.
- Minimize crossing of pedestrian and vehicular paths and design necessary crossing points to promote safety.
- Provide shaded seating at intervals along pedestrian paths through large parking lots.

Portals

- Limit the number of primary building entries from outside of campus.
- Direct students from parking areas to the campus center.
- Organize room entrances around a central interior quad or internal passageway.
- Use plant material to delineate portals into campus.
- Use consistent paving types, colors and patterns to delineate portals into campus.
- Incorporate architectural elements such as shade structures and/or pilasters at key entry points.
- Integrate all landscape elements with lighting and signage as appropriate.

Linking the Campus Core

- Incorporate emergency and maintenance access with pedestrian pathways.
- Use hardscape and landscape elements to soften appearance of emergency and maintenance access.
- Link gathering spaces or quads at key intervals along campus pathways.
- Provide iconic plant palette along campus core linkages.
- Use consistent paving types, colors, and patterns to connect campus core linkages.
- Integrate all landscape elements with lighting and signage as appropriate.
- Provide shaded resting places at intervals along long paths to perimeter parking and facilities.

Vertical Linkages
- Provide elevators stairs, ramps and bridges as necessary to overcome obstacles such as roadways, elevation grade changes or conflicting uses.
- Locate vertical linkages in exterior locations that can be accessed when buildings are closed.

OPEN SPACES
- Create varying scales of open spaces - open spaces should serve different purposes.
- Orient building entrances toward open spaces and quads.
- Provide opportunities for a diverse range of activities.
- Use streetscape imagery, consisting of regularly spaced lights, benches, trash cans, and consistent surfaces.
- Maintain consistency with common materials, street amenities, and site furnishings.
- Make plaza areas inviting during the day and at night.
- Link outdoor public spaces with circulation.
- Use landscaping to emphasize views/direction.
- To the extent that it is practical, ensure that open spaces are universally accessible.

Quads and Courtyards
- Use trees for shade and vertical elements.
- Incorporate low water use, low maintenance native and climate appropriate plant material.
- Use specialty paving to create unique spaces.
- Integrate all landscape elements with lighting and signage as appropriate.
- Incorporate site furniture as appropriate for the specific use.
- Use intimate-scaled courtyards to promote multi-level student, faculty, and community interaction.
- Orient buildings with corridor views leading to the courtyard.

ACTIVE GROUND-FLOOR USES
- Make visible from public spaces various campus activities: library, reading rooms, bookstore, cafeteria, faculty offices, message boards and galleries on the ground floor, toward public spaces.
- Create entrances to classrooms and other spaces from within the courtyards/quadrangles.
- Draw students directly to the core of the campus from the perimeter parking areas.

VIEW OPPORTUNITIES
- Combine new points of entry with 'great rooms'. (pedestrian friendly spaces that are created at the exterior of building groupings) capitalizing on scenic views.
- Capture views between buildings to the surrounding hills and valleys.

ARCHITECTURAL DESIGN

BUILDING MASS + ORIENTATION
- Emphasize the horizontal plane of the roof.
- Use large overhangs.
- Use articulated facades.
- Emphasize main entrance to building.

BUILDING ENTRANCES
- Signage should be incorporated into the design of building entrances to facilitate way-finding.
- Use a primary, visible, and appropriately scaled entrance to the building.
- Emphasize building height.
- Use vertical columns.
- Use full-story glass on building facades.
- Use side-lights at doorways.
- Create an inviting appearance with transparent glazing and glass doors.
- Ensure that entrances are well-lit.
- Encourage articulated rather than flat facades.

EXPRESSION LINES
- Use uniform palette of materials for building walls.
- Consider using differing materials at the floor and roof lines to emphasize a horizontal appearance.
- Emphasize horizontal elements, banding, etc.

ROOFTOPS
- Use architectural metal roofs as a design feature.
- Emphasize horizontal expression.
- Paint the underside of overhangs off-white.
- Minimize visibility of obtrusive equipment.
- Use high-albedo cool roofing surface materials.
- Use large overhangs to provide shade from the summer sun and allow passive heating in the winter.
- Design roofs to allow for daylight harvesting strategies.

COVERED WALKWAYS
- Include covered walkways attached to buildings.
- Do not obscure or block overhang passageways.
- Do not have site planters within overhang drip lines.
- Include covered structures for circulation paths when appropriate.

OTHER DESIGN FEATURES
- Incorporate public or student art into the campus design.

MECHANICAL EQUIPMENT
- MEP equipment and venting equipment should not be openly visible.
- Roof-mounted equipment should be shielded from ground view and from above views from higher levels.

VENDING MACHINES
- Vending equipment should not be visually intrusive.
- Vending areas should be shielded from the sun and weather.
- Vending areas should be safe, secure and well lit.
- Avoid placement in deep alcoves or secluded areas for security.

TRASH ENCLOSURES + LOADING FACILITIES
- Locate trash and recycling containers in enclosures.
- Plan the location of trash and recycling facilities to allow easy cleaning and management.

INDOOR ENVIRONMENTAL QUALITY
- Design to a high standard of aesthetic quality.
- Design for universal accessibility and clear way-finding through all of the indoor public spaces.
- Reduce sources of indoor air pollution such as cleaning and pest control chemicals and building materials, equipment, and furniture that emit volatile organic compounds and other pollutants.
- Design for effective ventilation and thermal comfort.
- Design acoustic environments that reduce distracting noise and improve aural communication.
- Design for optimal lighting quality and reduced glare.
- Design for ergonomic comfort.
- Provide occupants with a connection to the outdoors by providing glare-free natural lighting and views.
- Design buildings to be safe and secure environments for learning using CPTED principles.
- Equip buildings for monitoring and optimizing the indoor environment.

ENERGY + WATER
- Design in accordance with the GCCCD standards for energy and water use intensity.
- Employ the building occupants at the start of the programming process for input.
- Explore and select strategies that take advantage of synergies to optimize building performance.
- Equip buildings for monitoring and optimizing energy and water using systems.
- Explore opportunities to integrate photovoltaic systems into the design of facilities.

ENVIRONMENTALLY PREFERRED MATERIALS
- Build and furnish with durable and easily maintained materials.
- Build with materials that are locally sourced, rapidly renewable, contain recycled content, and are likely to be recycled or reused.
- Maintain healthy indoor air quality by selecting appropriate building materials and furnishings, with a proven track record for lantern performance.

WASTE REDUCTION + MANAGEMENT
- Follow best practices for the management of demolition materials and construction waste.
- Explore on-campus opportunities to reuse materials from demolished facilities and site work.
- Design buildings with space to support the campus recycling plan.

EXTERIOR BUILDING MATERIALS

CONCRETE BLOCK WALLS, CONCRETE COLUMNS, OTHER BUILDING MATERIALS
- Buff-colored large concrete block walls
- Concrete roof structures with coffered ceiling detail, painted off-while
- Concrete columns in 'X' and 'T' shapes
- Green standing seam metal sloped roofs
- Anodized aluminum window mullions (at large window wall systems)
- Painted aluminum window mullions (at clerestory and individual windows)
- Double Pane Low-e glass
- Limestone, or other similar natural materials in buff, off-white, or other earth tones
- Beige brick
- Exterior wall tile in buff, off-white, or other earth tones

SPECIFIC DESIGN GUIDELINES

FENESTRATION + GLASS WALLS

- Use anodized aluminum mullions with low-e glass.
- Use large expanses of glass at building entrances.

EXTERIOR LIGHTING

- Use increased lighting at primary entrances.
- Lighting fixtures should be LED fixtures or other proven energy efficient lighting systems can also be considered. Other options must be reviewed by District.
- Provide lighting for safe and secure night time use of the campus . Include consistent lighting on circulation pathways with a fixture every 25-30 ft providing illumination of a person's face 30 ft away.
- Avoid the use of in-ground lights.
- Locate lights in area where they can be easily maintained.
- Avoid placing lights in ceilings over stairs.
- Make provisions for lighting special outdoor performances, activities, and events.
- Design site lighting to minimize or shield light from adjacent neighborhoods and nature preserves.
- Prohibit exposure of habitat and astronomical observation areas to high-frequency spectrum lighting.

HANDRAILS

- Choose railing styles that add to the cohesive quality of the campus.
- Use bent tube steel in simple shapes and forms.
- Avoid painted handrails.

CONCRETE STAIRS + PAVING

- Use edge detailing on colored concrete.
- Integrate stairs, planter walls, and seating into paving design.

GRAPHICS + SIGNAGE

CAMPUS WAY-FINDING + SIGNAGE

- Understand the campus-wide way-finding plan and how it addresses the requirements for all facilities and elements of the campus circulation systems.
- Understand how each building and site improvement project functions as a part of the campus wide fabric and include the appropriate way-finding elements in the project scope.
- Support clear way-finding and direct connectivity for users with mobility limitations.
- Use trees and plant material and architectural elements to assist in campus way-finding.
- Incorporate educational and interpretive signage to highlight public art, sustainable facilities, and other features.

BUILDING NAMES, WAY-FINDING, + SIGNAGE

- Place building names in highly visible areas of exterior building walls.
- Building and room identification should be consistent and promote ease of way-finding.
- Coordinate with building and room numbering standards.

CAMPUS SITE FURNITURE

FURNITURE

- Be consistent with campus architectural elements when choosing furnishing styles.
- Place movable furniture in courtyards or controlled areas.
- Use metal mesh loose tables and chairs. Avoid using pedestal base tables.
- Integrate site furniture within the landscape and hardscape when appropriate.
- Consider boulders for seating elements.
- Provide trash and recycling receptacles along main circulation routes and building entrances.

SHADE STRUCTURE

- Consider the location of shade trees and building overhangs when planning the location of shade structures and use these elements in concert to provide the desired level of shading along pedestrian linkages and in outdoor gathering spaces.
- Avoid shading gathering spaces from the morning sun, especially during the cool weather season.
- Be consistent with campus architectural elements when designing shade structures.
- Use shade structures to provide intermittent resting points along exposed primary pathways.
- Integrate overhead shade structures at dining plazas and gathering spaces.
- Avoid using wood for shade structures.

STUDENT + PUBLIC ART

- Provide opportunities for the display of art in buildings, courtyards, and gathering areas throughout campus.
- Integrate art within the landscape and in site furnishing and signage elements when appropriate.
- Provide interpretive signage and lighting when appropriate.

- Provide support for technology, audio/visual, and lighting for outdoor performance venues.

PARKING + CIRCULATION

PASSENGER LOADING ZONES + BUS STOPS

- Separate loading zones from main vehicular routes.
- Provide adequate stacking space to accommodate waiting vehicles.
- Provide shade shelters and trees at bus stops.
- Provide benches and refuse receptacles at bus stops and loading zones.

BICYCLE PATHS + STORAGE

- Connect to the public network of bicycle paths.
- Provide Class I bicycle paths and signage along campus loop road.
- Provide consolidated bicycle storage at key portals on campus.
- Use bicycle storage that is consistent with campus architectural elements.
- Use bicycle storage made from sustainable materials for best cost value.
- Place bicycle storage in hardscape or gravel.

PARKING

- Soften parking areas with landscape elements.
- Utilize low water use, low maintenance native and climate appropriate plant material in landscaping.
- Provide trees in parking lot medians and islands to reduce heat island effect.
- Integrate storm water features into the parking lot medians and islands.
- Maintain landscape to avoid obstructing vehicular lines of sight.
- Provide preferred parking for carpools and alternative fuel vehicles.
- Provide electric vehicle charging stations.

CAMPUS PERIMETER

- Projects to alter or improve the Perimeter Road must provide a safe pedestrian route along the side of the road.
- Pedestrians should be directed to safe crossing points along primary circulation routes.
- Manage the flow of storm water to prevent erosion at the campus edge.
- Incorporate tree planting along loop road.
- Provide enhanced slope planting along roadways and campus edges.

EDUCATIONAL RESOURCES

NATURE PRESERVE

Provide safe access at the crossing of the Perimeter Road with pedestrian-controlled signaling and clear visibility to drivers. Provide a stabilized and accessible path that is separated from the Perimeter Road and connects a series of observation areas along the rim of the arroyo where small classes and groups can gather.

- Create overlooks for users to enjoy the Preserve.
- Restore native habitat at Preserve perimeters as part of the campus landscape.
- Create/restore trailhead connections to the Grossmont campus.
- Integrate interpretive and educational signage at trailheads and overlooks.
- Create opportunities for students to restore and maintain the Nature Preserve through class curriculum or as part of extracurricular groups.

LEARNING GARDENS + FLEXIBLE OUTDOOR SPACE

Gardens in the exterior academic quads and campus core will follow the precedent set at the college to express thematic influences from academic disciplines.

- Emphasize the use of low water use, low maintenance native and Mediterranean material.
- Demonstrate storm water management elements at landscape edges and within landscape areas.
- Integrate the academic programming of indoor and outdoor space.
- Provide a range of flexible spaces to accommodate a variety of learning activities.
- Provide appropriate support utilities and technology connectivity.
- Highlight sustainable campus facilities and operations with displays and interpretive signage.

CAMPUS GATEWAYS

Entry monument signage and gateway treatments are recommended to strengthen the college's presence within the community and enhance way-finding to the campus, including the exploration of signage in a location that is visible from the SR-125 freeway. Design the gateways and way-finding features to easily identify entrances and welcome pedestrians and bicyclists.

ENTERING THE CAMPUS

All who enter the campus must be equally welcomed and accommodated. Provide safe separation between pedestrians, vehicular, and bicycle circulation.

- Use specimen trees to provide a ceremonial entrance to campus.
- Provide complimentary and accent planting at campus monumentation.
- Provide safe, clear, and accessible paths for pedestrians entering and exiting the campus in both day-to-day and emergency situations.
- Use consistent paving types, colors and patterns to delineate pedestrian entrances into campus.
- Orient pedestrian entries to maximize pedestrian safety.
- Ensure that pedestrian entrances are well lit and include appropriate signage for way-finding.
- Provide universally accessible paths of travel.
- Provide linkages that anticipate the shortest path of travel between entries, campus open spaces, and buildings.

PEDESTRIAN LINKAGES

The Grossmont College campus core has clear, accessible, and well-organized circulation. There is a need to strengthen and extend the linkages to the campus perimeter and Exercise Science and Wellness outdoor instructional fields, especially in areas across Perimeter Road. Careful consideration must be given to their placement and design with regard to safety and security, universal accessibility, comfort and protection from the elements, and aesthetic quality. The network of linkages must be designed holistically to reflect a logical hierarchy, to accommodate the level of anticipated use, and supported by a campus wide way-finding system.

- Build upon the existing system of pedestrian linkages and provide universal accessibility between all campus facilities and open spaces.
- Strengthen and integrate the way-finding system to align with the hierarchy of pedestrian linkages.
- Design pedestrian linkages to accommodate the anticipated level of use.

TRAVERSING PARKING AREAS

Provide safe and universally accessible means for pedestrians to traverse parking lots and reduce conflicts that interfere with the flow of vehicles. In large parking areas, provide tree shade and well lit paths to the campus core. Minimize vehicular crossings and design necessary crossings to maximize the visibility of pedestrians to approaching drivers.

- Provide pedestrian paths that are separated from vehicular routes for safe circulation through parking lots.
- Employ consistent use of iconic plant material or vertical elements and lighting to visually identify pedestrian paths.
- Minimize crossing of pedestrian and vehicular paths and design necessary crossing points to promote safety.
- Provide shaded seating at intervals along pedestrian paths through large parking lots.

SITE DESIGN

PORTALS

Currently, the campus provides a multitude of entries to the campus precinct and individual buildings. A more secure approach may be established by limiting the number of primary entry points to the heart of the campus and not encouraging multiple entries to buildings and/or individual classrooms from the surrounding parking lots and perimeter of the campus.

Portals shall indicate the point of arrival from pedestrian linkages to all destinations such as the campus quads, and Exercise Science and Wellness/athletic fields. An important use of portals on the Grossmont College campus will be to welcome pedestrians coming from the parking lots and passenger loading zones and arriving at these entrances into the campus core. These portals must be welcoming and visible and from across parking lots. Develop a consistent design vocabulary to celebrate these important points throughout the campus. Facilitate the use of portals as decision points for way-finding by grouping horizontal and vertical linkages in their proximity.

- Limit the number of primary building entries from outside of campus.
- Direct students from parking areas to the campus center.
- Organize room entrances around a central interior quad or internal passageway.
- Use plant material to delineate portals into campus.
- Use consistent paving types, colors and patterns to delineate portals into campus.
- Incorporate architectural elements such as shade structures and/or pilasters at key entry points.
- Integrate all landscape elements with lighting and signage as appropriate.

LINKING THE CAMPUS CORE

Building on the system of main north-south pedestrian pathways and east-west crossing pathways into the academic quads and parking, provide safe and universally accessible links to all existing and future campus facilities. Ensure that pathways are designed to accommodate the anticipated level of use including extra width for both service vehicles and pedestrians.

- Incorporate emergency and maintenance access with pedestrian pathways.
- Use hardscape and landscape elements to soften appearance of emergency and maintenance access.
- Link gathering spaces or quads at key intervals along campus pathways.
- Provide iconic plant palette along campus core linkages.
- Use consistent paving types, colors, and patterns to connect campus core linkages.
- Integrate all landscape elements with lighting and signage as appropriate.
- Provide shaded resting places at intervals along long paths to perimeter parking and facilities.

SITE DESIGN

VERTICAL LINKAGES

Although much of the Grossmont College campus sits on a fairly level topographic plane, there is a need to provide access to facilities that are situated on plateaus both above and below the main campus core level. Within the core, there are subtle variations in elevations, especially to parking areas. Accessible paths of travel should link these areas.

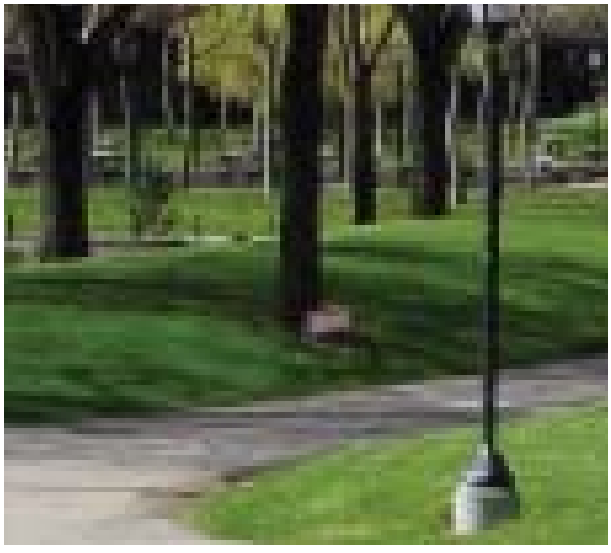
- Provide elevators, stairs, ramps, and bridges as necessary to overcome obstacles such as roadways, elevation grade changes or conflicting uses.
- Locate vertical linkages in exterior locations that can be accessed when buildings are closed.

OPEN SPACES

The geometry of the Grossmont College Campus is formal and rectilinear. This organization of buildings and open space should be used with the development of new buildings and open spaces. Open spaces surrounding buildings should be used to direct views toward buildings, entrances or the surroundings. Views of hierarchical monumental elements in the campus center should be preserved.

The feeling of the 'Southern California Campus' style is enhanced by courtyards, breezeways paths through buildings and centralized connections made between the buildings and open space. New buildings should maintain and enhance this connection within the core/interior of the campus. Multiple stairways and paths should continue to be used to connect buildings. Pathways and ramps should be integrated into the landscape, adjacent to stairs to provide accessibility.

- Create varying scales of open spaces. Open spaces should serve different purposes.
- Orient building entrances toward open spaces and quads.
- Provide opportunities for a diverse range of activities.
- Use street scape imagery, consisting of regularly spaced lights, benches, trash cans, and consistent surfaces.
- Maintain consistency with common materials, street amenities, and site furnishings.
- Make plaza areas inviting during the day and at night.
- Link outdoor public spaces with circulation.
- Use landscaping to emphasize views/direction.
- To the extent that it is practical, ensure that open spaces are universally accessible.



QUADS AND COURTYARDS

The use of courtyard spaces and courtyard buildings should be emphasized as the campus tradition. Courtyards should be an intimate scale, to promote natural gathering and greeting opportunities. Large courtyards promote a 'feeling of being alone' in a large space, which does not promote the safety and security needed throughout the campus. Courtyards of a small scale provide a density of activity, i.e. a place where there are a number of students and staff, promoting a safe and secure environment.

Security considerations for public safety should also be incorporated in the design. Clear lines of sight should be developed to all building entrances to promote an easily accessible and 'self-policed' passage between campus spaces.

The courtyard formed by the Fine Arts Buildings is a good example of a smaller, well-proportioned space. The building is inward oriented, with corridor views leading to the courtyard. The building has deep overhang roofs and covered walkways, which provide for a clear path of travel, shaded walks, and an emphasis on the horizontal massing of the buildings. New buildings in a similar style should be encouraged on the Grossmont College Campus.

Quads and courtyards are intended to be the heart and connective tissue of the academic clusters. Strong physical and visual connections to interior space will naturally attract students to these gathering spaces to study, collaborate, and socialize. The design of these spaces must satisfy the need for seating, connectivity to technology, thermal comfort, and security and safety. They must provide a variety of spaces in order to accommodate many different uses and activity levels. Programming and design of quads must be done with the programming and design of the adjacent academic building clusters to realize the ideal of an integrated design. The Health Sciences Complex serves as a model, using medicinal plants and herbs to fill this intimate courtyard. The scale and multi-level access successfully attract student engagement and interaction.

- Use trees for shade and vertical elements.
- Incorporate low water use, low maintenance native and climate appropriate plant material.
- Use specialty paving to create unique spaces.
- Integrate all landscape elements with lighting and signage as appropriate.
- Incorporate site furniture as appropriate for specific use.
- Use intimate-scaled courtyards to promote multi-level student, faculty, and community interaction.
- Orient buildings with corridor views leading to the courtyard.

ACTIVE GROUND-FLOOR USES

Encourage active uses opening onto or with strong visual connections to the open spaces – providing a 'self-policing' or 'eyes on the street' approach to creating a secure environment. Open visibility to building entries and interior spaces will provide a proactive approach to discourage misconduct, theft, or vandalism.

- Make visible from public spaces various campus activities: library, reading rooms, bookstore, cafeteria, faculty offices, message boards and galleries on the ground floor, toward public spaces.
- Create entrances to classrooms and other spaces from within the courtyards/quadrangles.
- Draw students quickly to the core of the campus from the perimeter parking areas.

VIEW OPPORTUNITIES

Within the context of the Facilities Master Plan, establish strong, direct views throughout the campus, providing a 'legible' and secure environment.

- Combine new points of entry with great 'rooms.' (pedestrian friendly spaces that are created at the exterior of building groupings) capitalizing on scenic views.
- Capture views between buildings to the surrounding hills and valleys.

Part E
ARCHITECTURAL DESIGN

BUILDING MASSING + ORIENTATION

The predominant building style is the single and two-story buildings with a flat or metal sloped roof. The strong emphasis is on the horizontal plane of the roof, with a deep shadow created by the overhang. On two and three-story buildings, the horizontal story line should carry across the building walls. Buildings can also be set back at the second floor level to create a balcony, as long as the horizontal roof plane and overhang are the predominant massing element.

- Emphasize the horizontal plane of the roof.
- Use large overhangs.
- Use articulated facades.
- Emphasize main entrance to building

BUILDING ENTRANCES

The central entrance to buildings should emphasize both the height of the building, the use of exposed vertical columns, and a formal symmetry. The entrances are either an open breezeway or a glass façade on the building. The single building entrance becomes obvious. At the outer edges of the campus, the symmetry of the entrances can shift to asymmetrical, to line up with the visual connections to the core campus and the view corridors.

Existing buildings on the Grossmont College campus use little or no glass at the main entrances. Use of full-story glass on building facades is encouraged, articulating the primary entry and encouraging a 'self-policed' campus environment.

- Signage should be incorporated into the design of building entrances to facilitate way-finding.
- Use a primary, visible, and appropriately scaled entrance to the building.
- Emphasize building height.
- Use vertical columns.
- Use full-story glass on building facades.
- Use side-lights at doorways.
- Create an inviting appearance with transparent glazing and glass doors.
- Ensure that entrances are well-lit.
- Encourage articulated rather than flat facades.

EXPRESSION LINES

Horizontal banding of materials should be used throughout the building walls. Materials should be rectilinear, in a proportion similar to the 4" by 16" buff colored concrete block and should always be used horizontally. The building walls should be a uniform material, with expression of different materials allowed at the floor and roof lines. Horizontal elements, such as clerestory windows and covered walkways should be tied into the banding and use materials similar to that of the building.

- Use uniform palette of materials for building walls.
- Consider using differing materials at the floor and roof lines to emphasize a horizontal appearance.
- Emphasize horizontal elements, banding, etc.

ROOFTOPS

Roofing is highly visible and provides a significant visual amenity. It should be designed with consideration for use and to be visually attractive when viewed from all locations including from above from higher views.

The overhang of the low-sloped roof is the predominant design feature of the roofs on the Grossmont campus. This design element should be used in all buildings. The roof detail should be used to match existing buildings with new green metal standing seam roofs. The underside color of the overhang should be painted off-white.
All obtrusive elements such as vents, bulkheads, and cooling units shall be minimized and finished in materials which are compatible in color and interest to the surrounding building surfaces.

- Use architectural metal roofs as a design feature.
- Emphasize horizontal expression.
- Paint the underside of overhangs off-white.
- Minimize visibility of obtrusive equipment.
- Use high-albedo 'cool' roofing surface materials.
- Use large overhangs to provide shade from the summer sun and allow passive heating in the winter.
- Design roofs to allow for daylight harvesting strategies.

COVERED WALKWAYS

Covered walkways are currently widespread throughout campus, present as large overhangs at the outer edge of buildings. Lighting should be included within covered walks to ensure lighted circulation.

In current applications, planters and/or kiosks are located along the building wall, forcing students and staff to walk outside the covered area, in the sun and rain. Existing planters, if used, should be relocated to outside the drip line of overhangs.

- Include covered walkways attached to buildings.
- Include covered structures for circulation paths when appropriate.
- Do not obscure or block overhang passageways.
- Do not site planters within overhang drip lines.

OTHER DESIGN FEATURES

When possible, some special design features should be incorporated into buildings across the Grossmont College campus to provide additional visual and cultural interest.

Vertical visual elements assist students and visitors with way-finding. Elements such as a campanile, vertical sculptures, and time clocks should be considered. Obelisks and other public art elements are other focal points that add to the campus experience.

• Incorporate public and student art into the campus design.

MECHANICAL EQUIPMENT

All mechanical, electrical, and plumbing (MEP) equipment should be shielded from all views and located within structures that are aesthetically pleasing. Consider views from building windows and higher elevations when determining style, size, and location of equipment screening elements.

- MEP equipment and venting equipment should not be openly visible.
- Roof-mounted equipment should be shielded from ground view and from above views from higher levels.

VENDING MACHINES

Vending machines should be located in shallow alcoves, visually shielded from the main pathways. Vending areas should have roof protection, providing sun and weather protection for the students. The location of vending areas should be reviewed and integrated into the design of new buildings if determined to be appropriate. Consider ease of service as well as security for locations.

- Vending equipment should not be visually intrusive.
- Vending areas should be shielded from the sun and weather.
- Vending areas should be safe and secure and well lit.
- Avoid placement in deep alcoves or secluded areas for security.

TRASH ENCLOSURES + LOADING FACILITIES

Trash bins should be housed in easily locatable enclosures but hidden from view. Areas should be designated for trash and recycling (and green waste). Access should be from the perimeter access road or other service road. Bins should not be placed adjacent to pedestrian walkways.

Loading facilities and docks should be placed adjacent to the service access roads. Careful planning should consider the ability to clean the trash and loading areas, including the management of trash and recycling.

- Locate trash and recycling containers in enclosures.
- Plan the location of trash and recycling facilities to allow easy cleaning and management.

TEMPORARY STRUCTURES

Temporary structures have been used to provide needed facilities on campus. These structures should be removed as quickly as possible and replaced with permanent buildings.

- Replace temporary structures with permanent buildings.

INDOOR ENVIRONMENTAL QUALITY

Indoor environmental quality is a key measure of sustainability and building performance. Design quality indoor environments that contribute to the health, safety, and comfort of building occupants, and enhance learning and productivity over the life-span of the campus facilities.

- Design to a high standard of aesthetic quality.
- Design for universal accessibility and clear way-finding through all of the indoor public spaces.
- Reduce sources of indoor air pollution such as cleaning and pest control chemicals and building materials, equipment, and furniture that emit volatile organic compounds and other pollutants.
- Design for effective ventilation and thermal comfort.
- Design acoustic environments that reduce distracting noise and improve oral communication.
- Design for optimal lighting quality and reduced glare.
- Design for ergonomic comfort.
- Provide occupants with a connection to the outdoors by providing glare-free natural lighting and views.
- Design buildings to be safe and secure environments for learning using CPTED principles.
- Equip buildings for monitoring and optimizing the indoor environment.

ENERGY + WATER

Design new facilities, major renovations, and site improvement projects to minimize the use of water and energy, including electricity and fuel. Use technology to measure and improve energy and water conservation. Refer to Section 4 for specific standards for systems and fixtures.

- Design in accordance with the GCCCD standards for energy and water use intensity.
- Employ the building occupants at the start of the programming process for input.
- Explore and select strategies that take advantage of synergies to optimize building performance.
- Equip buildings for monitoring and optimizing energy and water using systems.
- Explore opportunities to integrate photovoltaic systems into the design of facilities.

ENVIRONMENTALLY PREFERRED MATERIALS

Design new facilities, major renovations, and site improvement projects to use environmentally preferred materials.

- Build and furnish with durable and easily maintained materials.
- Build with materials that are locally sourced, rapidly renewable, contain recycled content, and are likely to be recycled or reused.
- Maintain healthy indoor air quality by selecting appropriate building materials and furnishings. with a proven track record for lantern performance.

WASTE REDUCTION + MANAGEMENT

Design and equip new facilities, major renovations, and site improvement projects to support campus programs to reduce and divert waste from landfills.

- Follow best practices for the management of demolition materials and construction waste.
- Explore on-campus opportunities to reuse materials from demolished facilities and sitework.
- Design buildings with space to support the campus recycling plan.

Part F
EXTERIOR BUILDING MATERIALS

CONCRETE/MASONRY WALLS, CONCRETE COLUMNS, + OTHER BUILDING MATERIALS

The materials listed in the guidelines below should be used with new buildings and throughout open spaces on campus. The use of materials should be designed in a contemporary manner, with reference to the method of application within historic campus buildings. A strong horizontal emphasis throughout the campus is encouraged.

The buff-colored concrete block is 4" high by 16" long. It should be used in new buildings, in a manner that emphasizes its horizontal nature. Expressed concrete columns should be used on the exterior of buildings and at the interior courtyards. Expressed concrete columns should be encouraged throughout the campus.

Other natural materials in earth tones can be introduced into the building and landscape design. Materials such as stone, brick and limestone can be used in horizontal banding, to provide a cap to landscape or stair walls and to create a horizontal line at the base of a building.

The following materials should be used:
- Buff-colored large concrete block walls
- Concrete roof structures with coffered ceiling detail, painted off-while
- Concrete columns in 'X' and 'T' shapes
- Green standing seam metal sloped roofs
- Anodized aluminum window mullions (at large window wall systems)
- Painted aluminum window mullions (at clerestory and individual windows)
- Double pane, low-e glass
- Limestone, or other similar natural materials in buff, off-white, or other earth tones
- Beige brick
- Exterior wall tile, in buff, off-white, or other earth tones

FENESTRATION + GLASS WALLS

Fenestration within the buildings emphasizes the horizontal nature of the buildings with clerestory glass in classrooms and other spaces. The use of clerestory glass should be integrated into the building design, along with the some vertical elements. Natural light in instructional spaces is a priority and should be considered for all interior spaces when possible. Natural daylight will assist in a more energy-efficient design.

The glass used in buildings should include large expanses of glass at the building entrance and large window wall systems. The mullions should be colored to match the tradition of anodized aluminum mullions, with clear or low-e glass. Painted aluminum window mullions complement the buff and off-white materials used in the walls and structure of the building. Glass should be used in the entrance doors, with sidelights and clerestory glass above.

The following materials should be used:
- Use anodized aluminum mullions with low-e glass.
- Use large expanses of glass at building entrances.

WALL ACCENTS

The use of tile wall accents is an effective method to give the exterior of buildings a unique design element or detail. The wall pattern can be simple in nature, with a buff color to blend with surrounding materials.

EXTERIOR BUILDING MATERIALS

EXTERIOR LIGHTING

A historical building and open space light fixture is visible in many places on campus. This light fixture is a long rectangular metal structure, found as a surface mounted fixture in the breezeway of the Administration Building and as a pedestal-mounted fixture in the grassy area of the Central Mall off Highwood Avenue.

This style of fixture could be used as an accent piece in public areas such as courtyards around campus but should be analyzed for light levels, durability, and energy use. Its design can be interpreted in a contemporary manner if essential elements are incorporated into the design. These essential elements include proportions (width to height), grander scale in facades of large buildings, lightweight metal structure, open grid at the top/bottom, and glass lantern grid. Fixtures should use LED bulbs.

Exterior lighting should provide illumination for secure circulation throughout the campus in the evenings. Lights will be on motion sensors and maintain lower light levels when areas are not occupied. Lighting should illuminate the space from the ground to 6" above to allow for observation of approaching individuals. Building lighting should include increased lighting at primary entrances to emphasize the path to the buildings at night. Parking lot lighting should provide illumination for pedestrian and vehicular circulation.

- Lighting fixtures should be LED fixtures or other proven energy efficient systems can be considered. Other options should be reviewed by the District.
- Provide lighting for safe and secure night time use of the campus. Include consistent lighting on circulation pathways with a fixture every 25-30 ft. providing illumination of a person's face 30 ft. away.
- Use increased lighting at primary entrances.
- Locate lights in areas where they can be easily maintained.
- Avoid placing lights in ceilings over stairs.
- Make provisions for lighting special outdoor performances, activities, and events.
- Design site lighting to minimize or shield light from adjacent neighborhoods and nature preserves.
- Prohibit exposure of habitat and astronomical observation areas to high-frequency spectrum lighting.
- Refer to Section 4 for specific light standards.

HANDRAILS

The use of tube steel handrails around the campus creates a cohesive design approach along stairs and ramps. New handrails should be similar in nature, using bent tube steel, in simple shapes and forms. The rails can be filled with stainless steel cables with a stainless riser where guardrail protection is required. The design emphasis should remain as horizontal element.

- Choose railing styles that add to the cohesive quality of the campus.
- Use bent tube steel in simple shapes and forms.
- Avoid painted handrails.

CONCRETE STAIRS + PAVING

Concrete is typically used for walkways and stairs. Color, detailing, or use of alternate materials can enhance the quality of design. Integral colored concrete walkways (buff color), with edge detail such as a rough-cut stone block can enhance the level of quality. Concrete pavers, in natural buff colors can also enhance the hardscape but must be easy to maintain. Stairs, planter walls and areas for seating should be integrated into the paving design. The design team should design integral impediments to destructive behavior (i.e. 'v' grooves in low walls) and not rely upon 'after the fact' solutions (i.e. development of skateboard blocks) to solve these types of problems.

- Use edge detailing on colored concrete.
- Integrate stairs, planter walls, and seating into paving design.

Part G
GRAPHICS + SIGNAGE

CAMPUS WAY-FINDING + SIGNAGE

By its nature, campus way-finding must be designed holistically and be aligned with the system of campus gateways, circulation linkages, and destinations. Because campuses are developed incrementally, it is important for each design team to understand how specific campus facilities and circulation elements function to welcome students and visitors into the campus and convey them to their destinations. It is especially critical to emphasize clear communication of universally accessible routes and alternatives.

- Understand the campus-wide way-finding plan and how it addresses the requirements for all facilities and elements of the campus circulation systems.
- Understand how each building and site improvement project functions as a part of the campus-wide fabric and include the appropriate way-finding elements in the project scope.
- Support clear way-finding and direct connectivity for users with mobility limitations.
- Use trees and plant material, lighting, and architectural elements to assist in campus way-finding.
- Incorporate educational and interpretive signage to highlight public art, sustainable facilities, and other features.

BUILDING NAMES, WAY-FINDING, + SIGNAGE

BUILDING NAMES

Currently, much of the building graphics system on the Grossmont College campus is based on a numbering system. This convention is typically an institutional approach to building identification. On college campuses, buildings are usually referred to by name, i.e. 'Smith Hall'. Building names can be placed on buildings providing a friendlier atmosphere but should not violate current way-finding and signage plans.

SIGNAGE

Signage throughout campus should be consistent, using the same format, font, scale and organization. An overall set of standards should be developed for use by staff, designers, architects and other personnel. For additional information and details, see Section 4.

TYPOGRAPHY

Typography should be consistent and harmonize with other building elements. (Additional information will be provided in Section 4.)

- Place building names in highly visible areas of exterior building walls.
- Building and room identification should be consistent and promote ease of way-finding.
- Coordinate with building and room numbering standards.

Part H
CAMPUS SITE FURNITURE

FURNITURE

Furnishings such as seating, tables, and shade structures are encouraged. Furnishings may be movable or fixed. If fixed, they shall be oriented to provide maximum variety in relationship to planted areas, sun and shade. Furnishings throughout campus should be consistent and conform with architectural elements and colors. They also should blend in with existing colors, be durable metal, and have the ability to withstand a high volume of student usage (refer to Section 4 for specific standards).

- Be consistent with campus architectural elements when choosing furnishing styles.
- Place movable furniture in courtyards or controlled areas.
- Use metal mesh loose tables and chairs. Avoid using pedestal base tables.
- Integrate site furniture within the landscape and hardscape when appropriate.
- Consider boulders for seating elements.
- Provide trash and recycling receptacles along main circulation routes and building entrances.
- Use receptacles that are consistent with campus architectural elements.

SHADE STRUCTURES

Provide shades structures at key locations to help create comfortable outdoor gathering and resting places, especially during the hottest time of the day and year.

- Consider the location of shade trees and building overhangs when planning the location of shade structures and use these elements in concert to provide the desired level of shading along pedestrian linkages and in outdoor gathering spaces.
- Avoid shading gathering spaces from the morning sun, especially during the cool weather season.
- Be consistent with campus architectural elements when designing shade structures.
- Use shade structures to provide intermittent resting points along exposed primary pathways.
- Integrate overhead shade structures at dining plazas and gathering spaces.
- Avoid using wood for shade structures.

STUDENT + PUBLIC ART

Seek opportunities to collaborate with faculty, students, and the community to develop public art exhibits and installations and to integrate venues for the performing arts into building and site improvement projects.

- Provide opportunities for the display of art in buildings, courtyards, and gathering areas throughout campus.
- Integrate art within the landscape and in site furnishing and signage elements when appropriate.
- Provide interpretive signage and lighting when appropriate.
- Provide support for technology, audio/visual, and lighting for outdoor performance venues.

Part I
PARKING + CIRCULATION

Adequate parking and good circulation flow are key factors that benefit students daily and facilitate their access to the educational opportunities at Grossmont College. The design of the campus parking and circulation system presents many opportunities for sustainable design. Focus on reducing the use of energy and resources, reducing heat islands, maintaining local and regional water quality, facilitating alternate means of transportation, and providing for the comfort and safety of students and employees.

PASSENGER LOADING ZONES + BUS STOPS

- Separate loading zones from main vehicular routes.
- Provide adequate stacking space to accommodate waiting vehicles.
- Provide shade shelters and trees at bus stops.
- Provide benches and refuse receptacles at bus stops and loading zones.

BICYCLE PATHS + STORAGE

- Connect to the public network of bicycle paths.
- Provide Class I bicycle paths and signage along campus loop road.
- Provide consolidated bicycle storage at key portals on campus.
- Use bicycle storage that is consistent with campus architectural elements.
- Use bicycle storage made from sustainable materials.
- Place bicycle storage in hardscape or gravel.

PARKING

- Soften parking areas with landscape elements.
- Utilize low water use, low maintenance native and climate appropriate plant material in landscaping.
- Provide trees in parking lot medians and islands to reduce heat island effect.
- Integrate storm water features into the parking lot medians and islands.
- Maintain landscape to avoid obstructing vehicular lines of sight.
- Provide preferred parking for carpools and alternative fuel vehicles.
- Provide electric vehicle charging stations.

CAMPUS PERIMETER ROAD

The Perimeter Road follows the curving edge of the campus plateau along much of its length. In many sections the Perimeter Road must be crossed to walk to parking, Exercise Science and Wellness outdoor instructional facilities, and buildings that are located on the outer edges of campus. Visibility between drivers and pedestrians can be an issue. Many people walk along the Perimeter Road and a continuous sidewalk is needed. Additional bioswales are needed to prevent erosion along the adjacent slopes.

- Projects to alter or improve the Perimeter Road must provide a safe pedestrian route along the side of the road.
- Pedestrians should be directed to safe crossing points along primary circulation routes.
- Manage the flow of storm water to prevent erosion at the campus edge.
- Incorporate tree planting along the loop road.
- Provide enhanced slope planting along roadways and campus edges.

Part J
DISTRICT SERVICES BACKGROUND

GCCCD District Services provide district wide leadership and support through its operational divisions. District Services is comprised of more than 100 employees who serve both colleges with an array of essential operational activities, such as disbursing financial aid, providing tuition payment plans, and managing purchasing and payroll processing. In addition, District Services provides the administrative technology, facilities planning, human resources, and research functions that support the entire District. All of these employees are part of the critical District infrastructure that enables both colleges to be equipped, safe and compliant, and able to provide great educational services to students.

Currently District Services has a presence on both the Grossmont and Cuyamaca College campuses. Public Safety offices are housed in the Parking Structure at Grossmont College and the One-Stop Center at Cuyamaca College. Part of Warehouse J at Cuyamaca College is also used by District Services. The majority of District Services staff is housed in the main office facility which is located in two 30 year old temporary structures on the Grossmont College campus. These two temporary structures are located at the northern edge of the campus adjacent to the college maintenance facilities and occupying portions of parking lots 4 and 4A. The two buildings are separated by Perimeter Road making daily collaboration and efficiency difficult. There is no signage or directory information to identify the location of District Services which makes the facility very challenging to find.

Part K
LOCATION + CHARACTER

The 2013 Facilities Master Plan recommends replacement of the existing temporary structures with new facilities for District Services. The final future location of the District Services Facilities is still being considered and analyzed. Options for locating these functions include the following:

- New facilities on the soccer field/temporary parking on the Grossmont College campus
- Re-purposing the Building A Complex on the Cuyamaca College campus
- Purchase or lease of off-site property

The new location for the District Services offices should provide meeting space for District and community use and permanent workspace for District Services employees including office space for operational divisions, the main data center that serves both Grossmont and Cuyamaca Colleges, multipurpose and meeting space, warehouse and receiving, workshops, and work yards.

The character and design for the facility should allow the facility to be recognized as a separate and distinct function from college facilities to emphasize that the housed operations are District rather than college services, especially if the facility is located on one of the campuses. Appropriate signage, including directional signage, and a distinct entry will re-enforce the difference between college and District facilities. However, the exterior design of the structure should harmonize with the architecture and character of the campus on which it is located. The colors and materials of the facility could be a blend of the building materials and styles of both campuses. Appropriate adjacent parking, delivery access, and pedestrian circulation with signage to the facility must be considered wherever the facility is located. Similar design guidelines to the campus design guidelines should be followed for adjacent open spaces, courtyards, drought tolerant landscaping, and sustainable strategies.

INTRODUCTION

It is Grossmont Cuyamaca Community College District's intention to have space guidelines across both college campus locations to provide equitable and functional sizes of spaces for the expected use over the life of each facility. The proposed guidelines reflect the clearances required for the ease of circulation and effective utilization of furniture and equipment within each space. The targeted usable (net) square footage is noted on each diagram. Additional width or depth within the spaces would be acceptable, particularly in spaces that have structural elements, more specialized areas, or renovations of existing buildings, and will be approved on a project by project basis. Locations of doors and windows will vary depending on the layout and campus location of each specific project.

Buildings should provide spaces that are flexible, functional, and adaptable allowing for changes that will occur in the future, as well as the ability to alter a space during the day to allow for a variety of learning activities and needs that might take place in a space. Creating environments which promote collaboration and interaction between individuals and groups is highly desirable, as are including quiet areas for individual focus and study. Varying sizes and types of learning and gathering spaces should be included within the buildings and throughout the campus.

Part A
CLASSROOMS

Classrooms are where students and faculty spend a significant amount of time together, and should be designed with enough space to accommodate easy interaction, accessible seat count, pedagogies, learning technologies, furnishings, and building code requirements.

Faculty should have intuitive ease of access to light zoning, window shades, and projection controls from the fixed lectern. Generally, medium and large classrooms should be rectangular, with the wider side as the front teaching wall, to maximize view angles and make it easier for the instructor to be close to all the students even in the most distant seats. Current trends are showing classrooms becoming student-centered, collaborative spaces with less emphasis on direct instruction from a "single point front of classroom" to visual displays and markerboards on all walls for both instructor and student use. Other walls can host windows with shades maximizing daylight.

Classrooms should foster communication by maximizing markerboard or writing space on multiple walls, provide projection communication, Wi-Fi connectivity, and assisted listening systems.
Flat screen monitors are an option for some instructional spaces on the side and rear walls. The monitors should support student project work, collaboration, and virtual simulation labs, as well as to improve presentation visibility from all areas of the room.

All classroom design options should be flexible for a variety of instructional and learning approaches. The number of each type of classroom included in a building project will be determined by the needs of the specific programs that will occupy the building.

Different options for technology are shown in the following classroom layouts and inclusion of identified technology features in a project should consider current and future learning activities as well as reflect prudent economic choices. A base level for technology features in a classroom should include a smart cart with controls, projector and projection screen WiFi, and one floor box with power, data and AV connections in the center of the room for flexibility.

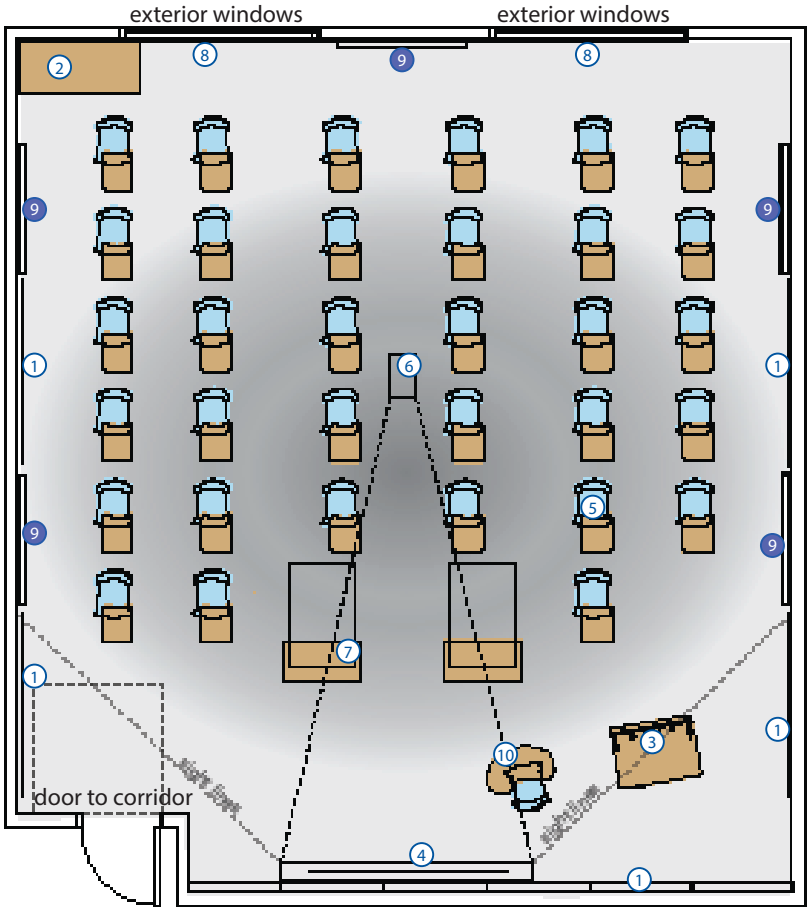
CLASSROOMS

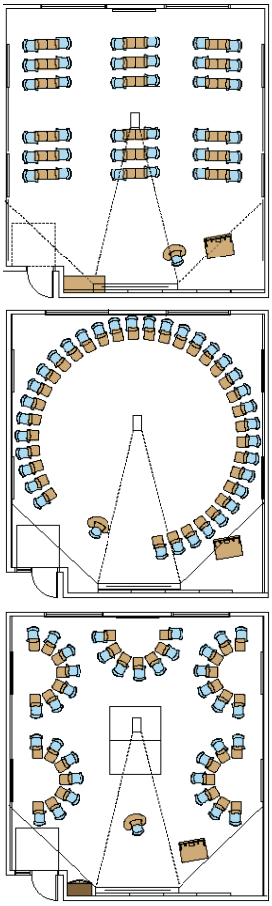
SMALL CLASSROOM - OPTION 1

- 32-35 student stations
- 990 sq. ft.

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"





PLAN

FURNISHINGS & EQUIPMENT

0 Indicates optional feature

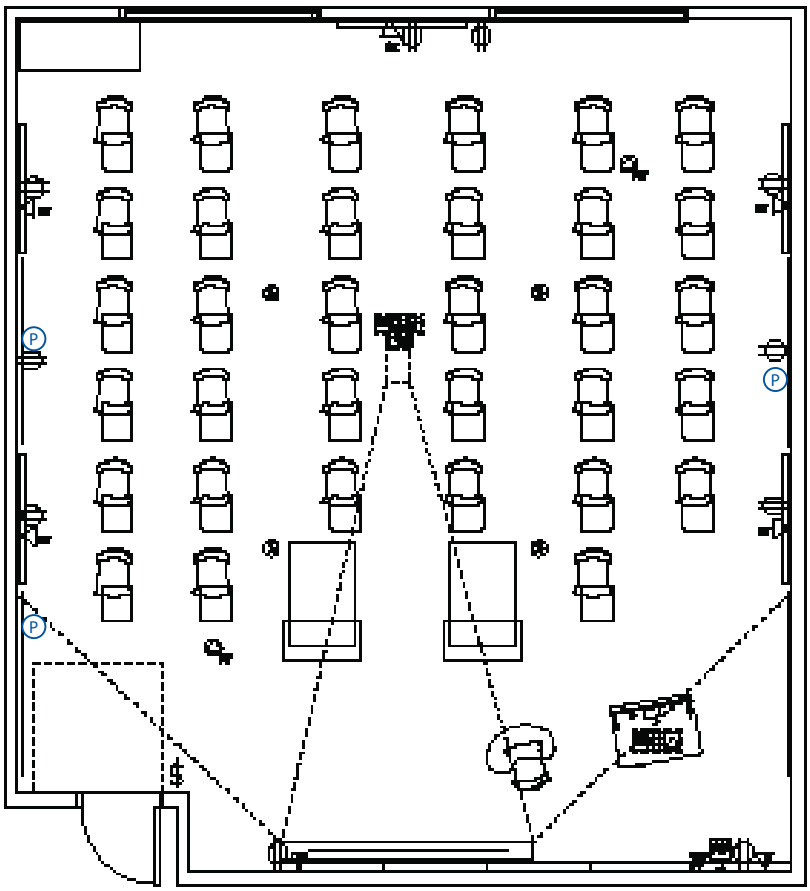
1. Markerboard
2. Mobile fliptop support table
3. Mobile instructor station with A/V equipment rack, power conditioner, fan
4. Motor operated 119.5" x 67.25"projection screen
5. Chair and desk
6. Projector, ceiling mounted
7. Accessible desk
8. Roller shade (window treatment)
9. Flat screen monitor
10. Mobile presentation surface

FINISHES

Floor: Rubber or dark carpet
Wall: Paint & Acoustical wall treatment
Ceiling Ht: 10'-11'
Ceiling Type: Acoustical ceiling tile
Chair Rail: 3 walls

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

*Note that door location may vary depending on building layout.



PLAN

SYMBOLS

- Duplex
- 4-Port Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- A/V connector
- Light switch
- Power for charging
- Wall Phone
- Emergency call button - location to be determined
- Ceiling duplex, power for projector
- Ceiling data for projector
- Ceiling wireless access point outlet
- Flat panel data
- Ceiling speaker

HVAC:

Thermostat by door

LIGHTING:

LED lighting

NOTES:

- Avoid locating electrical panels in classrooms.
- Avoid chilled water equipment above the ceiling of all classrooms.

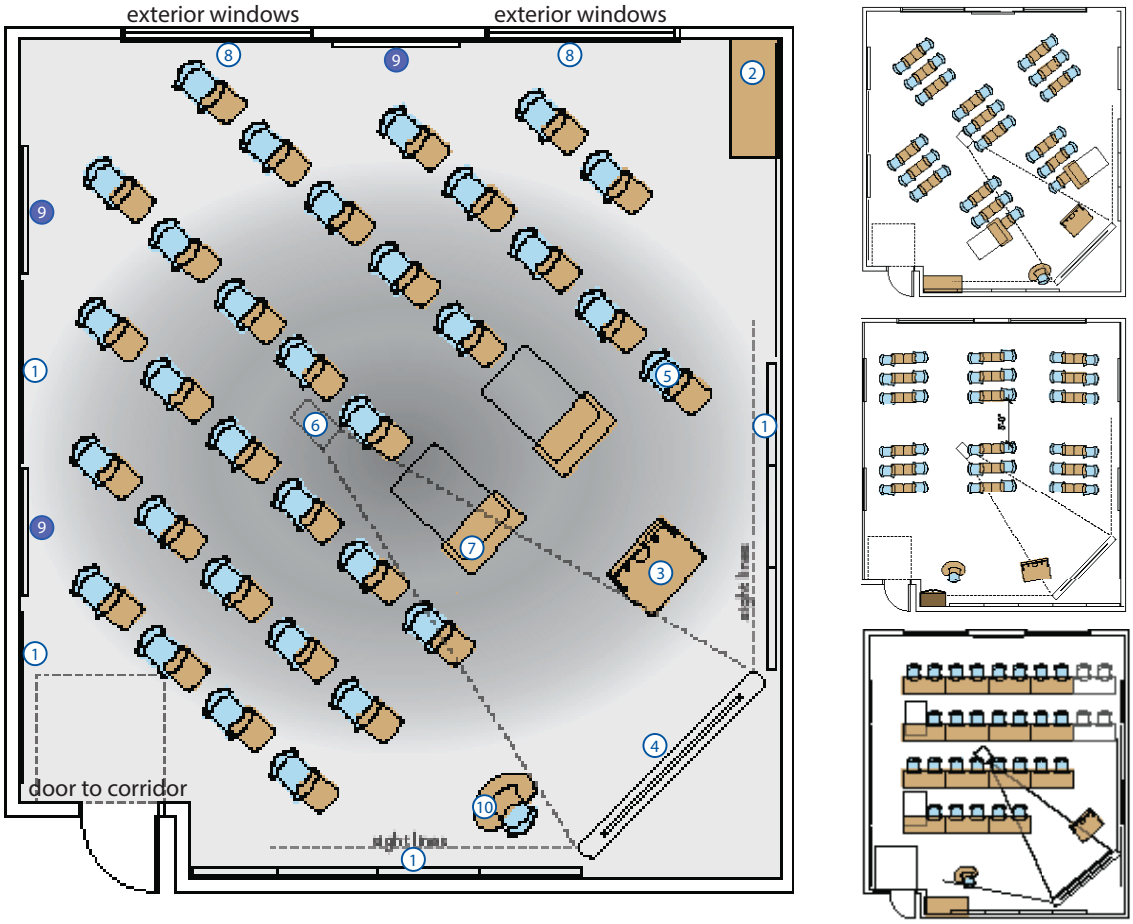
CLASSROOMS

SMALL CLASSROOM - OPTION 2

- 32-35 student stations
- 990 sq. ft.

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN

FURNISHINGS & EQUIPMENT

0 Indicates optional feature

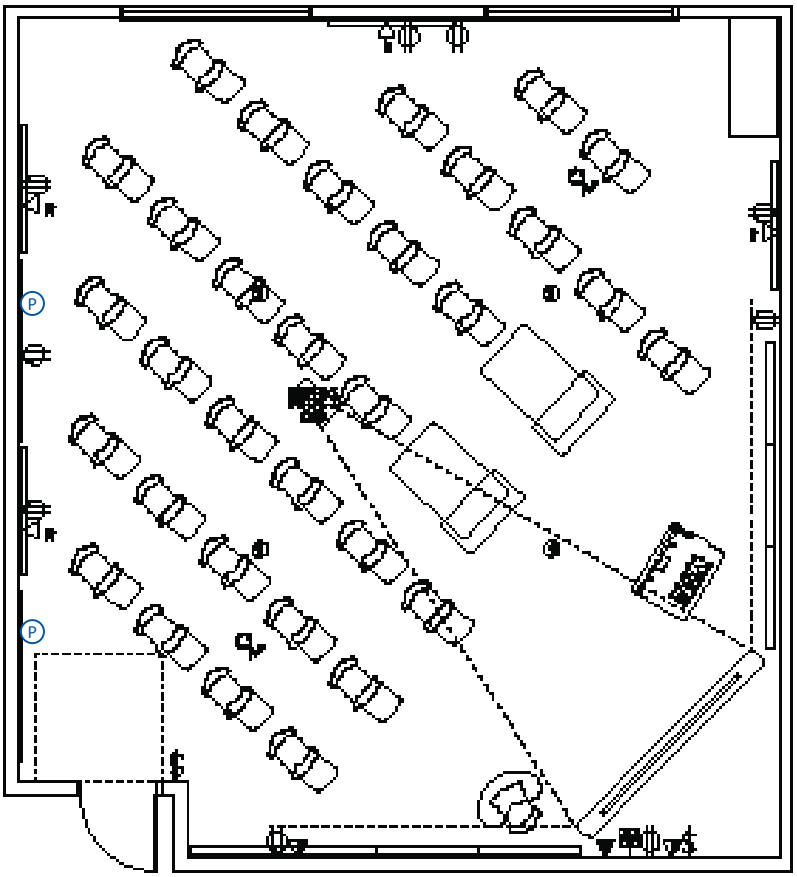
1. Markerboard
2. Mobile fliptop support table
3. Mobile instructor station with A/V equipment rack, power conditioner, fan
4. Motor operated 119.5"x 67.25" projection screen
5. Chair and desk
6. Projector, ceiling mounted
7. Accessible desk
8. Roller shade (window treatment)
9. Flat screen monitor
10. Mobile presentation surface

FINISHES

Floor: Rubber or dark carpet
Wall: Paint & Acoustical wall treatment
Ceiling Ht: 10'-11'
Ceiling Type: Acoustical ceiling tile
Chair Rail: 3 walls

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

*Note that door location may vary depending on building layout.



PLAN

SYMBOLS

- Duplex
- 4-Port Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- A/V connector
- Light switch
- Power for charging
- Wall Phone
- Emergency call button - location to be determined
- Ceiling duplex, power for projector
- Ceiling data for projector
- Ceiling wireless access point outlet
- Flat panel data
- Ceiling speaker

HVAC:

Thermostat by door

LIGHTING:

LED lighting

NOTES:

- Avoid locating electrical panels in classrooms.
- Avoid chilled water equipment above the ceiling of all classrooms.

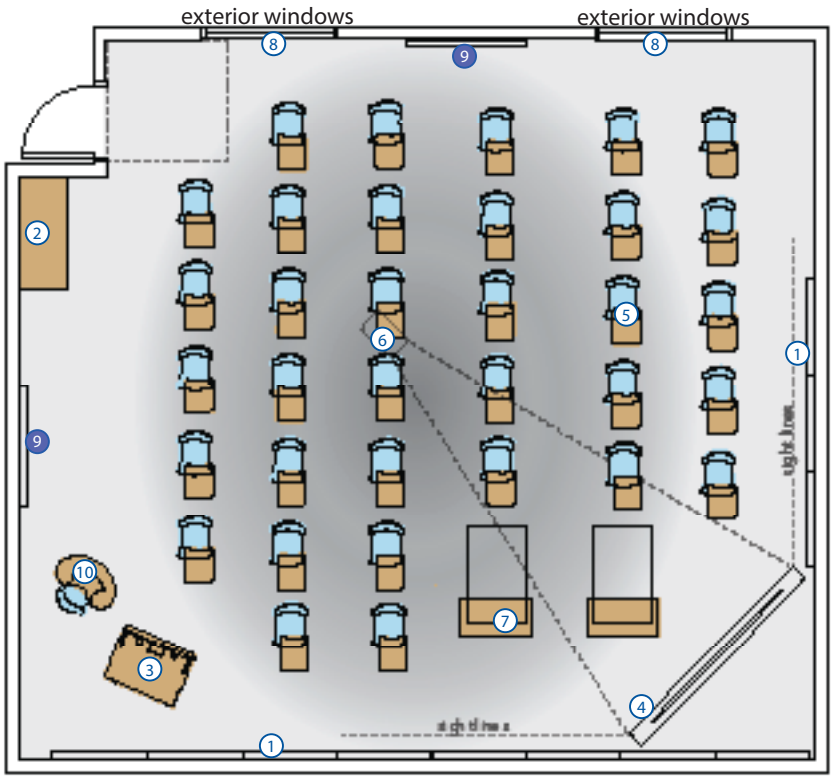
CLASSROOMS

SMALL CLASSROOM - OPTION 2A

- 32-35 student stations
- 990 sq. ft.

0 ft 4 ft 8 ft

SCALE: 1/8″ = 1′-0″



PLAN

FURNISHINGS & EQUIPMENT

0 Indicates optional feature

1. Markerboard
2. Mobile fliptop support table
3. Mobile instructor station with A/V equipment rack, power conditioner, fan
4. Motor operated 119.5″x 67.25″ projection screen
5. Chair and desk
6. Projector, ceiling mounted
7. Accessible desk
8. Roller shade (window treatment)
9. Flat screen monitor
10. Mobile presentation surface

FINISHES

Floor: Rubber or dark carpet
Wall: Paint & Acoustical wall treatment
Ceiling Ht: 10′-11′
Ceiling Type: Acoustical ceiling tile
Chair Rail: 3 walls

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

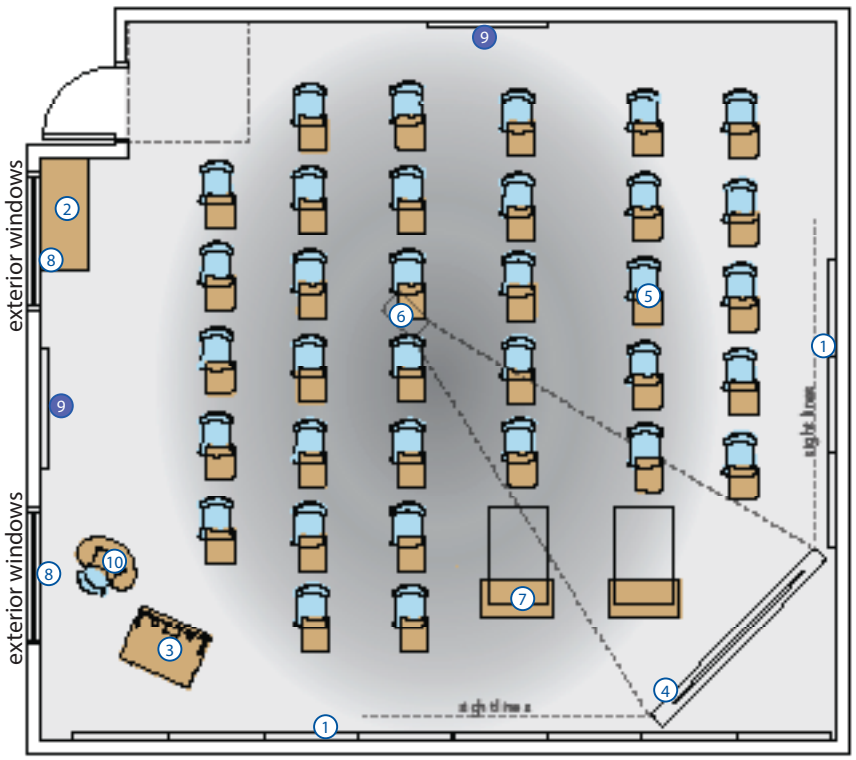
*Note that door location may vary depending on building layout.

SMALL CLASSROOM - OPTION 2A

- 32-35 student stations
- 990 sq. ft.

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN

FURNISHINGS & EQUIPMENT

0 Indicates optional feature

1. Markerboard
2. Mobile fliptop support table
3. Mobile instructor station with A/V equipment rack, power conditioner, fan
4. Motor operated 119.5"x 67.25" projection screen
5. Chair and desk
6. Projector, ceiling mounted
7. Accessible desk
8. Roller shade (window treatment)
9. Flat screen monitor
10. Mobile presentation surface

FINISHES

Floor: Rubber or dark carpet
Wall: Paint & Acoustical wall treatment
Ceiling Ht: 10'-11'
Ceiling Type: Acoustical ceiling tile
Chair Rail: 3 walls

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

*Note that door location may vary depending on building layout.

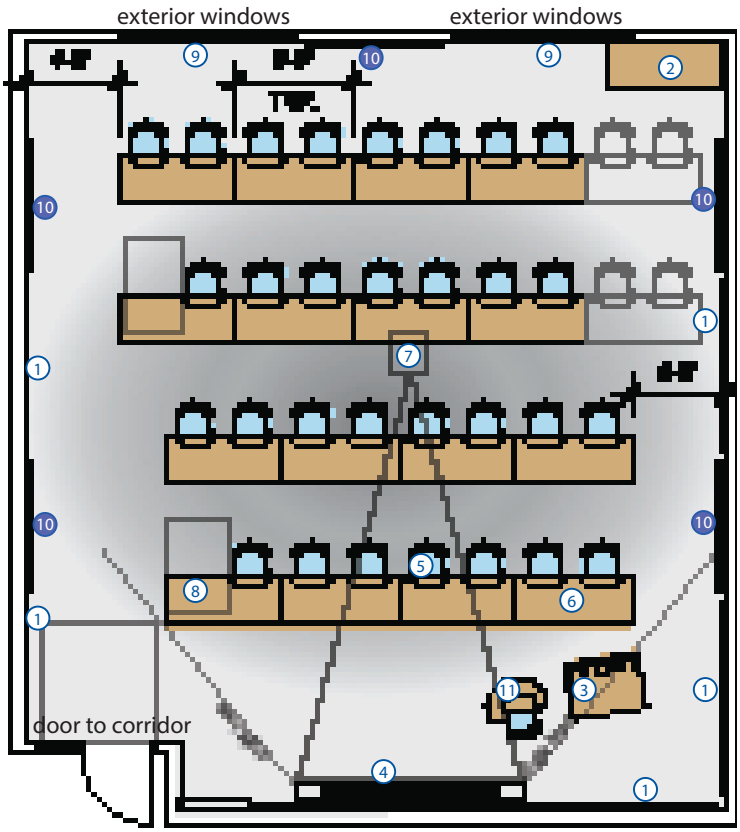
CLASSROOMS

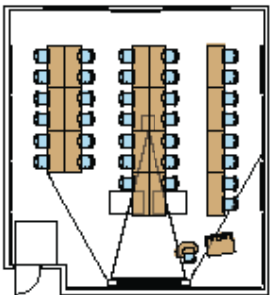
SMALL CLASSROOM - OPTION 3

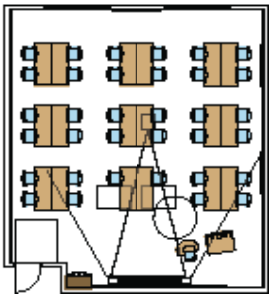
- 32-35 student stations
- 990 sq. ft.

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"







PLAN

FURNISHINGS & EQUIPMENT

0 Indicates optional feature

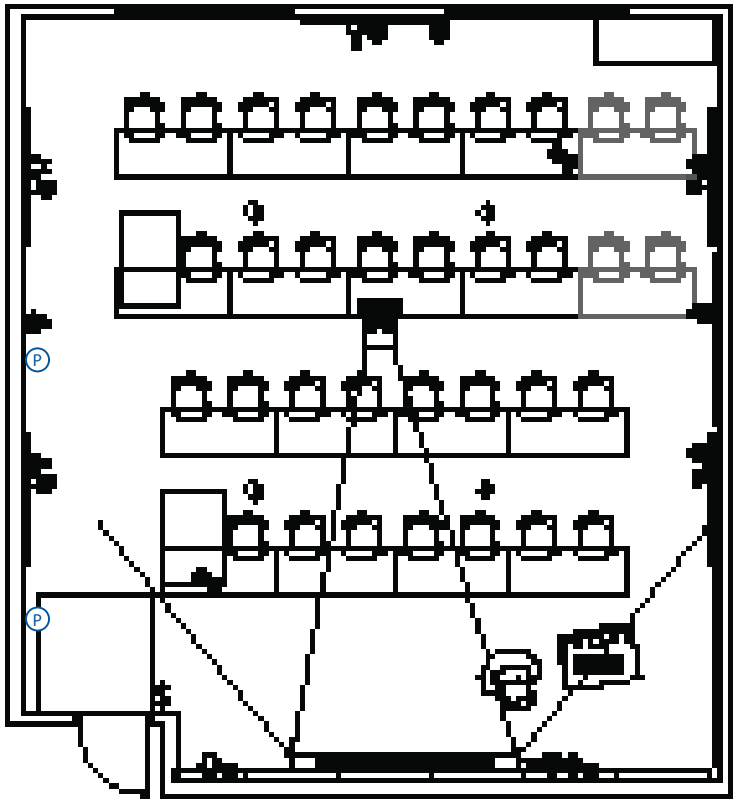
1. Markerboard
2. Mobile fliptop support table
3. Mobile instructor station with A/V equipment rack, power conditioner, fan
4. Motor operated projection screen, 119.5" x 67.25"
5. Stackable mobile chairs
6. Mobile tables
7. Projector, ceiling mounted
8. Accessible desk
9. Roller shade (window treatment)
10. Flat screen monitor
11. Mobile presentation surface

FINISHES

Floor: Rubber or dark carpet
Wall: Paint & Acoustical wall treatment
Ceiling Ht: 10'-11'
Ceiling Type: Acoustical ceiling tiles
Chair Rail: 3 walls

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

*Note that door location may vary depending on building layout.



PLAN

SYMBOLS

- Duplex
- 4-Port Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V connector
- $ Light switch
- (P) Power for charging
- ▲ Wall phone
- (E) Emergency call button - location to be determined
- Ceiling duplex, power for projector
- Ceiling data for projector
- AP Ceiling wireless access point outlet
- FP Flat panel data
- (S) Ceiling speaker

HVAC:

Thermostat by door

LIGHTING:

LED lighting

NOTES:

- Avoid locating electrical panels in classrooms.
- Avoid chilled water equipment above the ceiling of all classrooms.

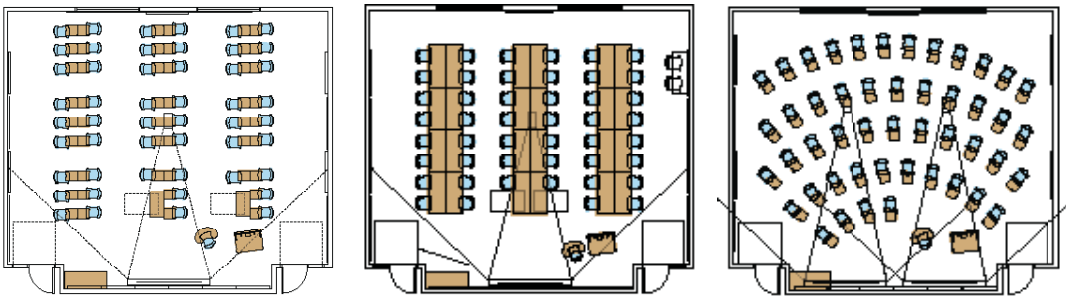
CLASSROOMS

MEDIUM CLASSROOM - OPTION 1

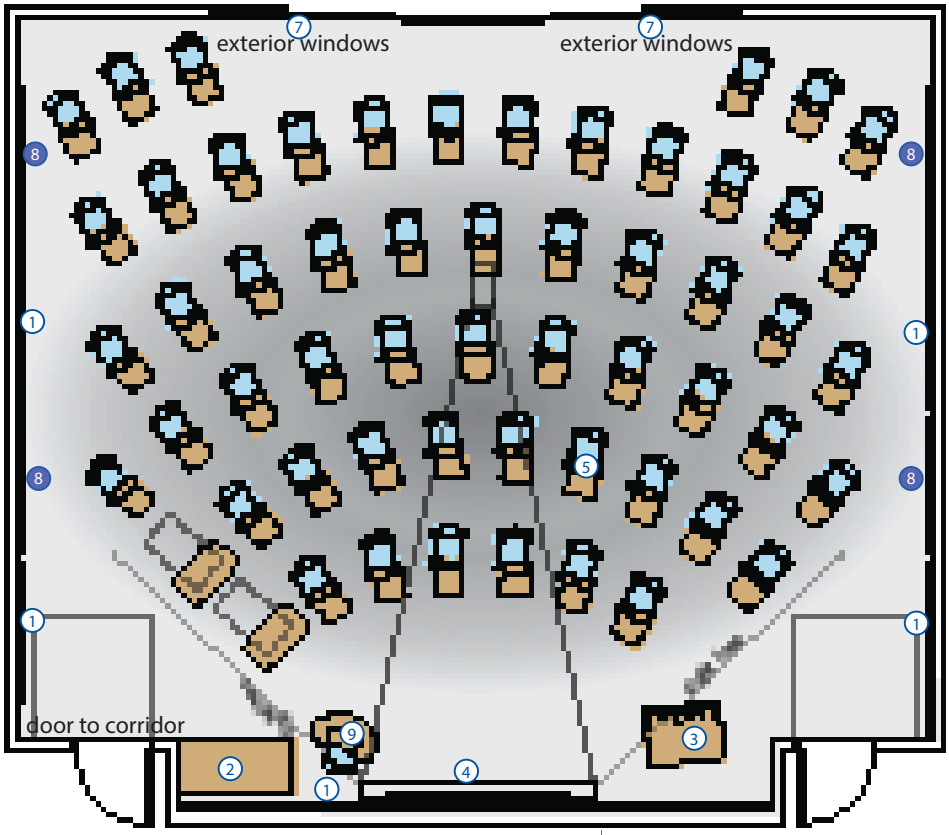
- 50-55 student stations
- 1,254 sq. ft.

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



NOTE: Double Projection Screen Option - if budget allows



PLAN

FURNISHINGS & EQUIPMENT

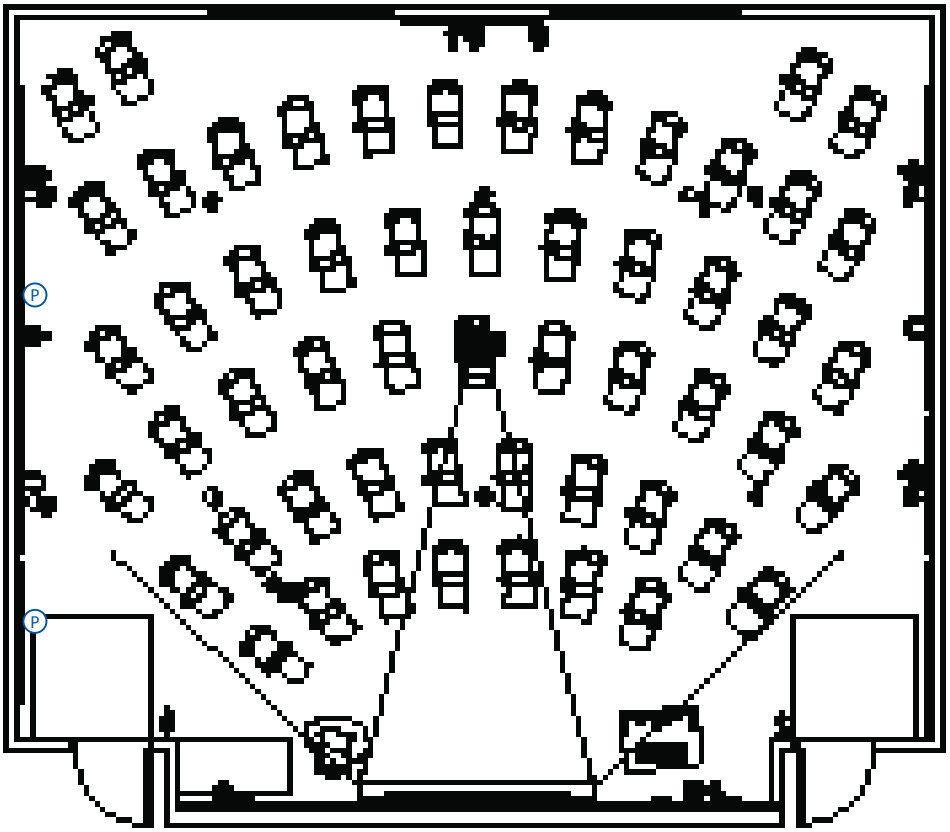
0 Indicates optional feature

1. Markerboard
2. Mobile fliptop table
3. Mobile instructor station with A/V equipment rack, power conditioner, fan
4. Motorized projection screen, 119.5" x 67.25"
5. Desk & Chair
6. Projector, ceiling mounted
7. Roller shade (window treatment)
8. Flat screen monitors
9. Mobile presentation surface

FINISHES

Floor: Rubber or dark carpet
Wall: Paint & Acoustical wall treatment
Ceiling Ht: 10'-11'
Ceiling Type: Acoustical ceiling tile
Chair Rail: 3 walls

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70
*Note that door location may vary depending on building layout.



PLAN

SYMBOLS

- Duplex
- 4-Port Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V connector
- S Light switch
- (P) Power for charging
- (E) Emergency call button - location to be determined
- Wall phone
- Ceiling duplex, power for projector
- Ceiling data for projector
- AP Ceiling wireless access point outlet
- FP Flat panel data
- (S) Ceiling speaker

HVAC:

Thermostat by door

LIGHTING:

LED lighting

NOTES:

- Avoid locating electrical panels in classrooms.
- Avoid chilled water equipment above the ceiling of all classrooms.

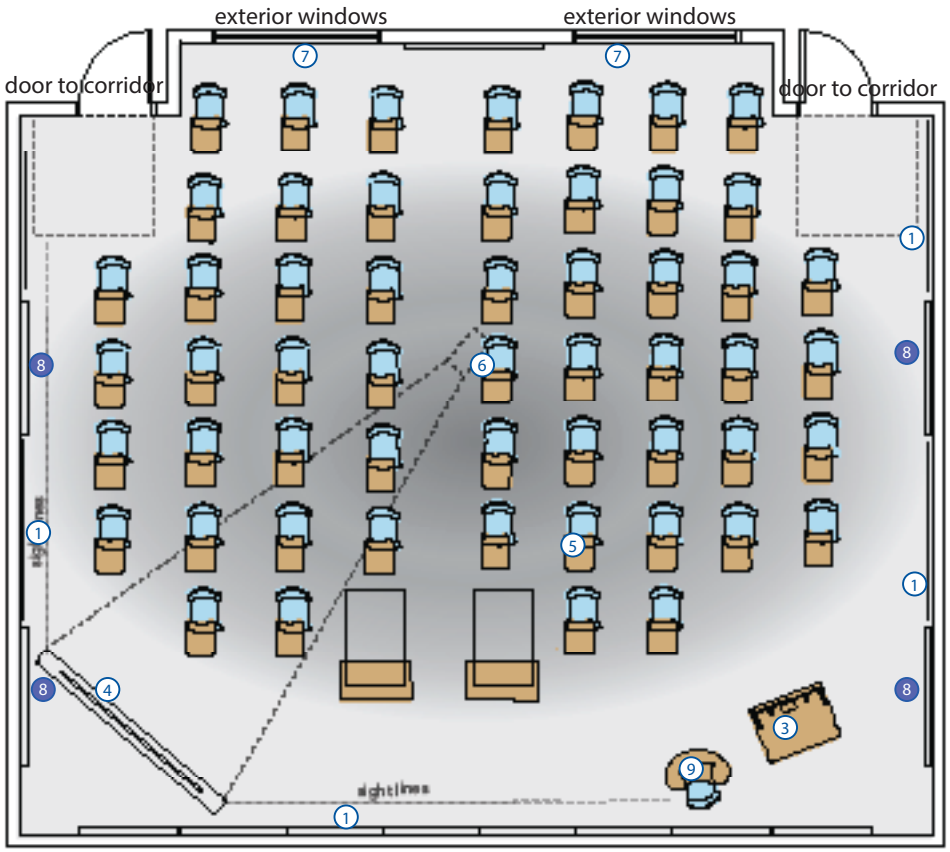
CLASSROOMS

MEDIUM CLASSROOM - OPTION 1A

- 50-55 student stations
- 1,254 sq. ft.

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN

FURNISHINGS & EQUIPMENT

0 Indicates optional feature

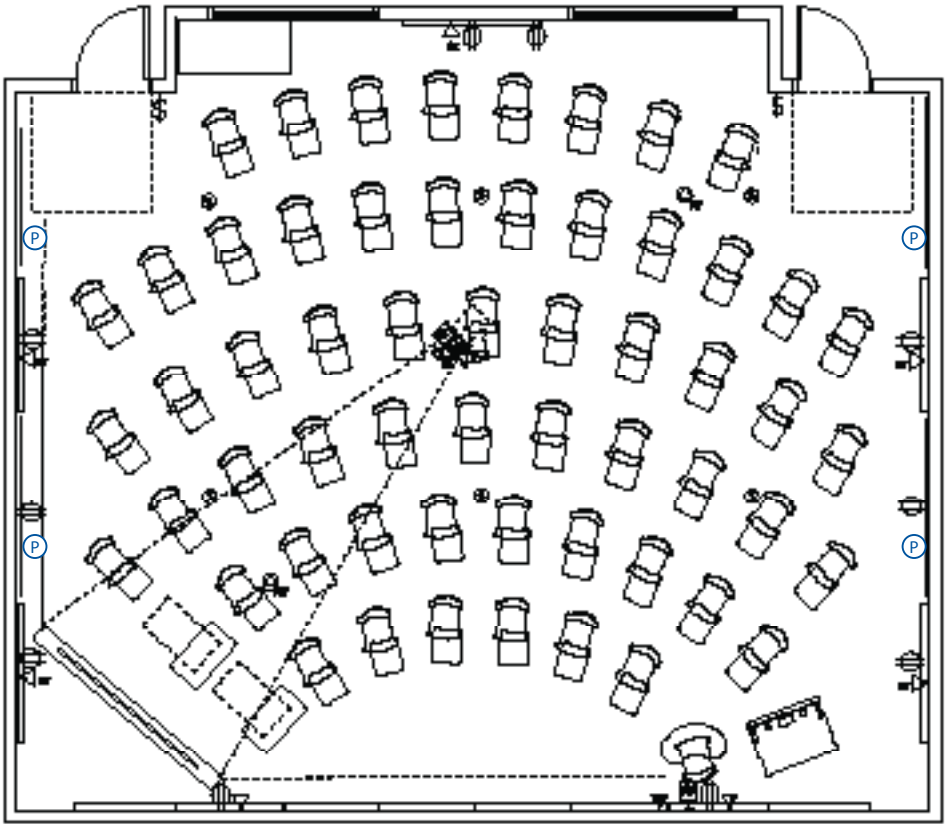
1. Markerboard
2. Mobile fliptop table
3. Mobile instructor station with A/V equipment rack, power conditioner, fan
4. Motorized projection screen, 119.5" x 67.25"
5. Desk & Chair
6. Projector, ceiling mounted
7. Roller shade (window treatment)
8. Flat screen monitors
9. Mobile presentation surface

FINISHES

Floor: Rubber or dark carpet
Wall: Paint & Acoustical wall treatment
Ceiling Ht: 10'-11'
Ceiling Type: Acoustical ceiling tile
Chair Rail: 3 walls

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

*Note that door location may vary depending on building layout.



PLAN

SYMBOLS

- Duplex
- 4-Port Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V connector
- S Light switch
- (P) Power for charging
- (E) Emergency call button - location to be determined
- Wall phone
- Ceiling duplex, power for projector
- Ceiling data for projector
- AP Ceiling wireless access point outlet
- FP Flat panel data
- (S) Ceiling speaker

HVAC:

Thermostat by door

LIGHTING:

LED lighting

NOTES:

- Avoid locating electrical panels in classrooms.
- Avoid chilled water equipment above the ceiling of all classrooms.

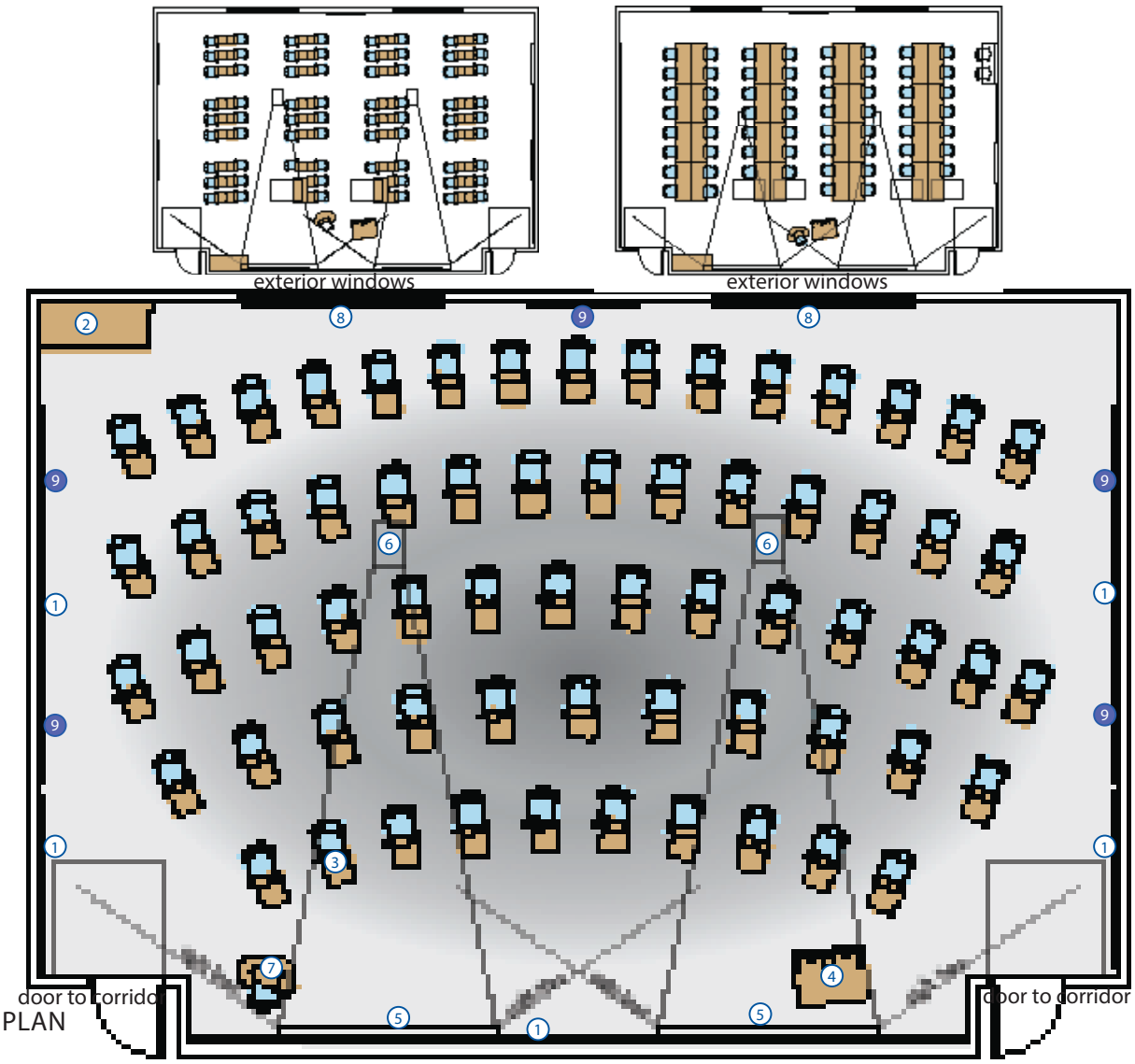
CLASSROOMS

MEDIUM CLASSROOM - OPTION 2

- 64 student stations
- 1,585 s

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN

FURNISHINGS & EQUIPMENT

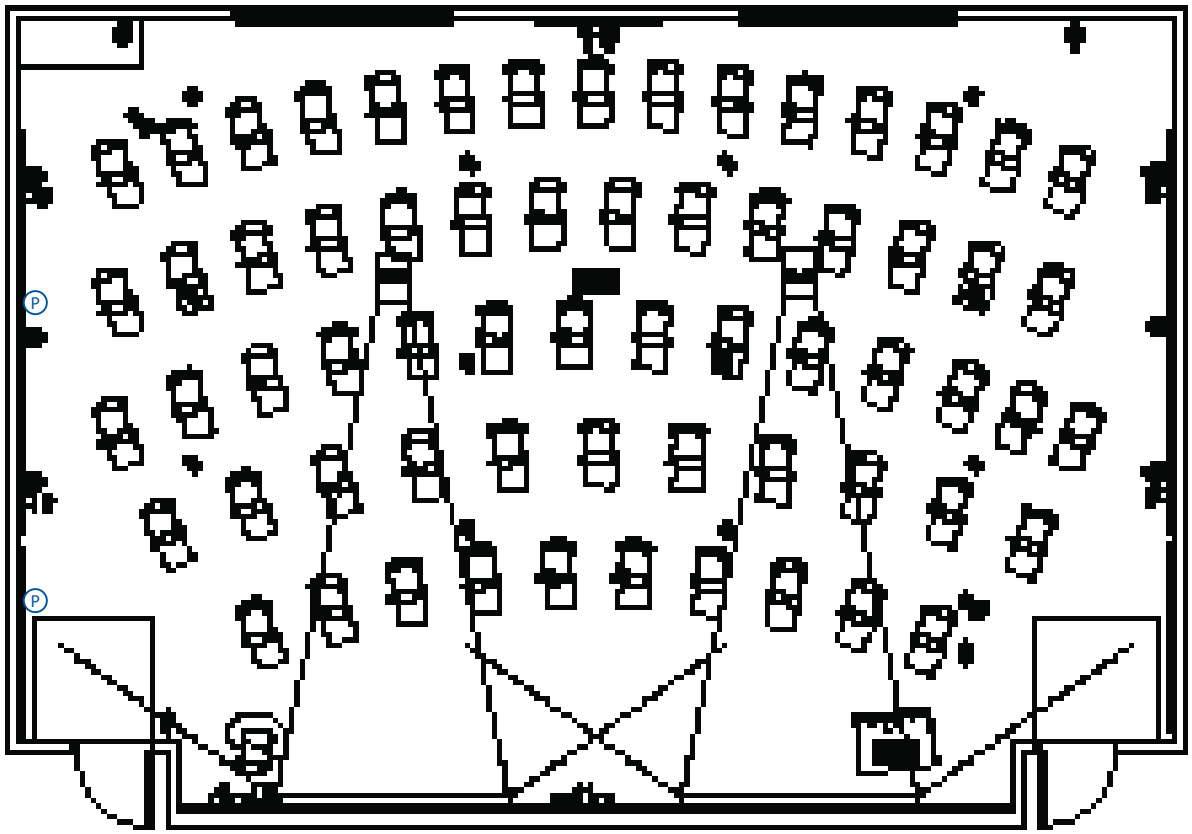
0 Indicates optional feature

1. Markerboard
2. Mobile fliptop support table
3. Desk & Chair
4. Mobile instructor station with A/V equipment rack, power conditioner, fan
5. Motor operated projection screen, 128" x 72"
6. Projector, ceiling mounted
7. Mobile presentation surface
8. Roller shade (window treatment)
9. Flat screen monitors

FINISHES

Floor: Rubber or dark carpet
Wall: Paint & Acoustical wall treatment
Ceiling Ht: 10'-6"-11'
Ceiling Type: Acoustical ceiling tile
Chair Rail: 3 walls

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70
*Note that door location may vary depending on building layout.



PLAN

SYMBOLS

- Duplex
- 4-Port Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V connector
- S Light switch
- P Power for charging
- E Emergency call button - location to be determined
- Wall phone
- Ceiling duplex, power for projector
- Ceiling data for projector
- AP Ceiling wireless access point outlet
- FP Flat panel data
- S Ceiling speaker

HVAC:

Thermostat by door

LIGHTING:

LED lighting

NOTES:

- Avoid locating electrical panels in classrooms.
- Avoid chilled water equipment above the ceiling of all classrooms.

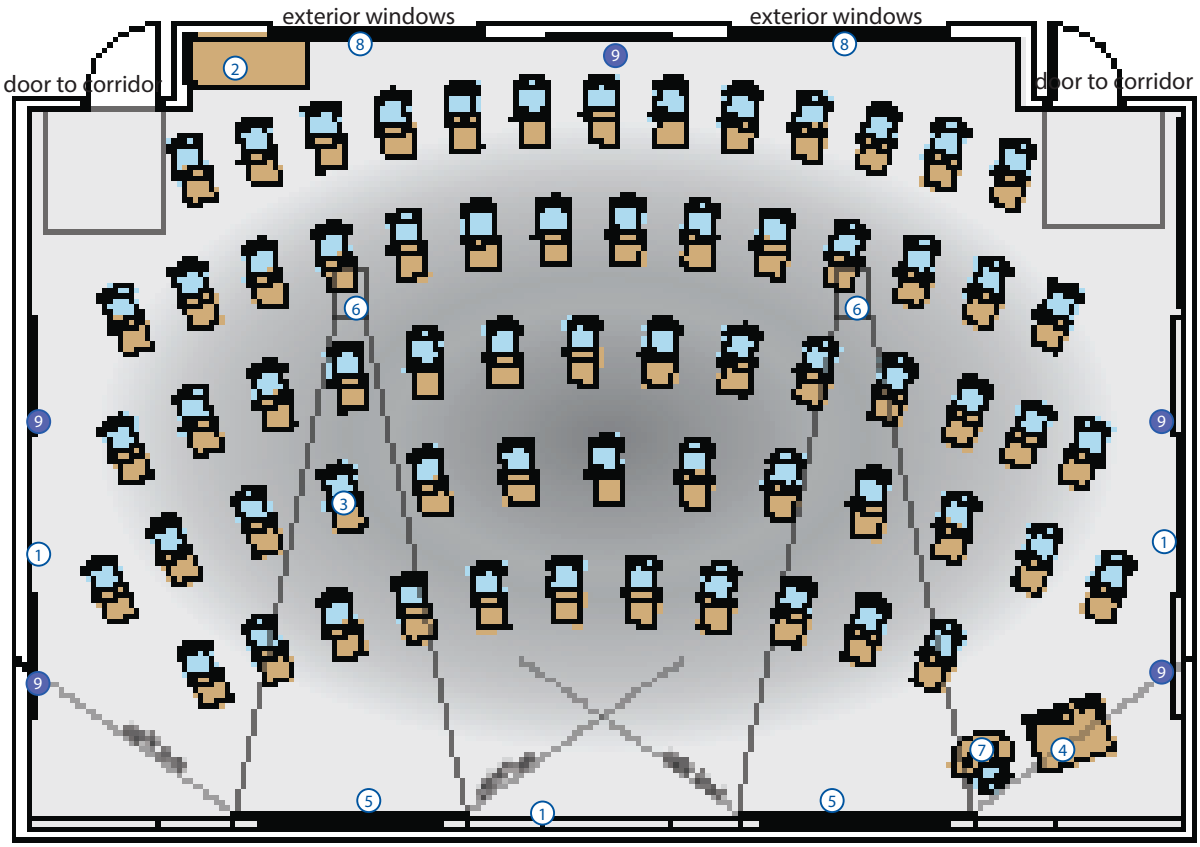
CLASSROOMS

MEDIUM CLASSROOM - OPTION 2A

- 64 student stations
- 1,585 sq. ft.

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN

FURNISHINGS & EQUIPMENT

0 Indicates optional feature

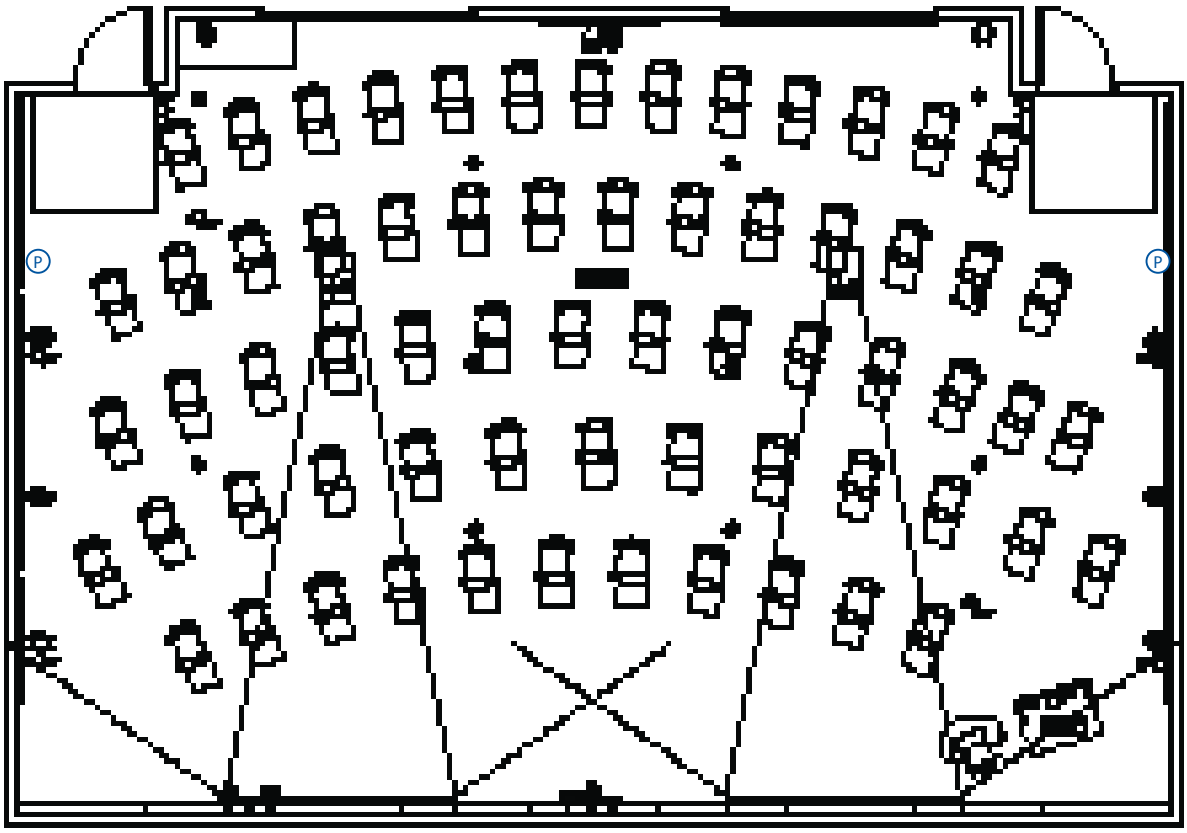
1. Markerboard
2. Mobile fliptop support table
3. Desk & Chair
4. Mobile instructor station with A/V equipment rack, power conditioner, fan
5. Motor operated projection screen, 128" x 72"
6. Projector, ceiling mounted
7. Mobile presentation surface
8. Roller shade (window treatment)
9. Flat screen monitors

FINISHES

Floor: Rubber or dark carpet
Wall: Paint & Acoustical wall treatment
Ceiling Ht: 10'-6"-11'
Ceiling Type: Acoustical ceiling tile
Chair Rail: 3 walls

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

*Note that door location may vary depending on building layout.



PLAN

SYMBOLS

- Duplex
- 4-Port Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V connector
- S Light switch
- P Power for charging
- E Emergency call button - location to be determined
- Wall phone
- Ceiling duplex, power for projector
- Ceiling data for projector
- AP Ceiling wireless access point outlet
- FP Flat panel data
- S Ceiling speaker

HVAC:

Thermostat by door

LIGHTING:

LED lighting

NOTES:

- Avoid locating electrical panels in classrooms.
- Avoid chilled water equipment above the ceiling of all classrooms.

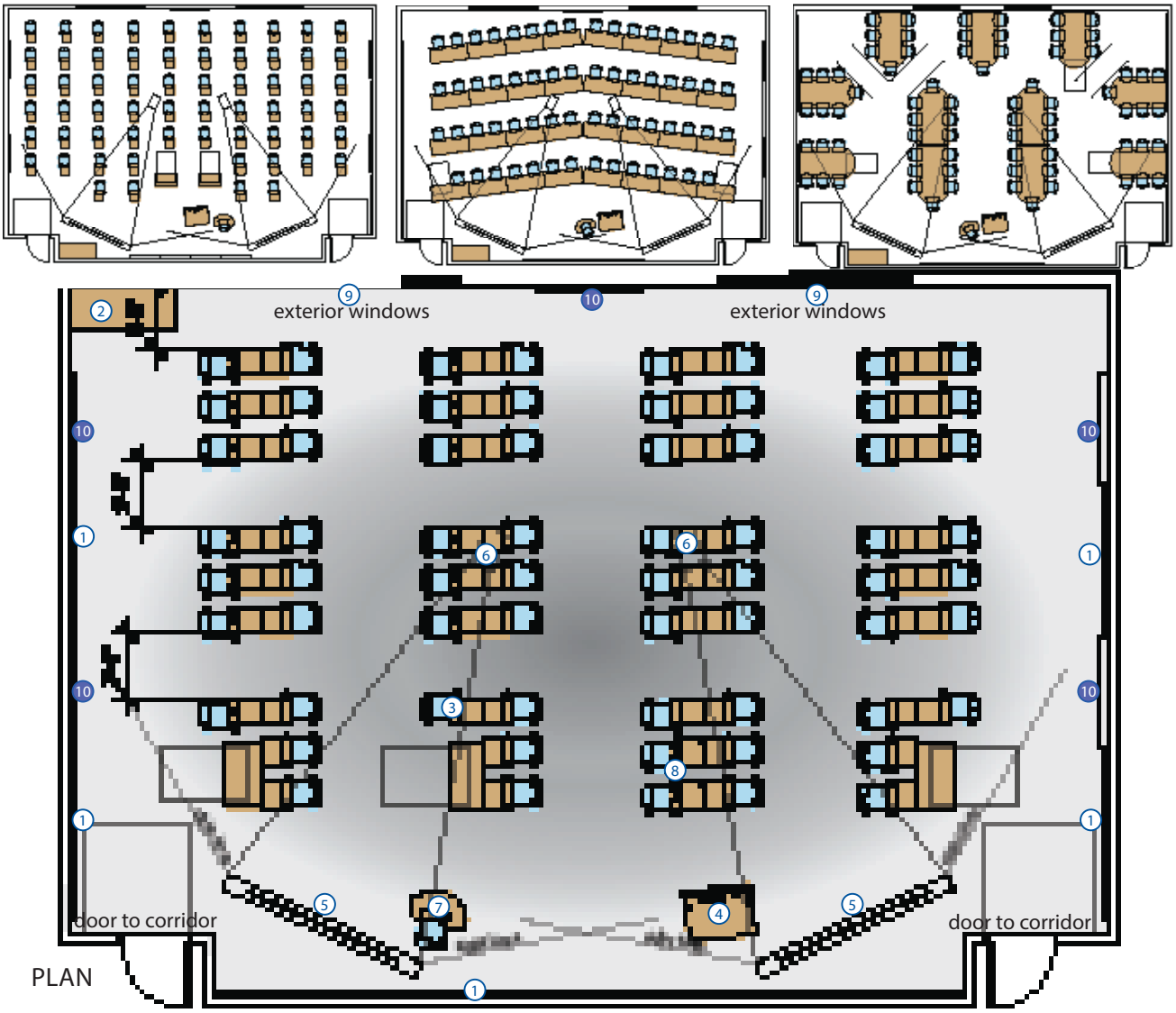
CLASSROOMS

MEDIUM CLASSROOM - OPTION 3

- 64 student stations
- 1,585 sq. ft.

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN

FURNISHINGS & EQUIPMENT

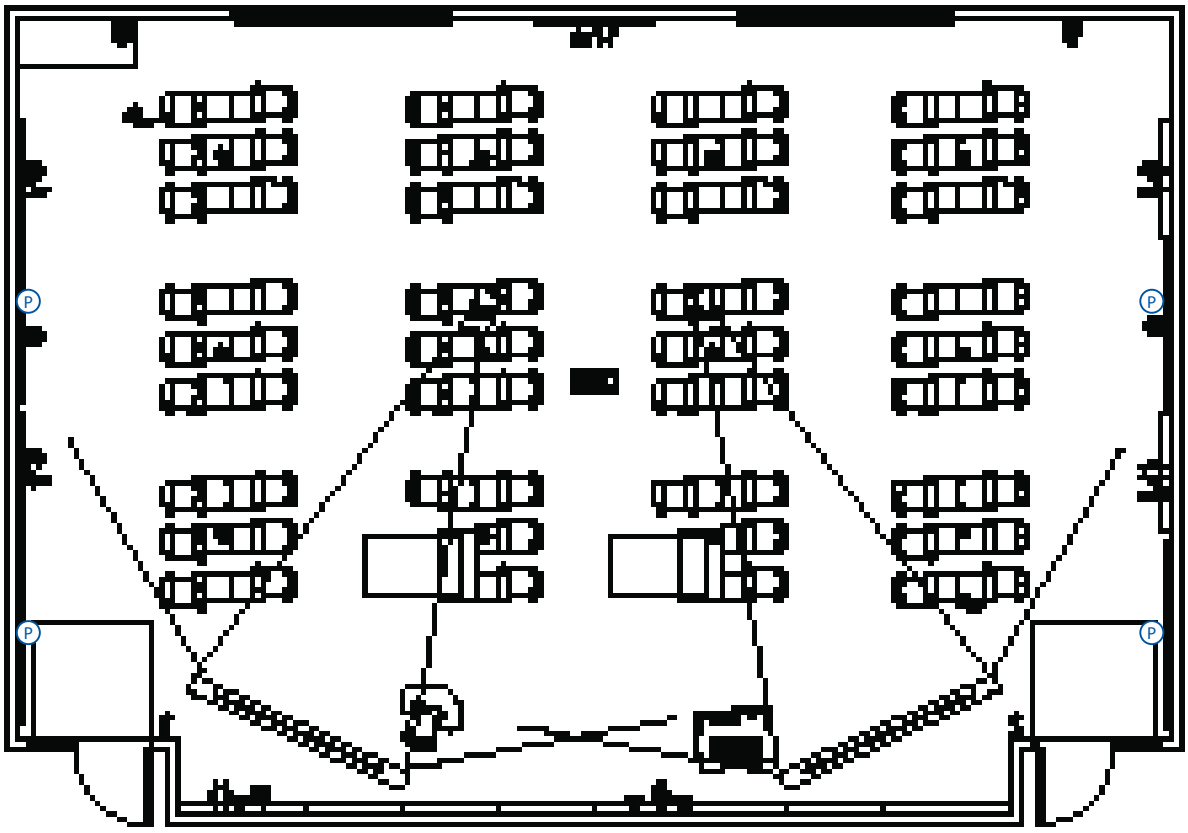
0 Indicates optional feature

1. Markerboard
2. Mobile fliptop support table
3. Desk and Chair
4. Mobile instructor station with A/V equipment rack, power conditioner, fan
5. Motorized projection screen, 128" x 72"
6. Projector, ceiling mounted
7. Mobile presentation surface
8. Accessible desk
9. Roller shade (window treatment)
10. Flat screen monitors

FINISHES

Floor: Rubber or dark carpet
Wall: Paint & Acoustical wall treatment
Ceiling Ht: 10'-6"-11'
Ceiling Type: Acoustical ceiling tile
Chair Rail: 3 walls

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70
*Note that door location may vary depending on building layout.



PLAN

SYMBOLS

- Duplex
- 4-Port Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V connector
- $ Light switch
- (P) Power for charging
- (E) Emergency call button - location to be determined
- Wall phone
- Ceiling duplex, power for projector
- Ceiling data for projector
- AP Ceiling wireless access point outlet
- FP Flat panel data
- (S) Ceiling speaker

HVAC:

Thermostat by door

LIGHTING:

LED lighting

NOTES:

- Avoid locating electrical panels in classrooms.
- Avoid chilled water equipment above the ceiling of all classrooms.

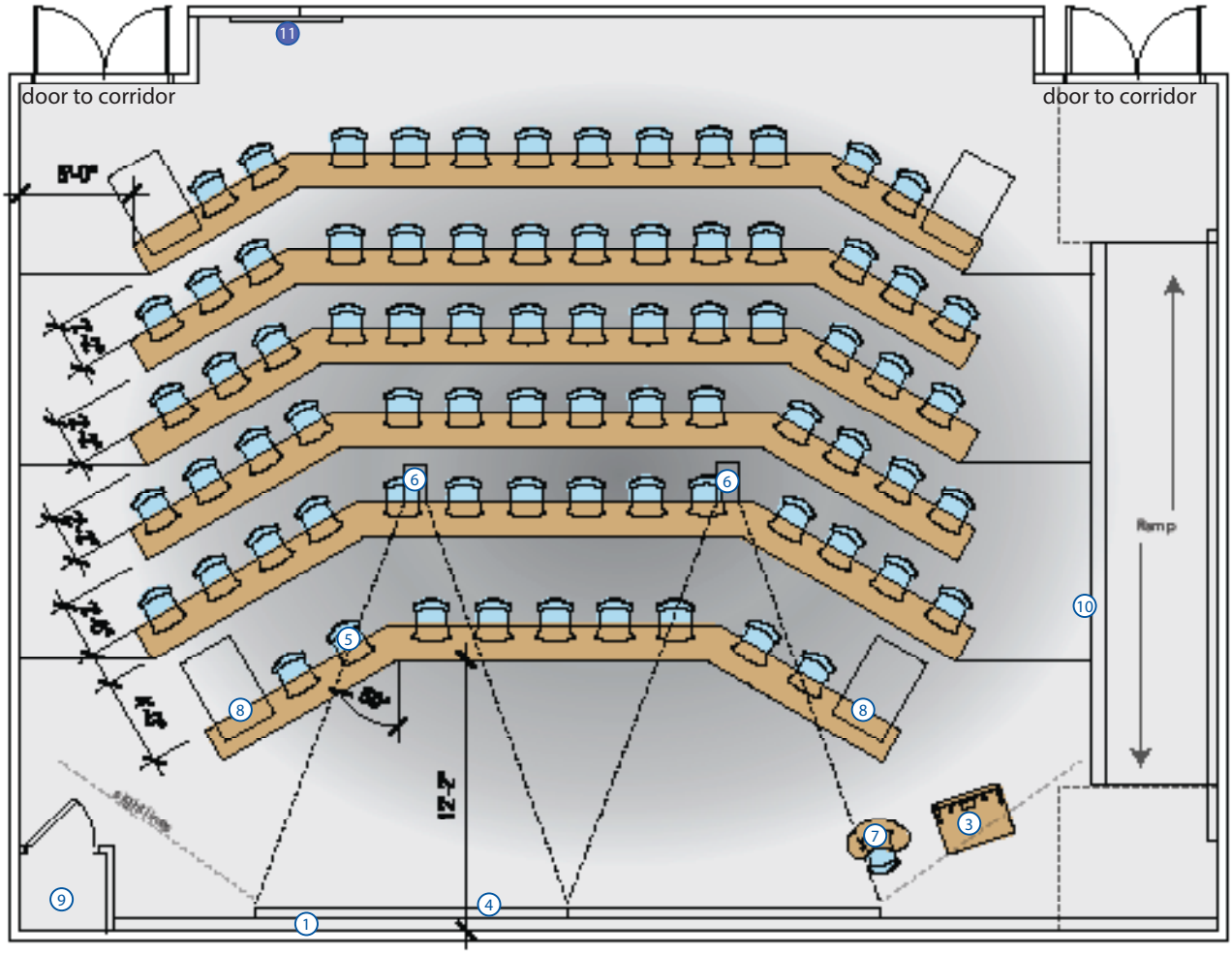
CLASSROOMS

LARGE CLASSROOM - OPTION 1

- 80 student stations
- 2,125 sq. ft. - tiered floor

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN

FURNISHINGS & EQUIPMENT

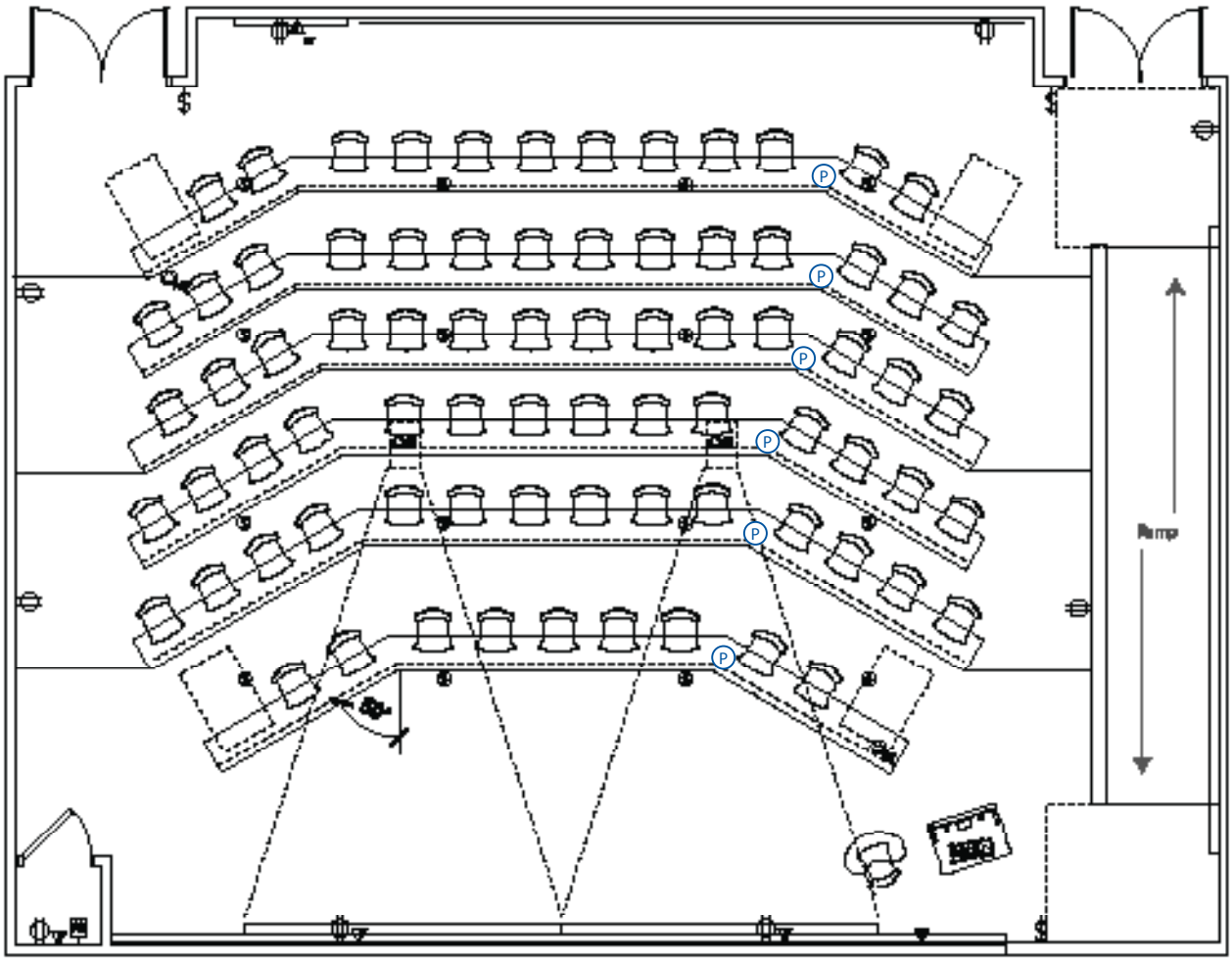
0 Indicates optional feature
1 Markerboard
2 Mobile fliptop support table
3 Mobile instructor station with A/V equipment rack, power conditioner, fan
4 Motorized projection screen 136.5" x 76.75"
5 Stackable, loose chairs
6 Projector, ceiling mounted
7 Mobile instructor station
8 Accessible seat
9 AV equipment rack
10 Partial height wall with railing
11 Flat screen monitor

FINISHES

Floor: Carpet or dark carpet
Wall: Paint & Acoustical wall treatment
Ceiling Ht: 12'-14' min.
Ceiling Type: Acoustical ceiling tile

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

*Note that door location may vary depending on building layout.



PLAN

SYMBOLS

- Duplex
- 4-Port Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- A/V connector
- Light switch
- Power/data raceway, typ. for all fixed furniture
- Emergency call button - location to be determined
- Ceiling duplex, power for projector
- Ceiling data for projector
- Ceiling wireless access point outlet
- Flat panel data
- Ceiling speaker

HVAC:

Thermostat by door

LIGHTING:

LED lighting.

NOTES:

- Avoid locating electrical panels in classrooms.
- Avoid chilled water equipment above the ceiling of all classrooms.

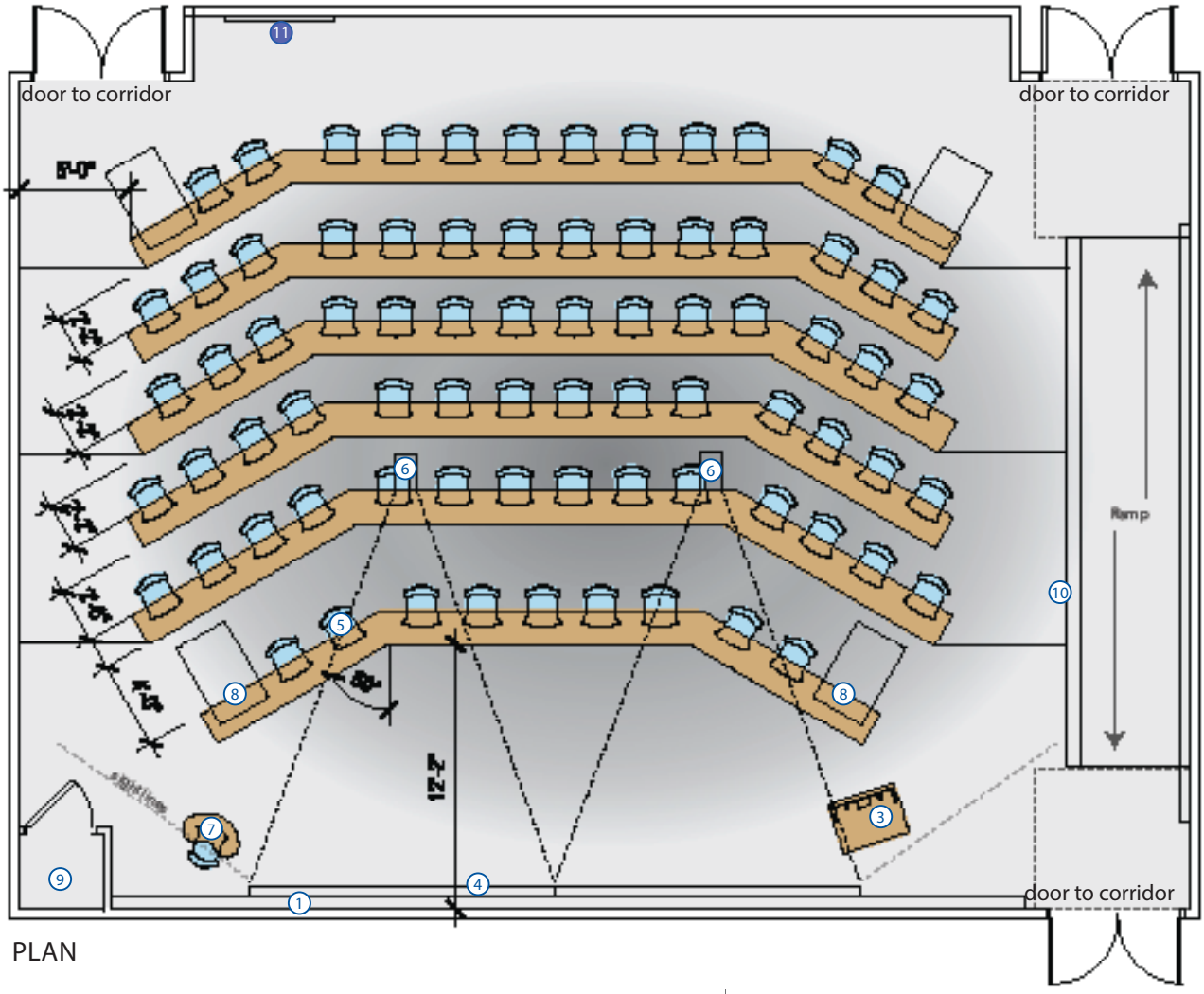
CLASSROOMS

LARGE CLASSROOM - OPTION 1

- 80 student stations
- 2,125 sq. ft. - tiered floor

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN

FURNISHINGS & EQUIPMENT

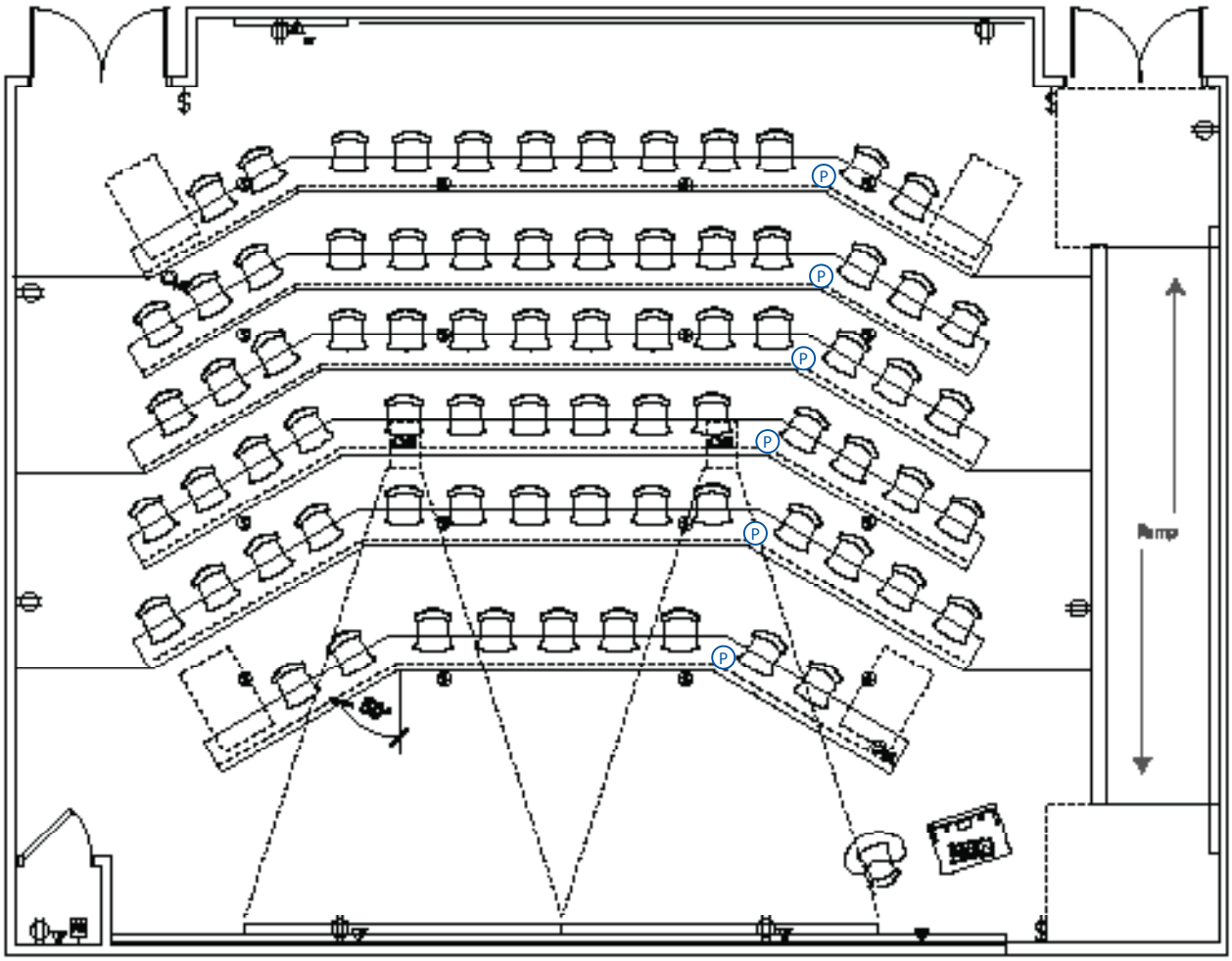
0 Indicates optional feature
1 Markerboard
2 Mobile fliptop support table
3 Mobile instructor station with A/V equipment rack, power conditioner, fan
4 Motorized projection screen 136.5" x 76.75"
5 Stackable, loose chairs
6 Projector, ceiling mounted
7 Mobile instructor station
8 Accessible seat
9 AV equipment rack
10 Partial height wall with railing
11 Flat screen monitor

FINISHES

Floor: Carpet or dark carpet
Wall: Paint & Acoustical wall treatment
Ceiling Ht: 12'-14' min.
Ceiling Type: Acoustical ceiling tile

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

*Note that door location may vary depending on building layout.



PLAN

SYMBOLS

- Duplex
- 4-Port Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- A/V connector
- Light switch
- Power/data raceway, typ. for all fixed furniture
- Emergency call button - location to be determined
- Ceiling duplex, power for projector
- Ceiling data for projector
- Ceiling wireless access point outlet
- Flat panel data
- Ceiling speaker

HVAC:

Thermostat by door

LIGHTING:

LED lighting.

NOTES:

- Avoid locating electrical panels in classrooms.
- Avoid chilled water equipment above the ceiling of all classrooms.
- Coordinate room dimensions with actual furniture to be used.

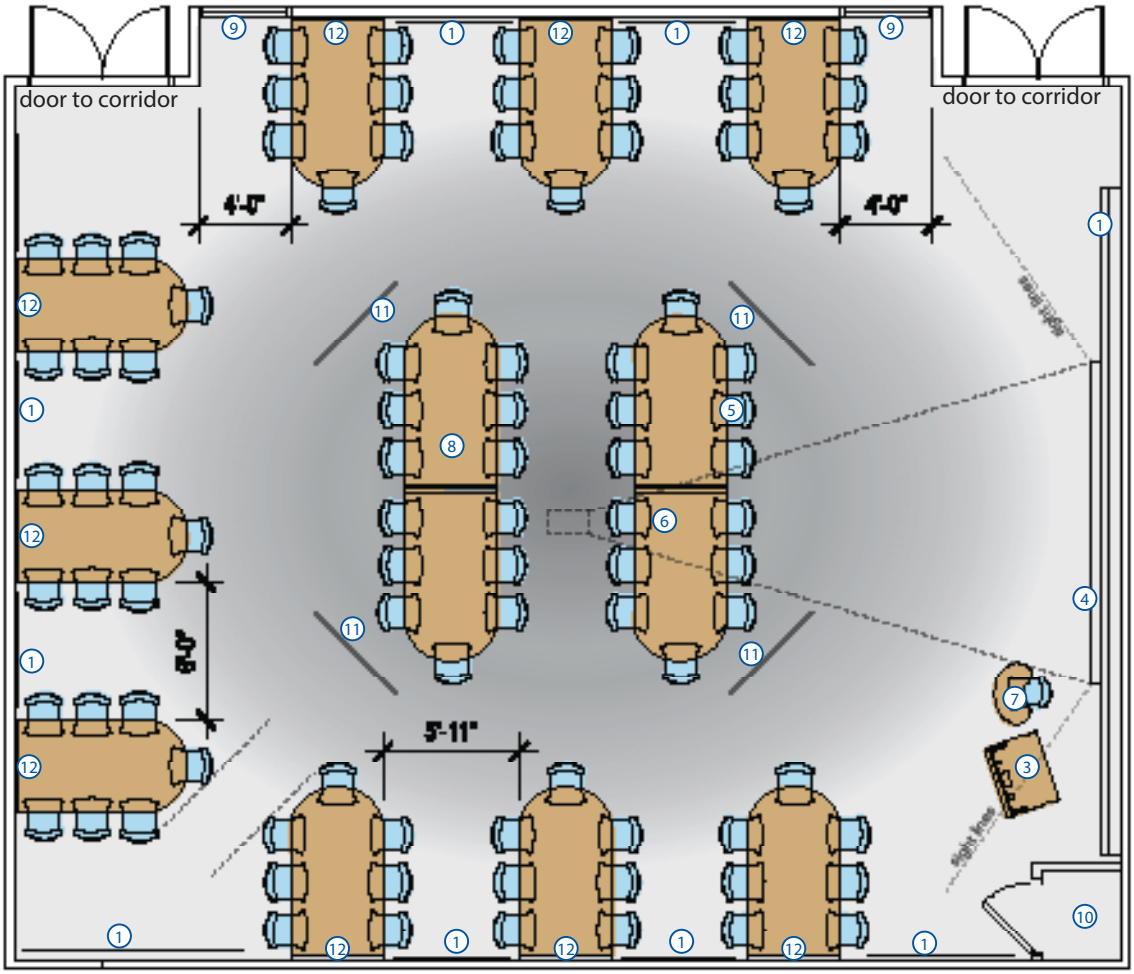
CLASSROOMS

LARGE CLASSROOM - OPTION 2

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"

- 80+ student stations
- 1,968 sq. ft. - flat floor



PLAN

FURNISHINGS & EQUIPMENT

0 Indicates optional feature

1. Markerboard
2. Mobile fliptop support table
3. Mobile instructor station with A/V equipment rack, power conditioner, fan
4. Motorized projection screen 128" x 72"
5. Mobile chairs
6. Projector, ceiling mounted
7. Mobile instructor station
8. Monitor table stations
9. Roller shade (window treatment)
10. AV equipment rack
11. Mobile marker easel
12. Flat screen monitors

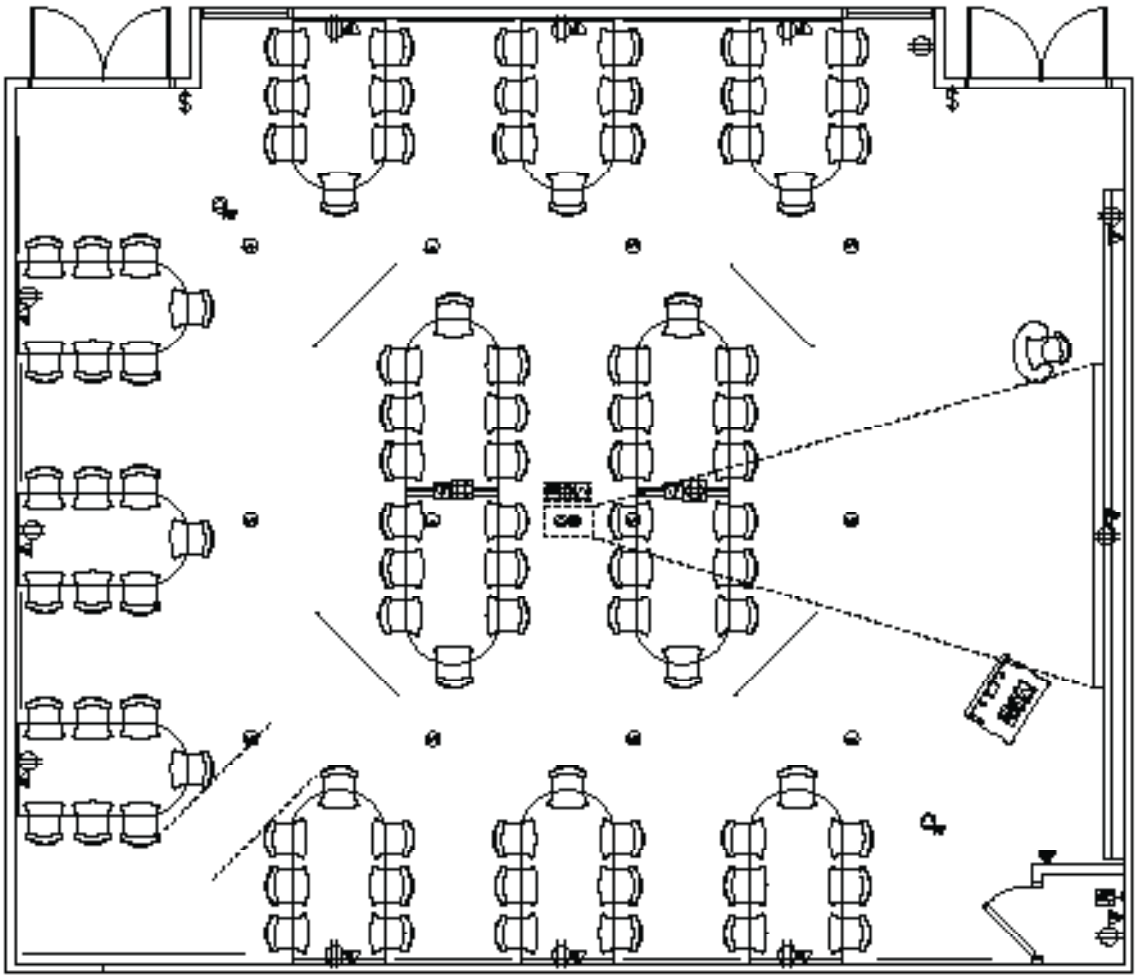
FINISHES

Floor: Rubber or dark carpet
Wall: Paint & acoustical treatment
Ceiling Ht: 10'-11'
Ceiling Type: Acoustical ceiling tiles

Environmental Sound Control:
Walls: min. STC 50

Ceilings: min. CAC 35, NRC .70

*Note that door location may vary depending on building layout.



PLAN

SYMBOLS

- Duplex
- Tel/Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V connector
- S Light switch
- E Emergency call button - location to be determined
- Ceiling duplex, power for projector
- Ceiling data for projector
- AP Ceiling wireless access point outlet
- FP Flat panel data
- S Ceiling speaker

HVAC:

Thermostat by door

LIGHTING:

LED lighting.

NOTES:

- Avoid locating electrical panels in classrooms.
- Avoid chilled water equipment above the ceiling of all classrooms.
- Coordinate room dimensions with actual furniture to be used.

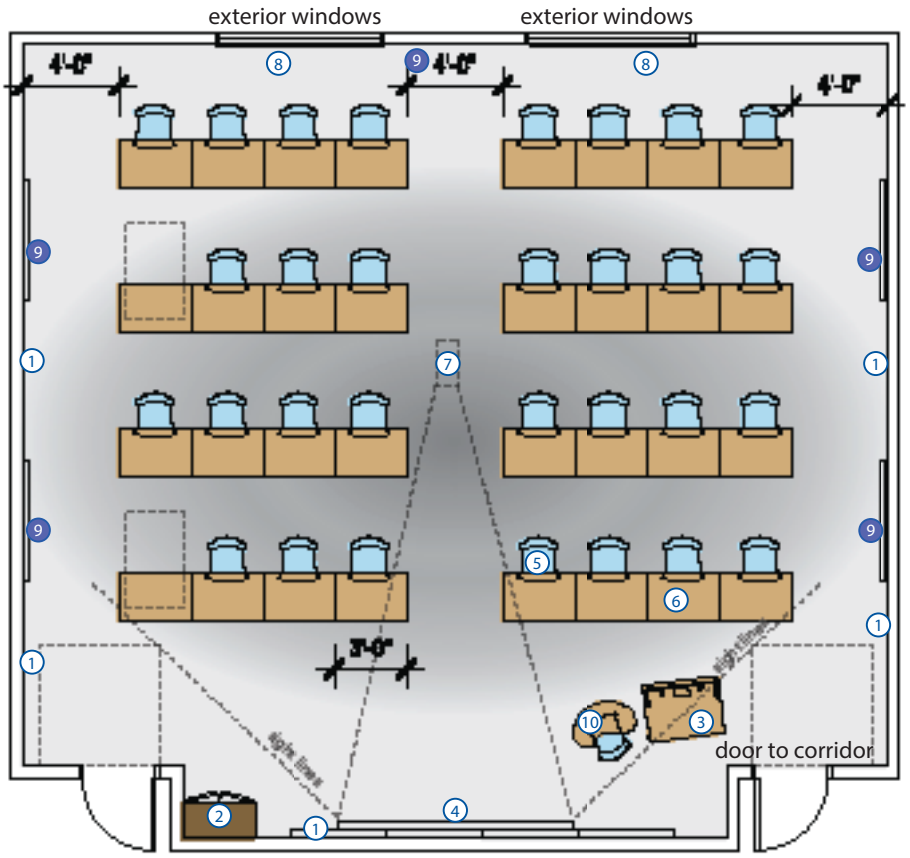
CLASSROOMS

COMPUTER LAB - OPTION 1

- 32 student stations
- 1,154 sq ft

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN

FURNISHINGS & EQUIPMENT

0 Indicates optional feature

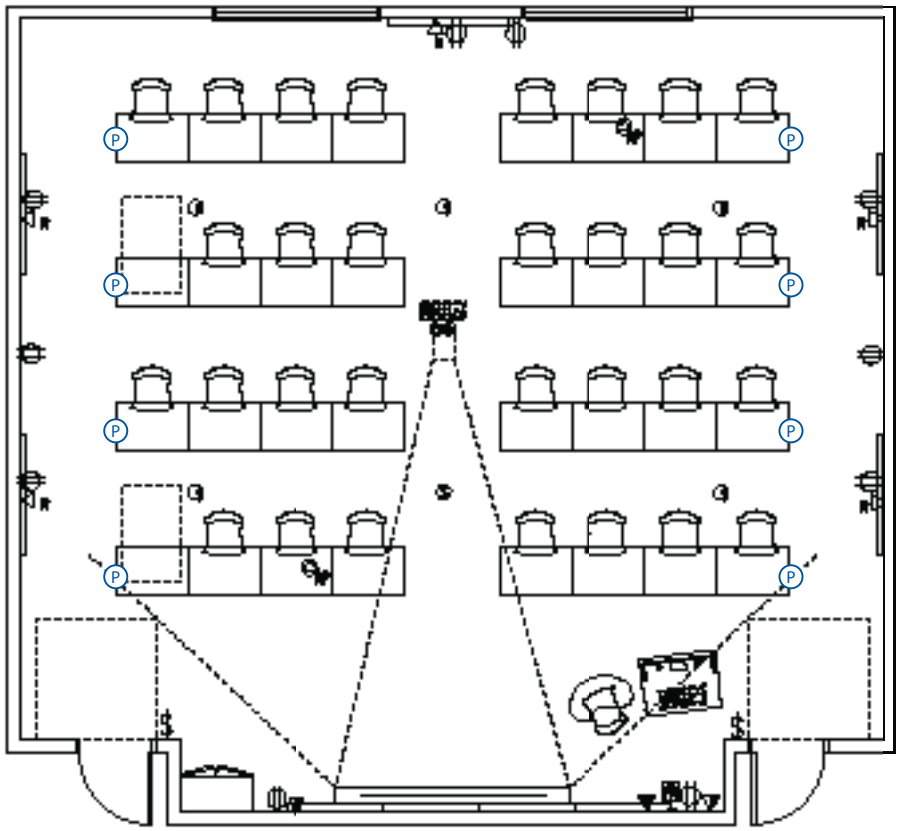
1. Markerboard
2. Storage cabinet - lockable
3. Mobile instructor station with A/V equipment rack, power conditioner, fan
4. Motorized projection screen, 119.5" x 67.25"
5. Mobile chairs
6. System computer desks
7. Projector, ceiling mounted
8. Roller shade (window treatment)
9. Flat screen monitors
10. Mobile presentation surface

FINISHES

Floor: Rubber or dark carpet
Wall: Paint & acoustical wall treatment
Ceiling Ht: 10'-11'
Ceiling Type: Acoustical ceiling tile
Chair Rail: Back wall

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

*Note that door location may vary depending on building layout.



PLAN

SYMBOLS

- Duplex
- 4-Port Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V connector
- $ Light switch
- (P) Data & Power for connection for furniture system
- ▲ Wall phone
- (E) Emergency call button - location to be determined
- Ceiling duplex, power for projector
- Ceiling data for projector
- AP Ceiling wireless access point outlet
- FP Flat panel data
- (S) Ceiling speaker

HVAC:

Thermostat by door

LIGHTING:

LED lighting

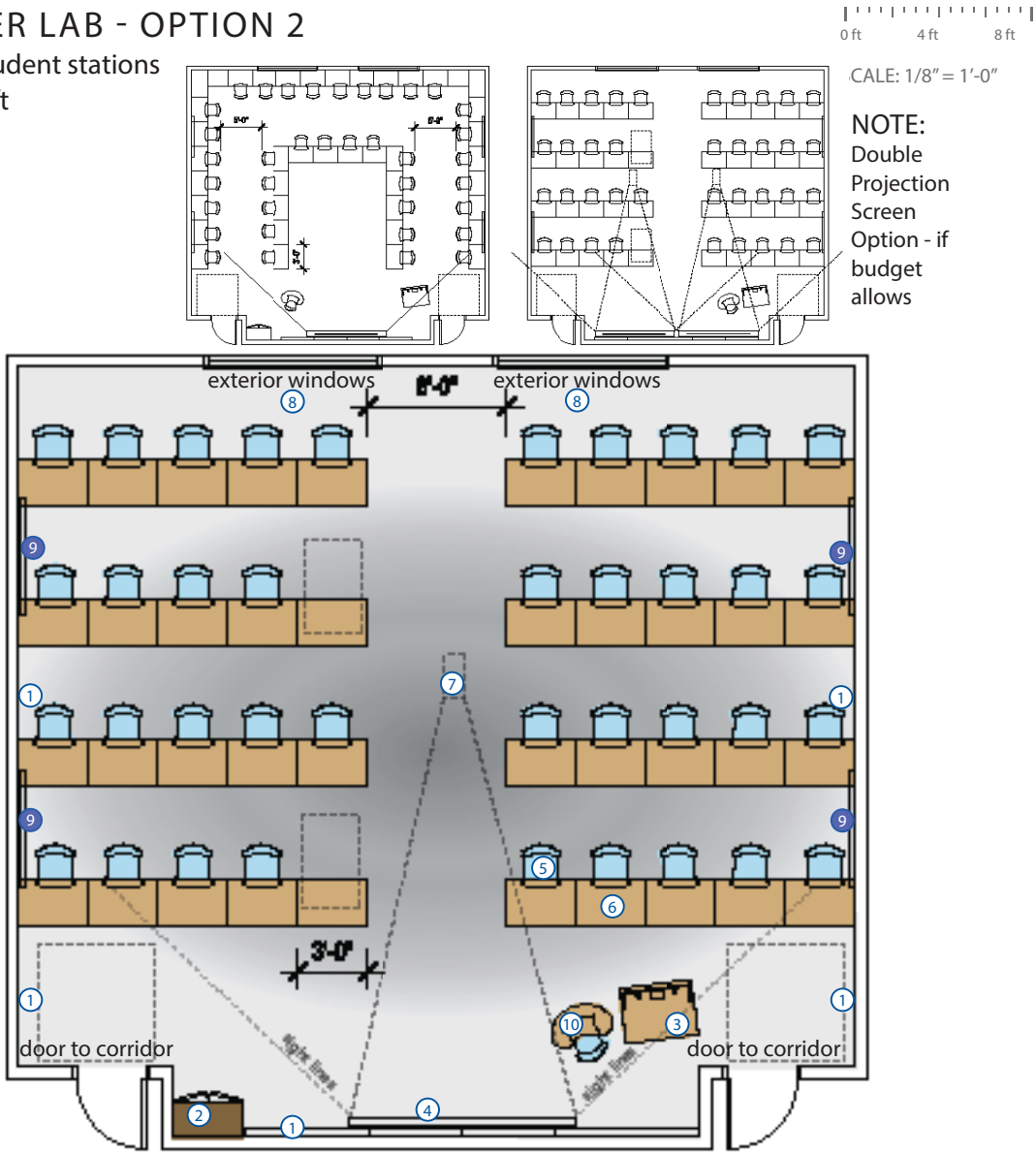
NOTES:

- Avoid locating electrical panels in classrooms.
- Avoid chilled water equipment above the ceiling of all classrooms.

CLASSROOMS

COMPUTER LAB - OPTION 2

- 36-40 student stations
- 1,154 sq ft



PLAN

FURNISHINGS & EQUIPMENT

0 Indicates optional feature

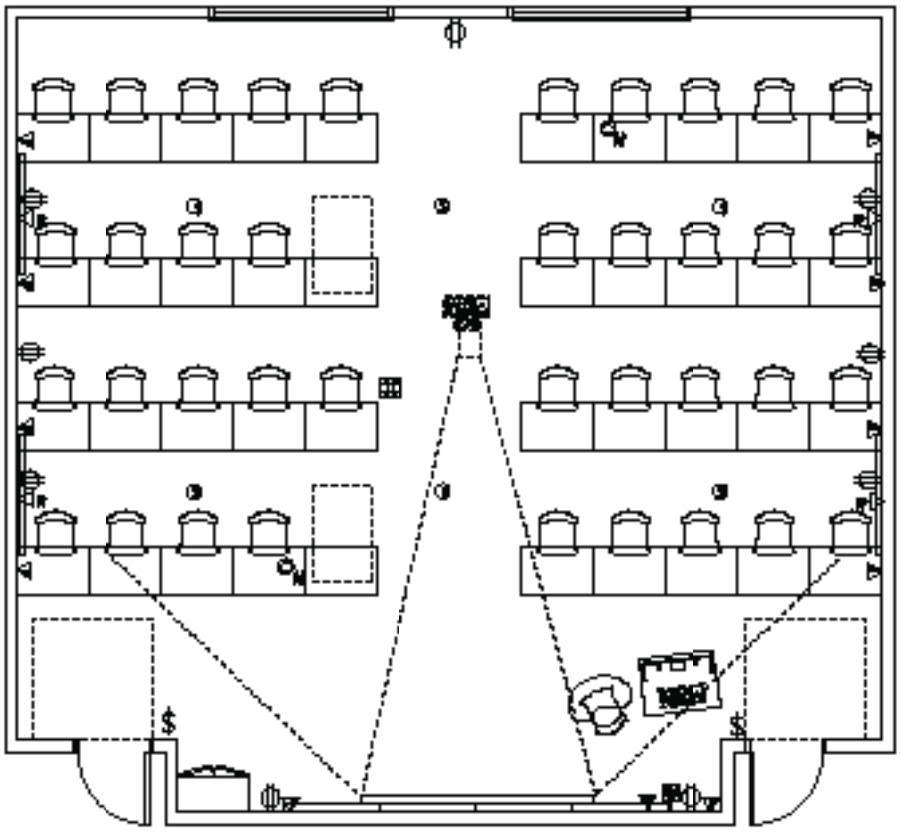
1. Markerboard
2. Storage cabinet - lockable
3. Mobile instructor station with A/V equipment rack, power conditioner, fan
4. Motor operated projection screen, 119.5" x 67.25"
5. Mobile chairs
6. System computer desk
7. Projector, ceiling mounted
8. Double roller shade (window treatment)
9. Flat screen monitors
10. Mobile presentation surface

FINISHES

Floor: Rubber or dark carpet
Wall: Paint & Acoustical wall treatment
Ceiling Ht: 10'-11'
Ceiling Type: Acoustical ceiling tile
Chair Rail: Back wall

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

*Note that door location may vary depending on building layout.



PLAN

SYMBOLS

- Duplex
- Tel/Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V connector
- $ Light switch
- (P) Power
- ▲ Wall phone
- (E) Emergency call button - location to be determined
- Ceiling duplex, power for projector
- Ceiling data for projector
- AP Ceiling wireless access point outlet
- FP Flat panel data
- (S) Ceiling speaker

HVAC:

Thermostat by door

LIGHTING:

LED lighting

NOTES:

- Avoid locating electrical panels in classrooms.
- Avoid chilled water equipment above the ceiling of all classrooms.
- Coordinate room dimensions with actual furniture to be used.

Part B
CONFERENCE/MEETING ROOMS

SMALL GROUP/TUTOR ROOM

SMALL CONFERENCE ROOM

A well designed conference room helps for effective and clear communication of ideas and dialogue. Conference room design demands not only the need to have the appropriate furniture and equipment, but it also calls for the right space, atmosphere, lighting and technology support.

LIGHTING

For rooms with exterior windows, the window treatments should contain solar blocking or blackout options to prevent glare for audio visual use.

ACOUSTICAL CONTROL

Conference room interiors should be designed seeking the comfort level of the users and should not allow for external sound to interfere with internal interaction. Sound inside the room also needs to be controlled. Location of conference rooms and doors in these spaces will assist in acoustical control.

FURNISHINGS

It is good practice to plan for a sufficient amount of space for the users to circulate and interact comfortably but still maintain personal space. Cluttering can & should be avoided by not crowding too many chairs around the table.

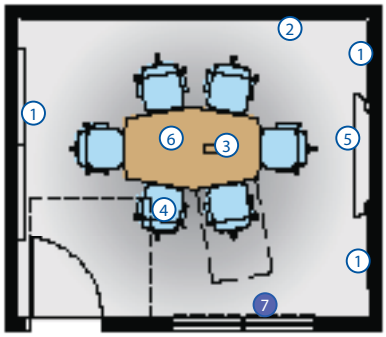
MEDIUM CONFERENCE ROOM

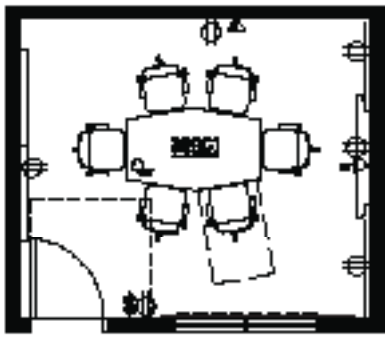
LARGE CONFERENCE ROOM

SMALL GROUP/TUTOR ROOM
- 180 SF / 6 SEATS

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"





PLAN

FURNISHINGS & EQUIPMENT

0 Indicates an optional feature
1 Markerboard
2 Tackable acoustical wall treatment
3 Power/data/phone/AV access panel
4 Mobile chairs
5 65" Flat panel display, wall mounted
6 Conference table
7 Interior window - may be opaque

FINISHES

Floor:	Carpet or Rubber
Wall:	Painted drywall
Ceiling Ht:	9'-0" approximately
Ceiling Type:	Acoustical ceiling tile

HVAC:
Thermostats by door

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

SYMBOLS

Duplex or Quad
Tel/Data
Flush floor-mounted quadruplex
Flush floor-mounted data
AV A/V connector
$ Light switch with occupancy sensor
AP Wireless access point
FP Flat panel data

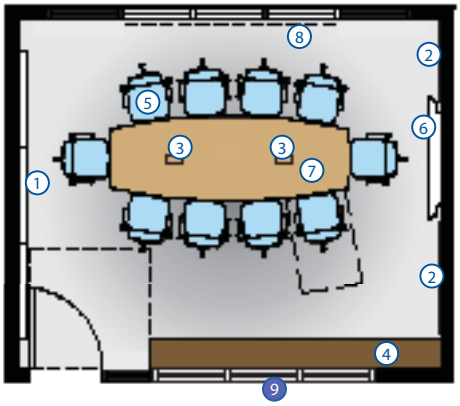
LIGHTING:

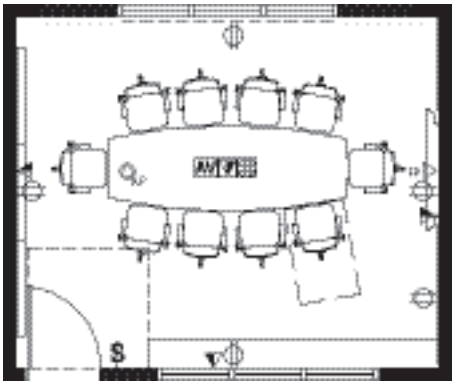
LED lighting

SMALL GROUP ROOM
- 256 SF / 10 SEATS

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"





PLAN

FURNISHINGS & EQUIPMENT

0 Indicates an optional feature
1 Markerboard
2 Tackable acoustical wall treatment
3 Power/data/phone/AV access panel
4 Storage cabinet
5 Mobile chairs
6 65" Flat panel display, wall mounted
7 Conference table
8 Roller shade (window treatment and room darkening)
9 Interior window - may be opaque

FINISHES

Floor:	Carpet
Wall:	Painted drywall
Ceiling Ht:	9'-0" approximately
Ceiling Type:	Acoustical ceiling tile

HVAC:
Thermostats by door

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

SYMBOLS

- Duplex or Quad
- 4-Port Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V connector
- $ Light switch with occupancy sensor
- AP Wireless access point
- FP Flat panel data

LIGHTING:

LED lighting

NOTES:

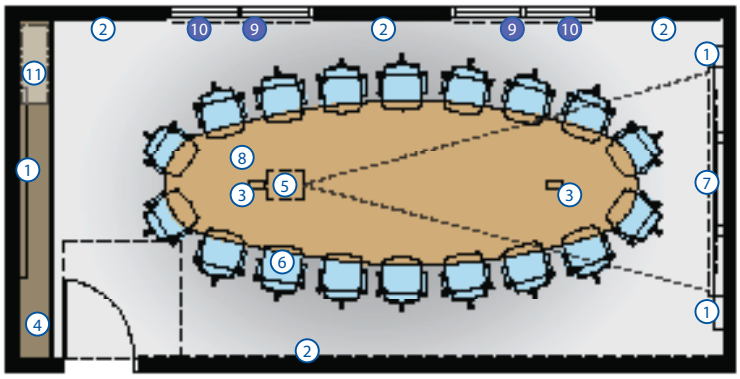
- Coordinate room dimensions and openings with actual furniture to be used.

CONFERENCE/MEETING ROOMS

MEDIUM GROUP ROOM
- 416 SF / 18 SEATS

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN

FURISHINGS & EQUIPMENT

0 Indicates an optional feature
1 Markerboard
2 Tackable acoustical wall treatment
3 Power/data/phone/AV access panel
4 Storage cabinet w/ space for AV equipment
5 Projector, ceiling mounted
6 Mobile chairs
7 Motorized projection screen, 42.75" x 72.5"
8 Conference table (1 table or modular unit)
9 Interior or exterior windows - may be opaque if interior
10 Roller shade - exterior window (window treatment)
11 A/V equipment

FINISHES

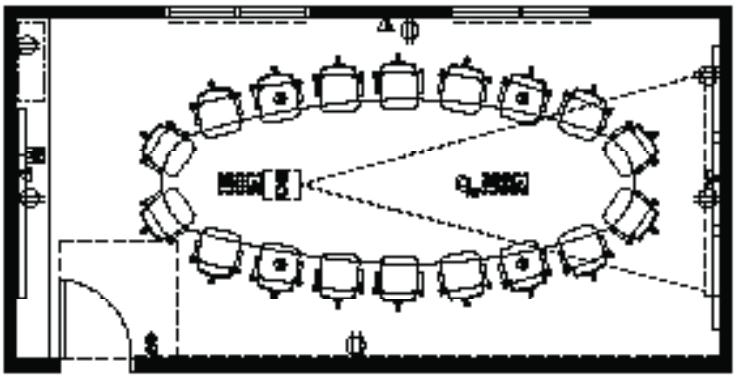
Floor:	Carpet
Wall:	Painted drywall
Ceiling Ht:	10'-0"
Ceiling Type:	Acoustical ceiling tile

HVAC:
Thermostats by door

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN

SYMBOLS

- Duplex
- 4-Port Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V connector
- $ Light switch with occupancy sensor
- Ceiling duplex, power for projector
- Ceiling data for projector
- AP Ceiling wireless access point outlet
- S Ceiling speaker

LIGHTING:

LED lighting

NOTES:

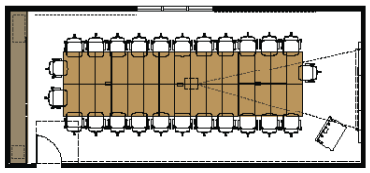
- Coordinate room dimensions and openings with actual furniture to be used.

CONFERENCE/MEETING ROOMS

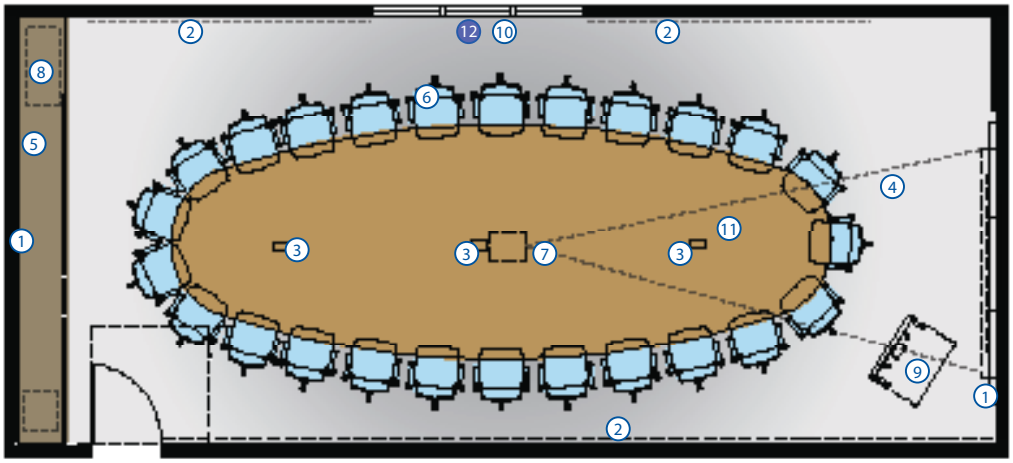
LARGE GROUP ROOM - 650-660 SF / 25 SEATS

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



NOTE:
Alternative layout with modular tables.



PLAN

FURNISHINGS & EQUIPMENT

0 Indicates an optional feature

1. Markerboard
2. Tackable acoustical wall treatment
3. Power/data/phone/AV access panel
4. Motorized projection screen, 102" x 57"
5. Low storage cabinet
6. Mobile chairs
7. Projector, recessed in ceiling
8. AV equipment
9. Mobile instructor station
10. Roller shade if exterior window (window treatment)
11. Conference table (1 table or modular unit)
12. Markerboard opaque glass

FINISHES

Floor:	Carpet
Wall:	Painted and acoustical wall treatment
Ceiling Ht:	10'-11' approximately
Ceiling Type:	Acoustical ceiling tile

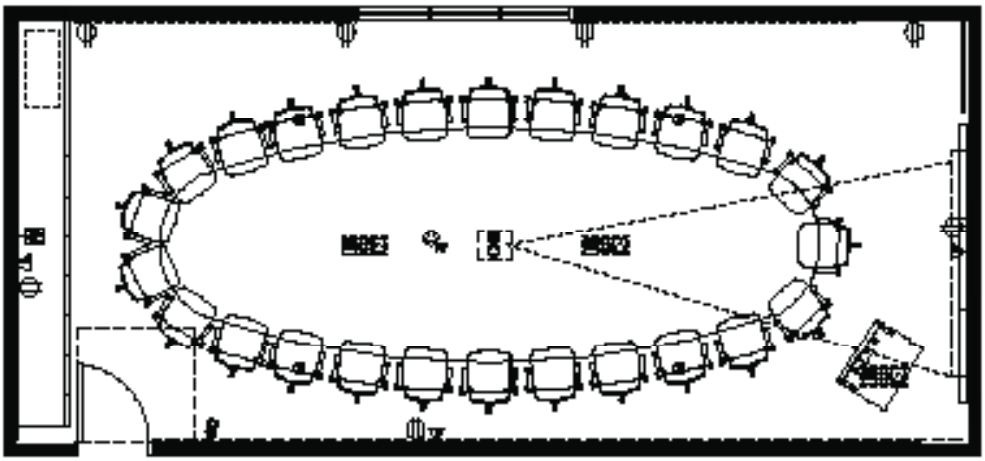
HVAC

Manually operated thermostats. Provide separate zone for large Conference Room.

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN

SYMBOLS

- Duplex
- 4-Port Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V connector
- $ Light switch with occupancy sensor
- Ceiling duplex, power for projector
- Ceiling data for projector
- AP Ceiling wireless access point outlet
- S Ceiling speaker

LIGHTING

LED lighting

NOTES:

- Coordinate room dimensions and openings with actual furniture to be used.

Part C
OFFICES

OFFICES

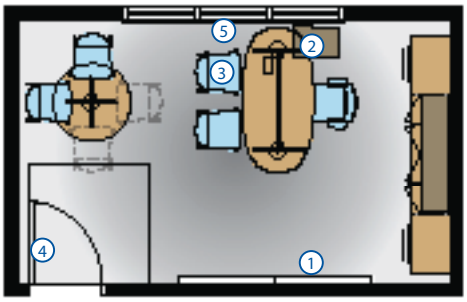
DOORS

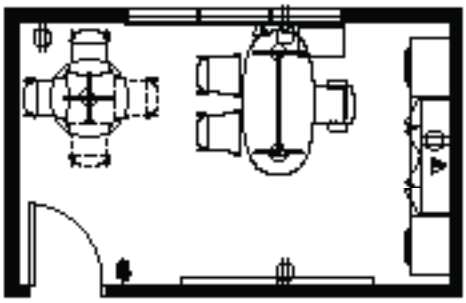
Vision panels should be installed in all offices, conference rooms, and classrooms to allow first responders to quickly ascertain the condition of the room. At a minimum, a solid door with a vision lite is required in all spaces.

DEAN OR VP PRIVATE OFFICE
- 200 SF / SINGLE OCCUPANCY

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"





PLAN

FURNISHINGS & EQUIPMENT

1. Markerboard/tackboard
2. Mobile, lockable pedestal file
3. Guest seating
4. Solid wood door w/vision lite
5. Single roller shade

- Worksurface
- Storage
- Seating

FINISHES

Floor:	Carpet
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 10'-0"
Ceiling Type:	Acoustical ceiling tile

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

SYMBOLS

- Duplex or Quad
- Tel/Data
- $ Light switch with occupancy sensor

HVAC

Manually operated thermostats are acceptable.

LIGHTING

LED lighting

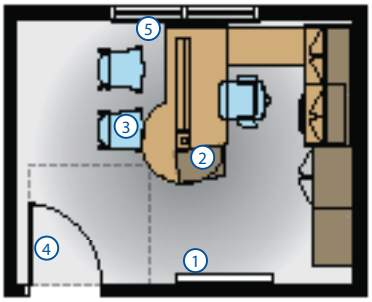
NOTES:

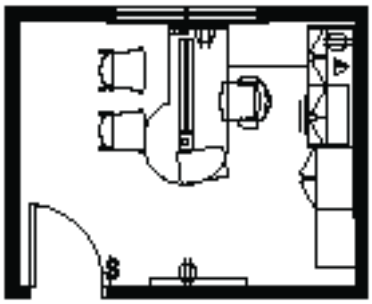
- Co-locate electrical and data outlets when placed on same wall.

MANAGER PRIVATE OFFICE
- 150 ASF / SINGLE OCCUPANCY

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"





PLAN

FURNISHINGS & EQUIPMENT

1. Markerboard/tackboard
2. Mobile, lockable pedestal file
3. Guest seating
4. Solid wood door w/vision lite
5. Single roller shade

Worksurface
Storage
Seating

FINISHES

Floor:	Carpet
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 10'-0"
Ceiling Type:	Acoustical ceiling tile

Environmental Sound
Control: Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

SYMBOLS

Duplex or Quad
Tel/Data
$ Light switch with occupancy sensor

HVAC

Manually operated thermostats are acceptable.

LIGHTING

LED lighting

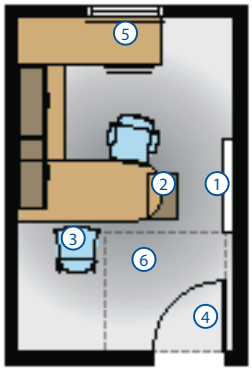
NOTES:

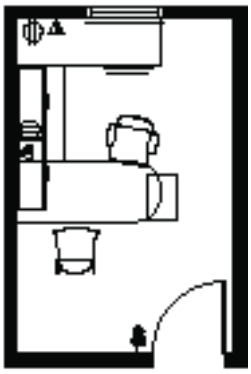
- Co-locate electrical and data outlets when placed on same wall.

SUPERVISOR 1 PRIVATE OFFICE
- 125 SF / SINGLE OCCUPANCY

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"





PLAN

FURNISHINGS & EQUIPMENT

1. Markerboard/tackboard
2. Mobile, lockable pedestal file
3. Guest seating
4. Solid wood door w/vision lite
5. Single roller shade

Worksurface
Storage
Seating

FINISHES

Floor:	Carpet
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 10'-0"
Ceiling Type:	Acoustical ceiling tile

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

SYMBOLS

Duplex or Quad
Tel/Data
$ Light switch with occupancy sensor

HVAC

Manually operated thermostats are acceptable.

LIGHTING

LED lighting

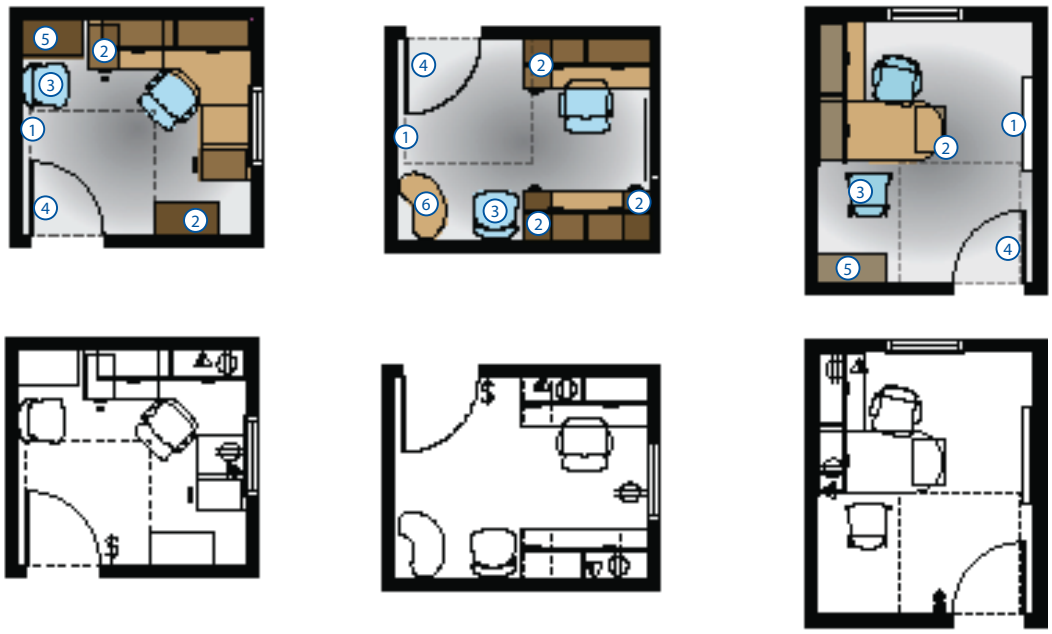
NOTES:

- Co-locate electrical and data outlets when placed on same wall.

SUPERVISOR 2 + FACULTY PRIVATE OFFICE - 80 SF -106 SF / SINGLE OCCUPANCY

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN

FURNISHINGS & EQUIPMENT

1. Markerboard/tackboard
2. Mobile, lockable pedestal file
3. Guest seating
4. Solid wood door w/vision lite
5. Option of storage or mobile collaboration surface
6. Mobile collaboration surface

Worksurface
Storage
Seating

FINISHES

Floor:	Carpet
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 10'-0"
Ceiling Type:	Acoustical ceiling tile

Environmental Sound Control: Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

SYMBOLS

Duplex or Quad
Tel/Data
$ Light switch with occupancy sensor

HVAC

Manually operated thermostats are acceptable.

LIGHTING

LED lighting

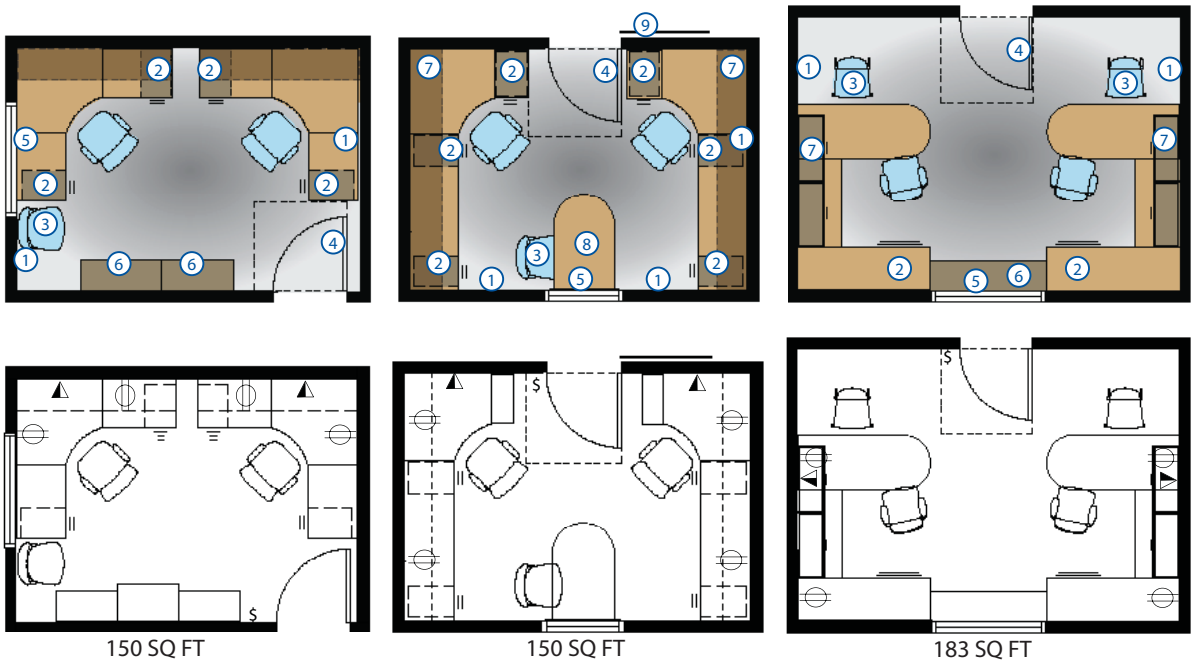
NOTES:

- Co-locate electrical and data outlets when placed on same wall.

SHARED FACULTY OFFICE
- 150-183 SF / DOUBLE OCCUPANCY

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



150 SQ FT | 150 SQ FT | 183 SQ FT

PLAN

FURNISHINGS & EQUIPMENT

1. Markerboard/tackboard
2. Lateral file
3. Guest seating
4. Solid wood door w/vision lite
5. Single roller shade
6. Bookcase
7. Upper cabinet storage
8. Collaboration table
9. Option for sliding door

Worksurface
Storage
Seating

FINISHES

Floor:	Carpet
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 10'-0"
Ceiling Type:	Acoustical ceiling tile

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 35, NRC .70

SYMBOLS

Duplex or Quad
Tel/Data
$ Light switch with occupancy sensor

HVAC

Manually operated thermostats are acceptable.

LIGHTING

LED lighting

NOTES:

- Co-locate electrical and data outlets when placed on same wall.
- Note that sound transmission can be compromised with a sliding door if there is no seal.

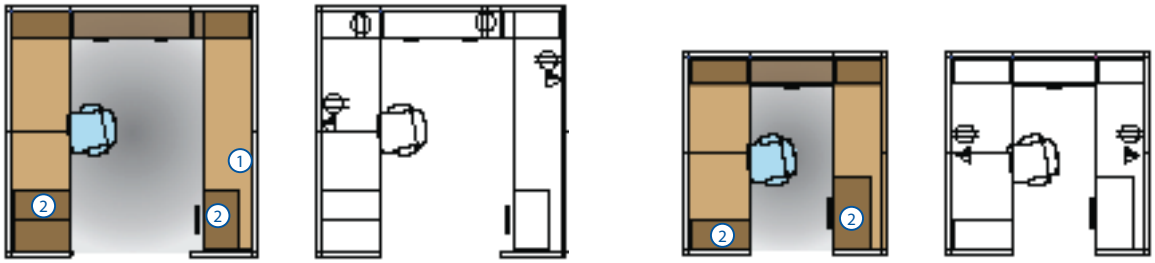
WORKSTATIONS

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"

LARGE WORKSTATION
100 SF

STANDARD WORKSTATION
64 SF



PLAN

FURNISHINGS & EQUIPMENT

1. Markerboard/tackboard
2. Fixed, lockable pedestal file
3. Guest seating

Worksurface
Storage
Seating

FINISHES

Floor:	Carpet
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 10'-0"
Ceiling Type:	Acoustical ceiling tile

Environmental Sound Control:
Walls: min. STC 50
Ceilings: min. CAC 25, NRC .90

SYMBOLS

Duplex or Quad
Tel/Data
$ Light switch with occupancy sensor

HVAC

Manually operated thermostats are permitted in Division Suites.

LIGHTING

LED lighting

NOTES:

- Co-locate electrical and data outlets when placed on same panel.

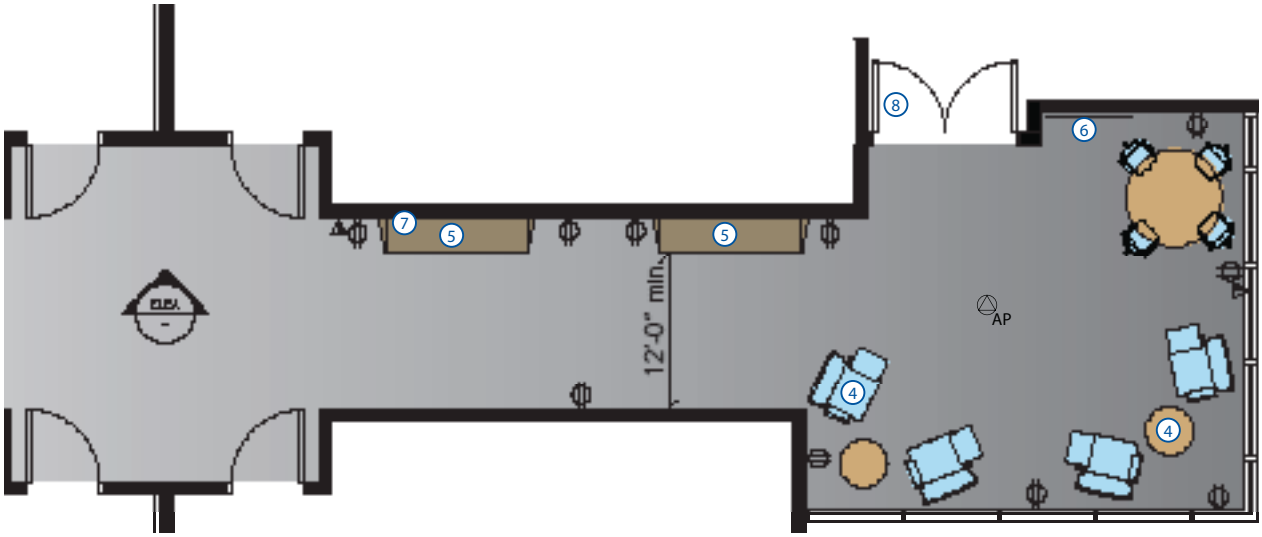
PUBLIC CORRIDORS

PUBLIC CORRIDORS

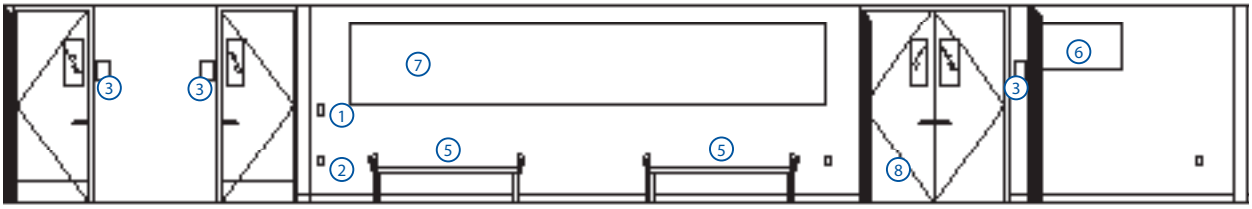
Public corridors adjacent to student classrooms should include highly durable materials and be configured to provide students with opportunities for collaboration and discussion with other students and instructors. Break out spaces at the end of the corridors are encouraged as they allow for informal dialogue and interaction. Placement of these areas should be away from classroom doors to provide for circulation flow and acoustical control.

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN



ELEVATION

FURNISHINGS & EQUIPMENT

1. Light switches, thermostat
2. Electric receptacle
3. Signage
4. Casual chairs and side tables
5. Bench
6. Electronic signage (where appropriate)
7. Opportunities for art and student display
8. Exit doors

FINISHES

Floor: Resilient flooring
Wall: Painted drywall
Consider durable wainscot
Ceiling Ht: 9'-0" to 11'-0"
Ceiling Type: Acoustical ceiling tile

SYMBOLS

Duplex
Tel/Data
AP Wireless access point

HVAC

No manually operated thermostats

LIGHTING

LED lighting
Consider 'Solatube' lights when possible

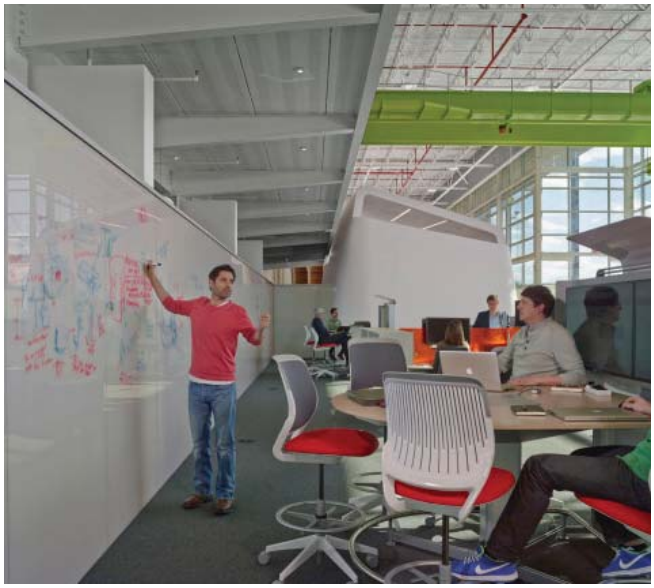
NOTES:

- Consider acoustical control when laying out informal gathering spaces.

FACULTY OFFICE SUITE CORRIDORS

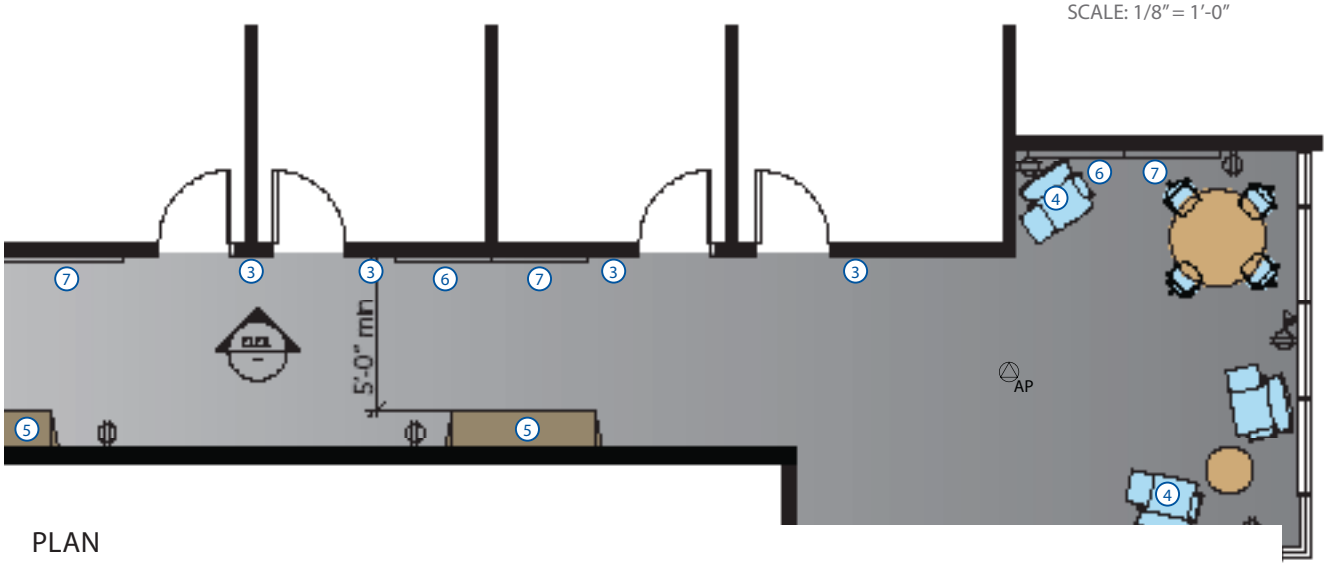
FACULTY OFFICE SUITE CORRIDORS

Faculty office suite corridors should provide space for interaction and collaboration among faculty members and between faculty and their students. Providing adequate seating groups along with tackboards and markerboards will foster this type of environment.



0 ft 4 ft 8 ft

SCALE: 1/8″ = 1′-0″



PLAN

ELEVATION

FURNISHINGS & EQUIPMENT

1. Light switches, thermostat
2. Electric receptacle
3. Signage
4. Casual chairs and side tables
5. Bench
6. Magnetic markerboard
7. Tackboard
8. Vision lite, typical

FINISHES

Floor: Resilient flooring
Wall: Painted drywall
Ceiling Ht: 9′-0″ to 11′-0″
Ceiling Type: Acoustical ceiling tile

SYMBOLS

Duplex
Tel/Data
AP Wireless access point

HVAC

No manually operated thermostats

LIGHTING

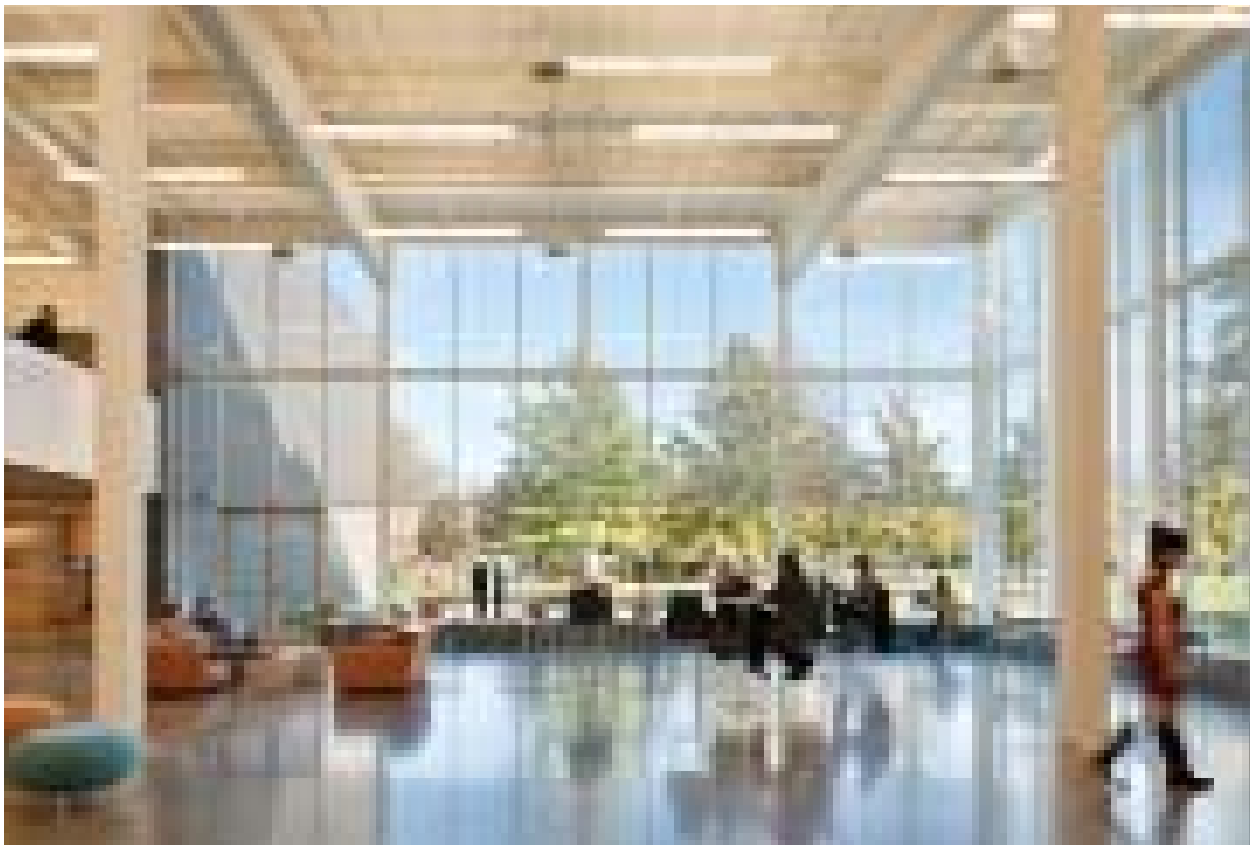
LED lighting
Consider 'Solatube' lights when possible

NOTES:

- Consider acoustical control when laying out informal gathering spaces.

CORRIDORS + COLLABORATIVE SPACES

Interior gathering spaces should be provided in each building, with furniture layouts that will accommodate multiple types of configurations and activities within the space. Places for rest and quiet study enhance the campus experience and support the users.



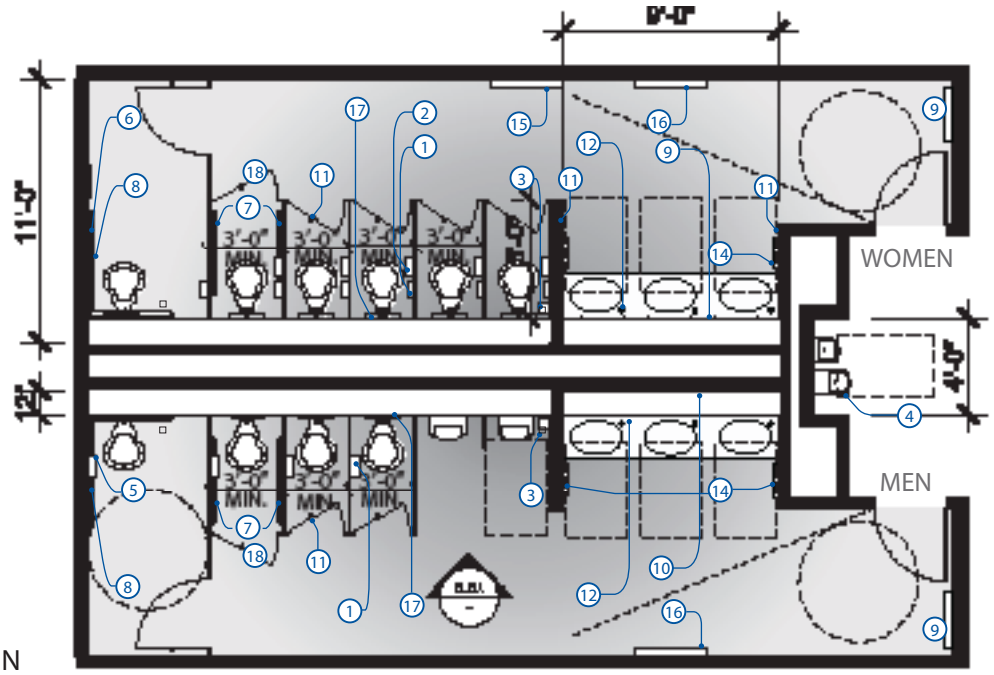
Public spaces are essential for the daily life of students, faculty, staff, and visitors. They foster the widest variety of activities, and should support the informal, spontaneous, interactions and socializing that can lead to a culture of trust, collaboration, sharing,and learning from others. Clear sightlines of these areas should be considered for security.

Planning a campus's facilities should strategically distribute a mix of quiet and lively, public and semi-private spaces such as lounges, cafés, common areas, and study rooms throughout buildings. They should be created within easy to locate areas such as lobbies, corridors, outside classrooms and offices, in transition spaces, and outdoors. Consideration should be given to designing a variety of configurations for various uses. They should support a variety of student activities including study, waiting between classes, socializing, interactive dialogue between students and instructors, eating, or reading.

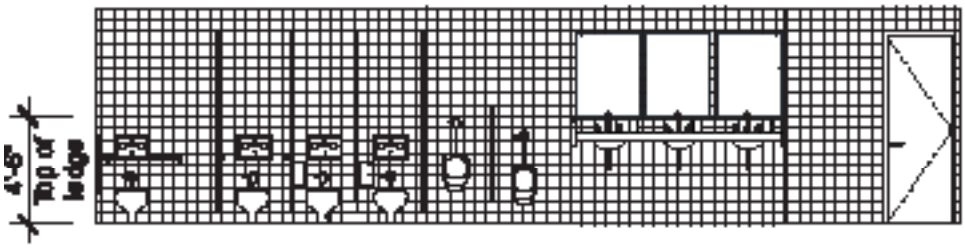
MULTIPLE ACCOMODATION STUDENT TOILET ROOMS - 850 SF | TOTAL OCCUPANCY

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



PLAN



ELEVATION

EQUIPMENT & ACCESSORIES

1. Toilet tissue dispenser in non-ADA compliant stalls by owner - surface mount (must have consideration for meeting accessibility clearances)
2. Sanitary napkin disposal with flip top lid on toilet partition
3. Floor drain w/trap primer connection
4. Hi-low drinking fountain with bottle refill station
5. Combination toilet seat cover and toilet tissue dispenser - recessed preferred in ADA stall
6. Combination toilet seat cover, sanitary napkin disposal and toilet tissue dispenser - recessed preferred in ADA stall
7. Horizontal grab bar
8. Two-wall horizontal grab bar
9. Full length mirror
10. Individual mirrors over lavatories
11. Hook with flat square head
12. Soap dispenser supplied by owner - surface mount on counter and overhang sink
13. Not used
14. Hand dryer - low profile
15. Napkin/tampon vendor - recessed (Women's)
16. Diaper changing station - when appropriate
17. Toilet seat cover dispenser
18. Semi-ambulatory accessible

FINISHES

Floor:	8"x 8" porcelain tile w/dark grout
Base:	Porcelain tile cove base
Wall:	8"x 8" porcelain tile w/accent option - to ceiling if budget allows
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Painted drywall with access panels

LIGHTING

LED lighting above water closets and above handwashing area

NOTES:

- Toilet rooms should provide a continuous ledge, 12" in depth, spanning the area behind lavatories and toilets. This design element provides a convenient dry surface for occupants to set their personal belongings.
- Provide obstructed sightline into restroom from corridor when door is open.
- All floor drains to be provided with an automatic trap primer behind an access panel.
- Floor mounted water closets.
- Backing plates for drinking fountains to be provided by the manufacturer.
- Provide exhaust at a minimum of 10 AC/HR and sufficient supply or transfer air to prevent excess negative pressure.
- Hot and cold water supply should be provided with accessible shut off valves.
- All cleanouts and access panels locations to be easily accessible.
- Place restrooms to avoid acoustical issues with adjacent spaces - see Section 4.
- Do not place hand dryers on exterior walls
- Doors should be at a minimum, roughed in for automatic door opener - install actual opening when budget permits.

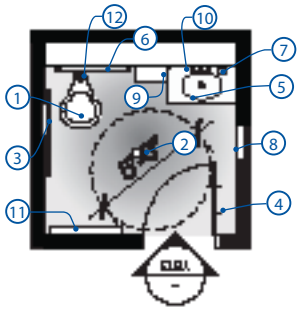
TOILET ROOMS

SINGLE OCCUPANCY/ FACULTY STAFF TOILET ROOM - MINIMUM 60 SF

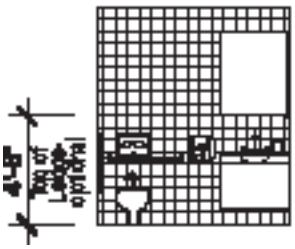
0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"

PLAN



ELEVATION



EQUIPMENT & ACCESSORIES

1. Floor mounted water closet
2. Floor drain w/trap primer connection
3. Combination toilet seat cover, sanitary napkin disposal and toilet tissue dispenser - recessed preferred
4. Coat hooks with flat end for safety
5. Solid surface counter with integral bowl
6. Two-wall, horizontal grab bar
7. Soap dispenser - surface mount
8. Combination paper towel dispenser and waste receptacle - recessed
9. Hand dryer - quick dry
10. Mirror
11. Napkin/tampon vendor - recessed (Women's)
12. Toilet seat cover dispenser - recessed

FINISHES

Floor:	8"x 8" porcelain tile
Base:	Porcelain tile cove base
Wall:	4"x 4" ceramic or 8"x 8" porcelain tile
Ceiling Ht:	9'-0"
Ceiling Type:	Painted drywall with access panels

LIGHTING

LED light fixtures

NOTES:

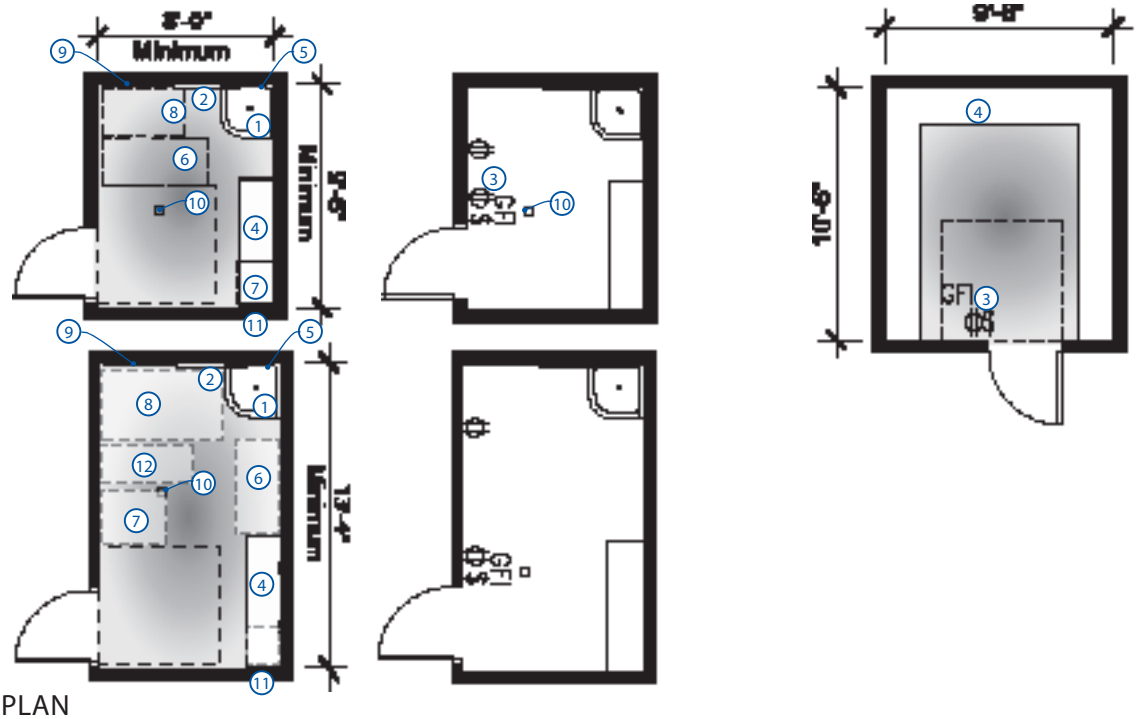
- The number of faculty/staff toilet rooms included in a building project will be determined by the needs of the specific programs that will occupy the building and code compliance.
- Hot and cold water supply should be provided with accessible shut off valves.
- All floor drains to be provided with an automatic trap primer behind an access panel.
- Floor-mounted water closets.
- Privacy lock.
- Provide exhaust at a minimum of 10 AC/HR and sufficient supply or transfer air to prevent excess negative pressure.
- All cleanouts and access panels locations to be easily accessed.
- Avoid placing plumbing walls on walls common with occupied spaces, such as classrooms, private offices, etc. If this is unavoidable, special sound isolated wall construction will be required. Place restrooms to avoid acoustical issues with adjacent spaces - see Section 4.
- Partition walls should be constructed on 4" concrete curb.

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"

CUSTODIAL WET/ EQUIPMENT CLOSET
- MINIMUM 76 SF - 106 SF

CUSTODIAL SUPPLY STORAGE ROOM
- MINIMUM 100 SF



PLAN

EQUIPMENT & ACCESSORIES

1. Floor basin (mop sink) with 4"curb
2. Mop rack with hooks
3. Ground fault interrupter (GFI) receptacle located approximately 2'-0" above finish floor (AFF) near door
4. Adjustable shelving - 12-16" deep starting at 3' AFF to allow vacuum to be stored below
5. Hot and cold water faucet with hook for filling buckets and attached hose
6. Mop cart - 2'-0" x 5'-0"
7. Vacuum - 18" x 18" or large vacuum 34" x 28"
8. Floor machine (buffer) - 2'-0" x 4'-0" or rider buffer 63" x 36"
9. Step ladder on wall hooks
10. Floor drain with trap primer connection
11. Walls to sit on 4" concrete curb
12. Carpet extractor 48" x 20"

FINISHES

Floor:	Hardened smooth concrete
Wall:	FRP panels
Ceiling Ht:	Slab to slab
Ceiling Type:	Exposed concrete or painted drywall
Door:	3'-0" wide
	Hollow metal frame

SYMBOLS

- Duplex
- Quadruplex
- $ Light switch with occupancy sensor

LIGHTING

LED utility lights

CUSTODIAL WET EQUIPMENT CLOSET

- Strategically located on all floors throughout a building.
- All buildings should have at least one larger custodial closet to accommodate larger cleaning equipment
- Locate closet to avoid moving equipment long distances.
- Doors shall swing out and shall be large enough to permit free movement of boxes and equipment (3'-0" min).
- Provide adequate ventilation.

CUSTODIAL SUPPLY STORAGE ROOM

- One room per building for bulk storage of custodial supplies is required.
- Locate on ground floor near elevator or loading dock to avoid moving equipment long distances.
- Doors shall swing out and shall be large enough to permit free movement of boxes and equipment.
- Provide adequate ventilation.

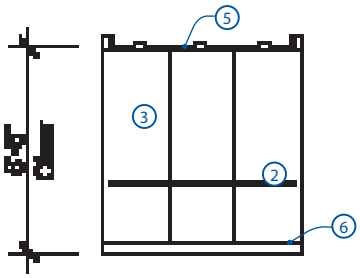
NOTES:

- Backflow preventers, pressure regulators etc. are not allowed in custodial rooms.
- Provide exhaust at a minimum of 10 AC/HR.
- All equipment rooms shall be designed and located to facilitate the removal, transport, and replacement of the largest equipment component housed within the room. Consider an oversized door to facilitate equipment.
- Prevent doors from swinging into path of travel.

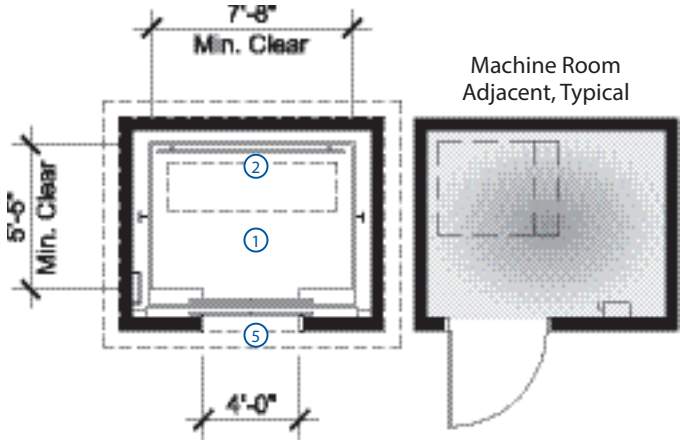
PASSENGER ELEVATOR - CENTER OPENING

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



ELEVATION



PLAN

FINISHES

1. Floor: Carpet
2. Handrail: One tubular handrail at back wall, satin stainless steel finish
3. Walls: Plastic laminate removable panels. Consider PVC edge or hardwood edge.
4. Ceiling: Metal panels with recessed LED downlights and perimeter lighting
5. Doors and front returns: Satin stainless steel (vertical)
6. Base: Satin stainless steel (vertical) 4" high

LIGHTING

LED downlights

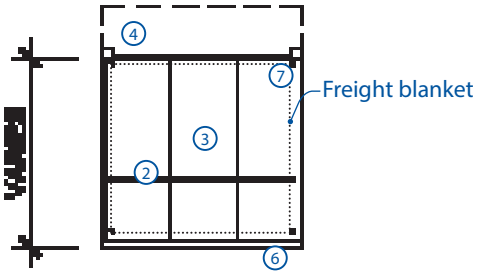
NOTES:

- For additional detail, refer to Section 4.
- All equipment rooms shall be designed and located to facilitate the removal, transport, and replacement of the largest equipment component housed within the room.
- Machine room surfaces similar to Electrical Room.

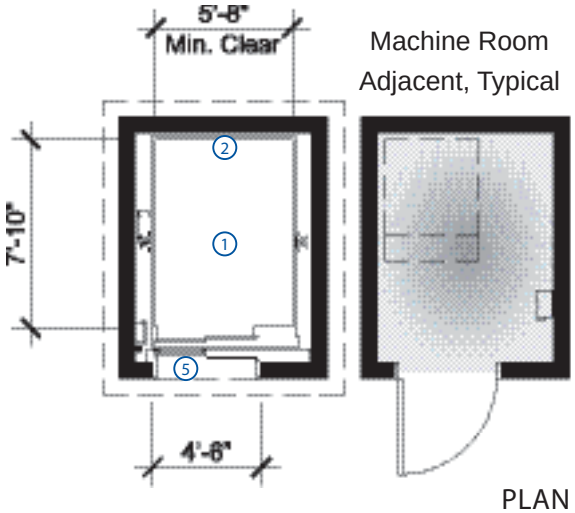
SERVICE ELEVATOR - SIDE OPENING

0 ft 4 ft 8 ft

SCALE: 1/8" = 1'-0"



ELEVATION



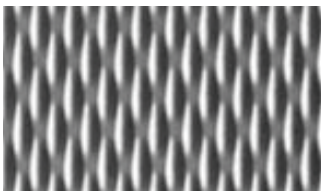
PLAN

FINISHES

1. Floor: Rubber tile
2. Handrail: Satin stainless steel tubular handrail at back wall only
3. Walls: 5.WL patterned stainless steel wall panels
4. Ceiling: Metal panels with recessed LED downlights and perimeter lighting
5. Doors, front returns, base and reveals: Satin stainless steel (vertical)
6. Base: Satin stainless steel (vertical) 4" high
7. Freight blanket hook: Satin stainless steel (vertical)

LIGHTING

LED lighting



RIMEX 5.WL

NOTES:

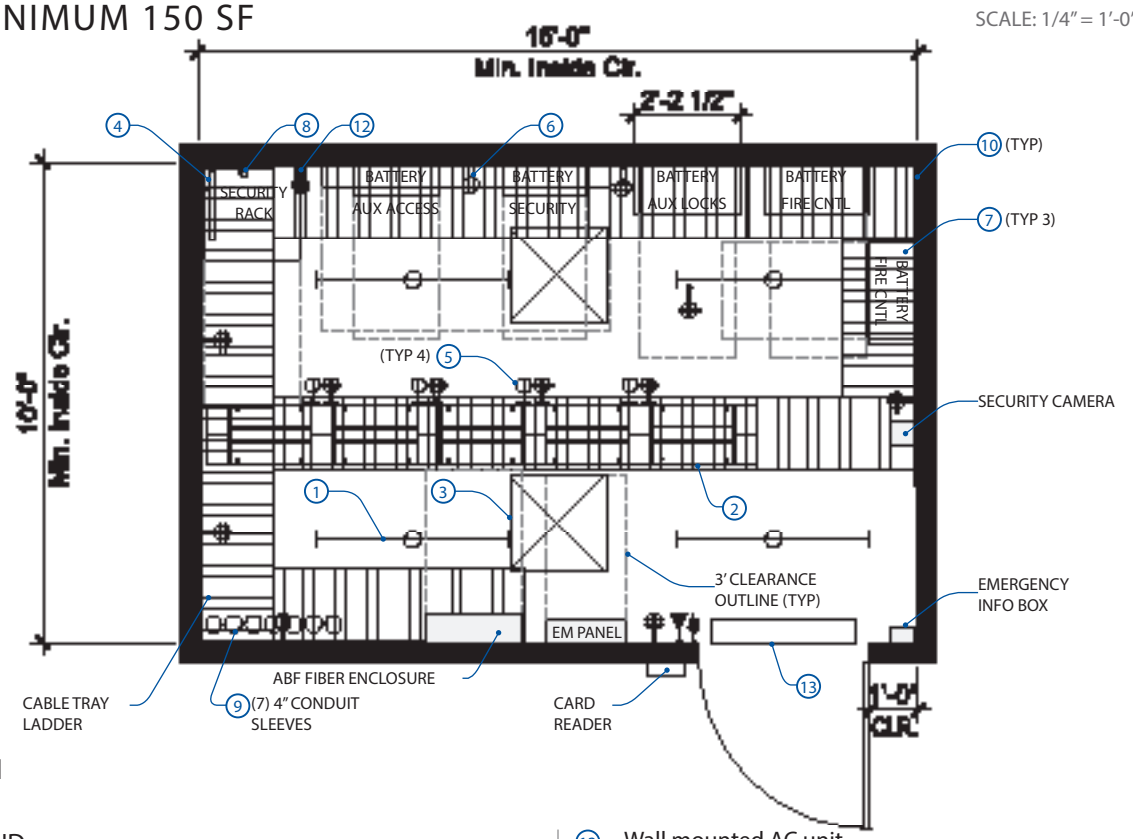
- All equipment rooms shall be designed and located to facilitate the removal, transport, and replacement of the largest equipment component housed within the room.
- Machine room surfaces similar to Electrical Room, refer to Part J. Elevator machine rooms sound absorptive ceiling treatment should be the same as the mechanical room.

Part H
TECHNOLOGY ROOMS

MAIN DISTRIBUTION FRAME (MDF)
- MINIMUM 150 SF

0 ft 2 ft 4 ft

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



PLAN

LEGEND

1. Lighting fixture, surface mount or pendant.
2. Space reserved for future rack needs.
3. Space reserved for HVAC equipment.
4. Telecom main grounding busbar. Busbar to be mounted above cable tray ladder. Coordinate cable tray height with district team at time of project.
5. Provide 120V/30A and 208V/30A receptacle on a dedicated circuit. (NEMA L5-30R, L6-30R)
6. Provide a 6'x6'x5' clearance for access area control and security control panels.
7. Provide 24V battery under fire control panel. See elevation for more information.
8. Provide 2" conduit to roof for GPS.
9. Conduit sleeves for future connections to building IDF rooms.
10. Provide 8'x4'x3/4" sheets of A-C grade fire retardant treated plywood 2'-0" AFF to 10'-0".
11. Provide hard wire provisions for future use.
12. Provide (2) receptacles, one 20 inches above finished floor and one 40 inches above finished floor for rack power convenience.
13. Wall mounted AC unit

FINISHES

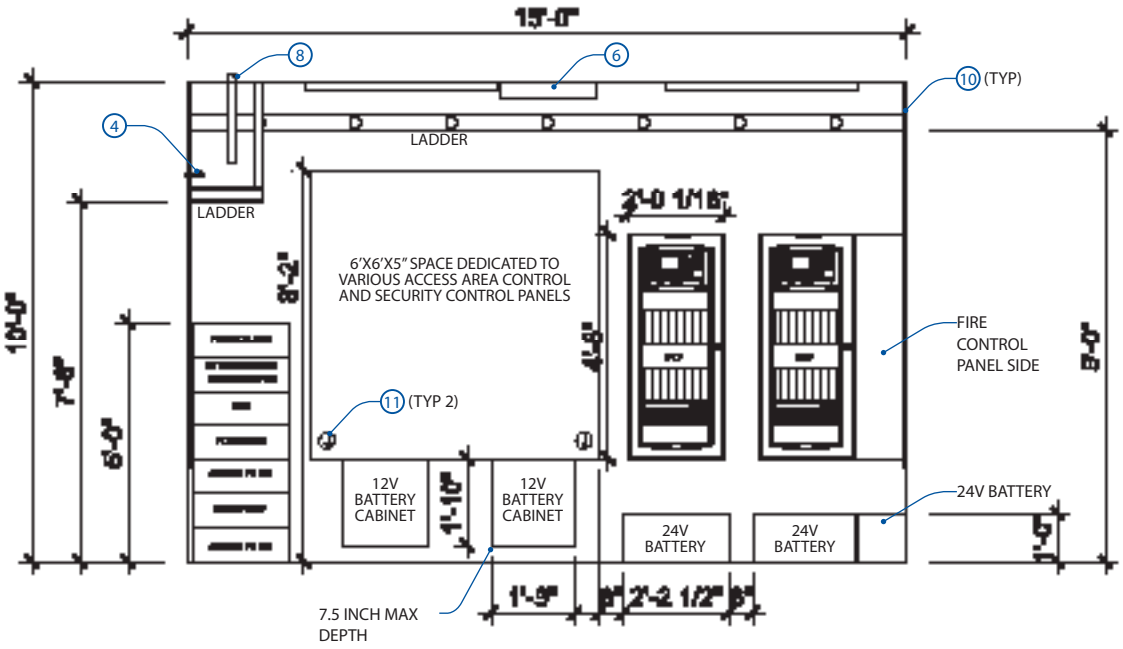
Floor:	VCT with rubber base
Wall:	Painted drywall Fire-rated painted plywood on some walls for mounting equipment
Ceiling Type:	Exposed to floor above
Doors:	3'-6"wide, solid, lockable, no louvers Hollow metal frames

LIGHTING

LED utility lighting hung from chain from ceiling to allow for even light distribution to all walls and racks. Lighting shall not be controlled by building lighting panel.

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data
- Light switch
- Wall phone
- Twist lock



ELEVATION

NOTES:

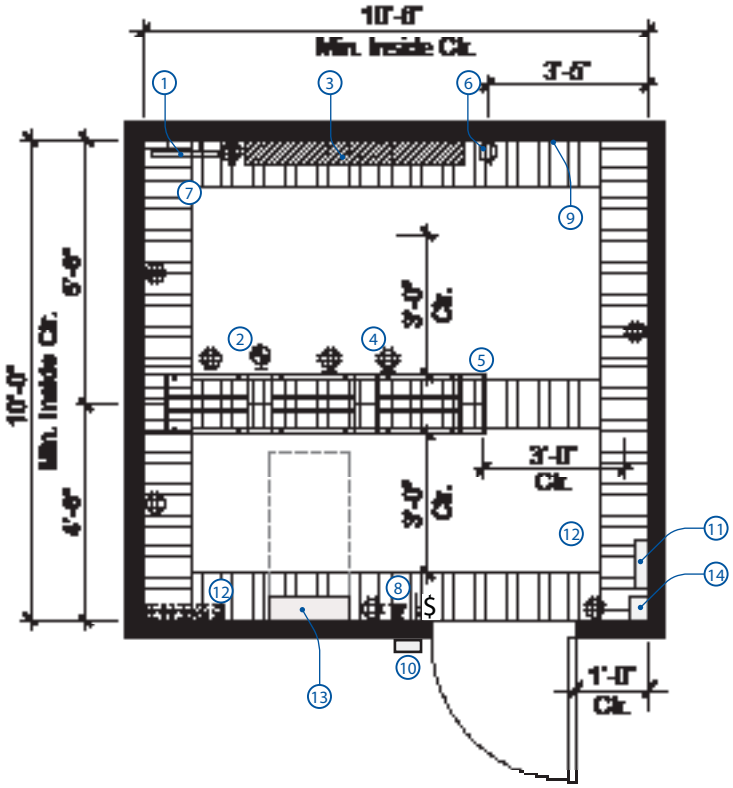
- Avoid plumbing water supply/service lines or drains running through the MDF room.
- Include an MDF in each building and coordinate details with District Facility and IT staff.
- Locate on 1st floor of building with door to exterior or hallway, ideally in central location.
- Provide a dedicated 208 V power distribution panel.
- There should be no pass through access to other spaces via the MDF room.
- No transformers should be co-located within the MDF or IDF rooms or on adjacent shared wall of the MDF room.
- No interters should be co-located in the MDF room.
- Connect to emergency power.
- Minimum clear height of 10'-0" clear of obstructions.
- Provide multi-mode fiber cross connect between all technology rooms in the same building.
- No windows, full height walls.
- Provide stand-alone HVAC unit with independent controls. Locate thermostat in MDF room. Temperature to be a constant 72 degrees.
- Coordinate light layout with rack and cable tray placement to ensure adequate service lighting on both sides of rack.
- Key door with electronic access and include conventional key lock for backup.
- All equipment rooms shall be designed and located to facilitate the removal, transport, and replacement of the largest equipment component housed within the room. Door should swing out when possible.
- Conduits or sleeves shall be 4" in size.
- Space diagram is to give a general concept layout of the MDF room. Layout for each project will need to be tailored to the specifics of that project. The project-specific layout of the MDF room should be coordinated and reviewed with District staff.
- Refer to additional information in the Appendix.

TECHNOLOGY ROOMS

INTERMEDIATE DISTRIBUTION FRAME (IDF)
- MINIMUM 64-105 SF

0 ft 2 ft 4 ft

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



PLAN

LEGEND

1. Telecom grounding busbar
2. 120V/30A and 208/30A outlet on dedicated circuit mounted on side of ladder rack (NEMA L5-30R)
3. Wall mounted equipment
4. Quadplex outlet on dedicated circuit
5. 19" equipment rack w/ 6" vertical cable mngt
6. Convenience duplex outlet
7. 18" ladder rack
8. Wall mounted telephone
9. 8'x4'x 3/4" sheets of A-C grade fire retardant treated plywood by General Contractor on all walls, plywood 6"AFF to 10'-0" AFF
10. Security card access. HID card reader/keypad combo with electrified mortise lockset, keyed off master
11. ABF fiber enclosure, 24"W x 20"H x 7"D.
12. 4" Riser conduit sleeves - minimum of 2
13. EM panel
14. Emergency info box

FINISHES

Floor:	VCT with rubber base
Wall:	Painted drywall Fire-rated painted plywood on some walls for mounting equipment
Ceiling Type:	Exposed to floor above
Doors:	3'-6"wide, solid, lockable, no louvers Hollow metal frames

LIGHTING

LED utility lighting hung from chain from ceiling to allow for even light distribution to all walls and racks. Lighting shall not be controlled by building lighting panel.

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data
- Light switch
- Wall phone
- Twist lock

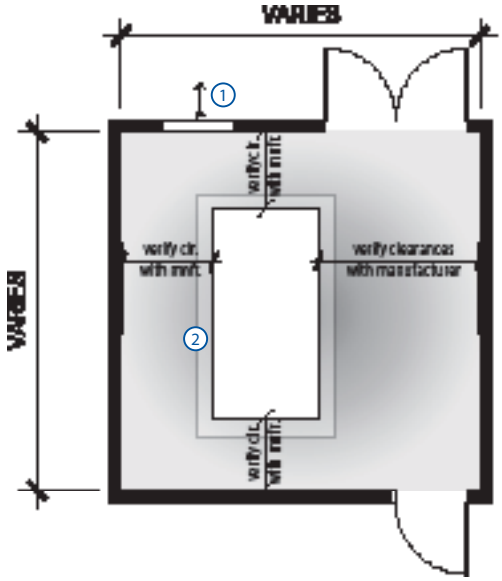
NOTES:

- Avoid plumbing water supply/service lines or drains running through the IDF room.
- Include an IDF in each building and coordinate details with District Facility and IT staff.
- Locate on 1st floor of building with door to exterior or hallway, ideally in central location.
- Provide a dedicated 208 V power distribution panel.
- There should be no pass through access to other spaces via the IDF room.
- No transformers should be co-located within the MDF or IDF rooms or on adjacent shared wall of the IDF room.
- No interters should be co-located in the IDF room.
- Connect to emergency power.
- Minimum clear height of 10'-0" clear of obstructions.
- Provide multi-mode fiber cross connect between all technology rooms in the same building.
- No windows, full height walls.
- Provide stand-alone HVAC unit with independent controls. Locate thermostat in IDF room. Temperature to be a constant 72 degrees.
- Coordinate light layout with rack and cable tray placement to ensure adequate service lighting on both sides of rack.
- Key door with electronic access and include conventional key lock for backup.
- All equipment rooms shall be designed and located to facilitate the removal, transport, and replacement of the largest equipment component housed within the room. Door should swing out when possible.
- Conduits or sleeves shall be 4" in size.
- Space diagram is to give a general concept layout of the IDF room. Layout for each project will need to be tailored to the specifics of that project. The project-specific layout of the IDF room should be coordinated and reviewed with District staff.
- Refer to additional information in the Appendix.

MECHANICAL ROOMS - SF VARIES

0 ft 2 ft 4 ft

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



LEGEND

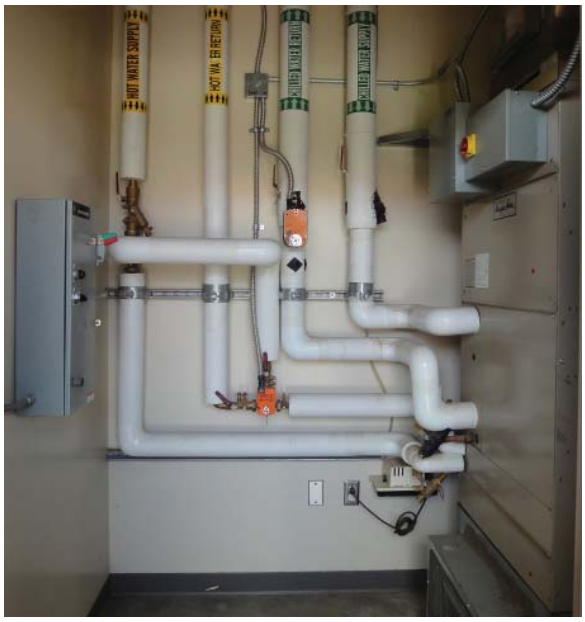
1. Exterior wall louver
2. Provide 4" high concrete curbs (housekeeping pads for equipment)

FINISHES

Floor:	Sealed concrete with concrete curb and floor drain
Wall:	Paint
Ceiling Ht:	Slab to slab
Ceiling Type:	Exposed to underside of structure
Doors:	3'-0" wide, louvered door (if required for ventilation and not fire rated) Hollow metal frames Hollow metal, double, exterior doors where applicable for large units.
Drains:	Minimum of one floor drain is required. Provide floor sink to support equipment as needed.

LIGHTING

LED utility lighting



NOTES:

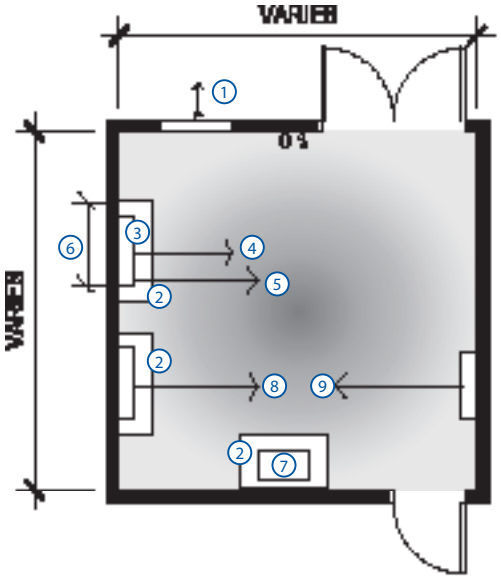
- Provide sound absorption (NRC 0.90 min.) over 100% of the total ceiling area whenever a mechanical room is immediately adjacent to an occupied room (i.e. classroom, group study room, office, etc.) or portions of an occupied room.
- Provide adequate safe access and manufacturer's recommended working clearances for all equipment.
- Provide adequate safe access head clearances for working on equipment.
- Provide clearances and door for replacement of the largest piece of equipment without removing permanent walls, large items of equipment, or equipment essential to the principal on-going, day-to-day building use.
- Provide direct access from the exterior for major mechanical rooms exceeding 100 net square feet.
- In phased projects, mechanical rooms shall be sized to include equipment for all the phases.
- Air equipment, piping, duct work, etc., shall be located to provide unobstructed access to filters, bearings, valves, control devices, and anything requiring access for maintenance.
- Provide fully ducted outside air, relief air, and return air for air handling equipment in mechanical rooms. Do not use mechanical rooms as an air plenum. Ventilation or HVAC for mechanical equipment rooms to maintain temperatures between 65°F. and 80°F.
- Prevent doors from swinging into path of travel.

Part J
ELECTRICAL ROOMS

ELECTRICAL ROOMS - SF VARIES

0 ft 2 ft 4 ft

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



PLAN

LEGEND

1. Exterior wall louver (depending on room type)
2. Provide 3" high concrete curbs (housekeeping pads) for equipment
3. Electrical panel board 20"W
4. 0-120V nominal voltage to ground equip. Provide 3' working space clearance.
5. 151-600V nominal voltage to ground equip. Provide 3-6' in working space clearance.
6. The width of the working space in front of the electrical equip. shall be the width of the equip. or 30", whichever is greater.
7. Transformer
8. 0-120V nominal voltage to ground equip. Provide 3' working space clearance.
9. 151-600V nominal voltage to ground equip. Provide 4' working space clearance.

FINISHES

Floor:	Sealed concrete with floor drain
Wall:	Exposed concrete Painted drywall Hard smooth finish on concrete block wall
Ceiling Ht:	Slab to slab
Ceiling Type:	Underside of structure
Doors:	3'-0" wide, louvered door (if required for ventilation and not fire rated) Hollow metal frames Hollow metal, double, exterior doors where applicable

LIGHTING

LED utility lighting

NOTES:

- All equipment rooms shall be designed and located to facilitate the removal, transport, and replacement of the largest equipment component housed within the room.
- Rooms shall be properly ventilated. If room contains transformers, the use of split system air conditioners should be considered. Maintain 80°F temperature control/limitations for transformers and lighting control panels to extend the duration of equipment.
- With the exception of fire sprinklers servicing the room, no other piping/ducting is allowed in the space.
- Transformers should be vibration isolated on 3/4" thick, 60 durometer maximum neoprene pads. Bolt holes shall have neoprene grommets. Flexible connections to the transformers shall be made using slack flexible conduit. There shall be 6" minimum of free and clear space between adjacent walls and the transformer.
- Prevent doors from swinging into path of travel.

INTRODUCTION

Section 4 of this document is intended to outline performance criteria that are important to the District for the major building/site systems and materials in future construction projects. Although Section 4 is organized in Divisions based on the 2010 MasterFormat® it is not written as or intended to be considered as product specifications that would be included in a project manual but rather provide criteria, locations, and desired design approach for systems and materials that would be used in a project. This Section does not include project procedures, requirements, or general and existing conditions which will be covered in other documents. The Section starts with Division 1 and only covers main materials and systems that would typically be used on a campus project and where clear performance standards have been established by the District. Therefore there will be numerical Divisions that are not included in this Section.

All design teams are responsible for meeting all federal, state, and local code and regulatory agency requirements. Such requirements, which do continually change, are not included in this Section but must be met for all projects. It is expected that a high level of professional standard of care and best practices be applied to each particular discipline on every project.

This Section is not intended to be all encompassing of every component of every future facility project, but rather provide and facilitate a mutual understanding of expectations and design requirements for projects within the District. Some standards will be campus specific and those are noted in the individual Divisions. Information in this section is supplemented with additional charts and drawings for reference in the Appendix.

Division 1
GENERAL REQUIREMENTS

General Approach - Division 1 should be coordinated with Bid Requirements, General Conditions, and the specific delivery method for the project and tailored to each specific project, schedule and needs of the project being constructed. Division 1 should be developed in collaboration with the Program Manager, the District and the College. All project Specifications, including Division 1 should be reviewed and approved by District and College facilities representatives. The intention of the criteria provided in these standards is not meant to be all inclusive or list everything that should be include in Division 1 but rather touch upon important areas to the District and items that should be considered as the project manual is being developed.

SUMMARY OF WORK

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
DESCRIPTION OF WORK	• Provide description of work and reference the current code compliances required. • Describe work outside of the contract to be performed by owner such as abatement and hazardous waste removal, FF+E deliveries, tests, and inspections, etc. • Reference if the project will be LEED certified and what level or LEED certified equivalent without documentation	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PERMISSIBLE WORKING DAYS AND HOURS	• Include all restrictions for access and use of site by the College during the construction of the specific project. Coordinate with District's General Conditions and the Program Manager, the District and the College on specific project requirements. Restrictions and proposed access and construction staging areas should be written up and reviewed and approved by the District and College for each specific project. - Generally work shall be accomplished on a project on a regularly scheduled 8 hour day. - Working hours generally will be from 7:00 am to 5:00 p.m. - Consider access and use of site and building (if a renovation project). - Outline use of entrances, campus drives, and parking lots, and scheduled times for deliveries. - Outline full or partial owner occupancies of areas of site or building. - Contractor shall cooperate with College during construction operations to minimize conflicts and facilitate owner usage. - Note acceptability of work on Saturdays and Sundays at no additional cost to owner with specific written College/District approval. • Limit site disturbance, including earthwork and clearing of vegetation. Minimize removal of existing trees.	
INTERRUPT-ION OF EXISTING UTILITY SERVICE	• When necessary to interrupt any existing utility service to make connections, contractor shall provide a minimum of 7 days advance notice to the College and Program Manager. • Interruptions in utility services shall be of shortest possible duration for work at hand and shall be approved by the College Facilities Department and the Program Manager. • In event any utility service is interrupted without required 7 days' notice, Contractor shall be financially liable for all damages suffered by the College due to an unauthorized interruption.	

GENERAL REQUIREMENTS

SUMMARY OF WORK

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
EXISTING CONDITIONS	• Reference the requirement to review existing conditions. The contractor shall be responsible to examine site of work and after investigation, to decide for himself/herself the character of materials, equipment and utilities to be encountered and all other existing conditions affecting the project. Contractor is also responsible to provide sufficient costs to cover provisions of all items of work under existing conditions including removal or relocation of utilities. • Reference Special Conditions and master schedule exhibit. • Reference phasing for specific project and target dates for substantial completion.	

PRICE AND PAYMENT PROCEDURES

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ALTERNATES	• Consider proposing bid "alternates" (add or deduct) on a project if and when applicable or appropriate to help protect the budget. • An "alternate" is an amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents. • Alternates should be clearly outlined in contract documents. The items should be clearly defined and the limits of the alternative should also be included in the contract documents. • Coordinate with Program Manager and District to determine what to include as alternates to allow for inclusion in bidding documents and forms.	
UNIT PRICES AND ALLOW-ANCES	• Include "unit prices" on the bid form when requested. Unit price is an amount proposed and stated in the Bid Form as price per unit of measurement for materials or services or both that will be added to or deducted from the contract price by change order in the event estimated quantities of work/ materials required by the contract documents are increased or decreased. The owner reserves right to reject the contractor's measurement of work-in-place that involves use of established unit prices, and to have this work measured by independent surveyor acceptable to the contractor at owner's expense. • Include both cash allowances and material allowances in the contract bid when requested. Coordinate all allowances with the Program Manager, the District, and the College. Make sure bid documents clearly require the allowances to be included in the contract sum. Direct contractor to include cost for materials, delivery, un-packaging, unloading, storage if any, taxes and installation costs.	

PRICE AND PAYMENT PROCEDURES

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CHANGES IN WORK	• Reference procedures for changes in project work. • All change orders shall be reviewed by Division of State Architect (DSA) and all change orders dealing with Structure, Life Safety, and Access must be approved by DSA. • If in Public R/W or the purview of another agency (i.e. Water District), the agency approval is also required. • For minor changes, the Program Manager and Architect will issue supplemental instructions for changes not requiring adjustments to contract sum or contract time. Document appropriately for project certification by DSA • For minor changes, the Program Manager and Architect will issue supplemental instructions for changes not requiring adjustments to contract sum or contract time. Document appropriately for certification by DSA • Design professional will issue an ASI through the Program Manager with appropriate documentation for owner initiated project changes to the work which may require adjustment to the contract sum or contract time and include appropriate DSA documentation forms. Require the contractor to submit a quotation in the time frame designated in the General and Supplementary Conditions estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change. • If latent or changed conditions require modifications to the contract, the contractor may initiate a claim by submitting a request for a change to the PM/CM and Architect. The request must include a statement outlining reasons for change of work. The contractor must provide a complete description of the proposed change with detailed breakdown of labor, materials and cost. Indicate the effect of the proposed change on the contract sum and the contract time. Include an updated construction schedule that indicates the effect of the change, including, but not	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	limited to, changes in activity duration, start and finish time , and activity relationships. • Construction Change Directives, which instruct the contractor to proceed with a change in the project work, for subsequent inclusion in a Change Order may be issued by the Architect. Change directives must be accompanied by appropriate DSA documentation forms. Construction Change Directives should contain a complete description of change in the work and designate method to be followed to determine change in the contract sum or the contract time. Maintain detailed records on a time and material basis of work required by the Construction Change Directive. • Change Orders Procedures: On District's approval of a Change Order Request, the Architect and Program Manager will issue a Change Order for signatures of the District and contractor on the designated form. • Change Orders shall include the following: - Stipulated Price Change Order: Based on contractor's change order request as approved by the Architect. - Time and Material Change Orders: Submit itemized account and supporting data after completion of change within time limits indicated in Conditions of Contract. The Architect and Program Manager will determine change allowable in contract price and contract time as provided in contract documents. - Maintain detailed records of work done on time and material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in project work. - The Program Manager will issue change orders for signature of parties as provided in Conditions of the Contract. - For pre-determined unit prices and quantities, change order will be executed on fixed unit price basis. For unit costs or quantities of units of work that are not pre-determined, execute work under a construction change directive. Change in contract price or contract time will be computed as specified for a time and material change order.	

PRICE AND PAYMENT PROCEDURES

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SCHEDULE OF VALUES	• Schedules of values should be referenced. • The contractor shall submit application for progress payment in accordance with the General and Supplementary Conditions.	

REQUEST FOR INFORMATION (RFIs)

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL	• Include information on procedures for RFIs. Written requests prepared by the contractor requesting additional information necessary to clarify an item which he/she believes is not clearly shown or called for in the construction documents, or to address problems which have arisen under field conditions must be submitted to the Program Manager and Architect and should include a detailed written statement that indicates specific drawings or specification in need of clarification a nature of clarification equested. Include drawing number or Specification Division and page.	
CONTRACT-OR'S REQUEST FOR INFORM-ATION	• Whenever possible, such clarification shall be equested at the next appropriate project meeting, with response entered into meeting minutes. When clarification at the construction meeting is not possible, because of urgency of need, or complexity of item, the contractor shall prepare and submit a written RFI to the Program Manager and Architect. • RFIs shall be submitted on a form provided by the Program Manager. Forms shall be completely filled in, and if p epared by hand, shall be fully legible after photocopying or transmission by email scan. Each page of attachments to RFIs shall bear RFI number. RFI will be reviewed and then sent to the Architect. • RFIs shall be originated by the contractor. RFIs from subcontractors or material suppliers shall be submitted through, reviewed by, and signed by the contractor before submittal to the Program Manager. • In cases where RFIs are issued to request clarification of coordination issues, for example pipe and duct routing, clearances, specific locations of work shown diagrammatically, and similar items, the contractor shall fully lay out suggested solution using drawings or sketches drawn to scale, and submit same with RFI. RFIs which fail to include suggested solution will be returned unanswered with requirement that the contractor submit a complete request.	

REQUEST FOR INFORMATION (RFIs)

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ARCHITECT'S RESPONSE TO RFIs	• In the event the contractor believes that clarification by the Architect results in additional cost or time, the contractor shall not proceed with the work indicated by the RFI response until a change order or a construction change directive is prepared and approved. • RFIs shall not automatically justify cost increase in work or change in the project schedule. • The contractor shall prepare and maintain a log of RFIs and provide upon request to the Architect or Program Manager. • The contractor shall allow up to 10 days review and response time for RFIs, however, the Architect will endeavor to respond in timely fashion to RFIs.	

ADMINISTRATIVE REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PROJECT COORD-INATION	• Require the contractor to be responsible for project coordination including timely submittal review and verification of utility requirements and characteristics of operating equipment which are compatible with site and building utilities. • The contractor shall coordinate space requirements and installation of mechanical and electrical work in finished areas except as otherwise indicated in the documents. • After the owner occupancy of premises, coordinate access to the site for correction of defective work and work not in accordance with contract documents, to minimize disruption of owner's activities. • The contractor shall carefully coordinate interface between all mechanical and electrical work before commencing installation.	
COORD-INATION MEETINGS	• There will be a Pre-construction meeting after notice of award set up by the Program Manager. Attendees will include the Architect, the Program Manager, the Construction Manager (if applicable) all prime contractors, major subcontractors, project inspector, Director, District Facilities Planning, Development, and Maintenance, and the College Facility Director. The Program Manager or Construction Manager (if on the project) will record minutes and distribute copies to participants. • There will be project construction progress meetings every week. The Program Manager will make arrangements for these meeting, prepare the agenda, and preside at the meetings. Attendees will include the Architect, Program Manager, Construction Manager (if on the project), all prime contractors, major subcontractors, project inspector, Director, District Facilities Planning, Development, and Maintenance, the College Facility Director, and the inspector of record. • Pre-installation meetings are required for certain work. Refer to the criteria in specific Divisions for these meetings. The Architect should be notified 7 days before the occurrence of these meetings.	

ADMINISTRATIVE REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUBMITTALS	• Include procedures for submittals to the Program Manager. Coordinate with the specifics in the General Conditions and Special Conditions. • Transmit separate submittal request for each section with all project information. • Submittal number shall use a sequential number followed by a hyphen then the Specification Section followed by a hyphen and then the revision number. Re-submittals shall have the original number and include the revision number as the suffix to allow for tracking • Submittals shall identify project and contractor including name and telephone number of individual who may be contacted for further information. • Apply the contractor's dated stamp with contractor's original signature or initials affixed the eto, certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information is according to requirements of work and the Contract Documents. Stamped signatures or initials are not acceptable. • Provide submittals according to the construction schedule and adequate enough in advance of scheduled dates of installation to provide required time for reviews for securing necessary approvals for possible revision and re-submittal and for placing orders and securing delivery. • Late submittals, not in accordance with the "Schedule for Submission of Shop Drawings, Product Data and Samples" and the construction schedule, will not be considered an acceptable reason for initiating a substitution requests caused by late ordering and procurement of materials. • Revise and resubmit submittals in their entirety, identify changes made since previous submittal. • Coordinate product data and submittals as required with all trades and all public agencies involved. • Where individual Sections require structural calculations, prepare submittal under direction of qualified California Licensed Structural Engineer and shall bear the Engineer's stamp and signature.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CONSTRUC-TION PROGRESS SCHEDULE	• Reference a construction progress schedule. This will be the responsibility of the contractor. The schedule should indicate complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float date and duration. Allow a minimum of 14 calendar days (to be verified with Program Manager) in schedule for final inspections before final acceptance. Include time to correct punch list items prior to final acceptance • The construction project schedule should indicate milestones and target dates and their activities including completion dates. The schedule for submission of shop drawings, product data, and samples should be coordinated and incorporated in the overall construction schedule including noting submittal dates. Review time will vary on a project by project basis. Discuss with Program Manager.	
CONSTRUC-TION PHOTO-GRAPHY	• Reference construction photography documentation. • The contractor should be responsible for taking digital photography. • Include pre-construction photos and submit photos electronically on a daily basis of progress. Submit 6 color photos as a minimum every month coinciding with dates of application for payment to show status of construction. Take 8 color photos after the date of substantial completion.	
ADDITIONAL PROJECT REQUIRE-MENTS	• Reference Record Drawing requirements. Coordinate with General Conditions and any special requirements for record documents for the specific project. • If project is LEED certified reference submittals for LEED certification	

ADMINISTRATIVE REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SHOP DRAWINGS	• Reference shop drawing requirements and procedures and coordinate with General Conditions. The contractor shall submit a shop drawing submission schedule within 14 days after the Notice to Proceed. The shop drawings shall be submitted electronically and shall include fabrication and installation drawings, setting diagrams, schedules, patterns, and templates and include the following information: - Dimensions - Identification of products and materials - Compliance with specified standards - Notation of coordination requirements - Notation of dimensions established by field measurement. • No portion of work requiring shop drawings shall be commenced until shop drawings have been returned and approved by Architect and Program Manager. - Reference product data submittals. 5 copies shall be submitted for review and 3 copies will be retained by the Architect. Submit actual color and sample of product specified - Reference the submittal requirements for manufacturer's instructions including manufacturer's printed instruction for delivery, storage, assembly, installation, and start-up. - Reference the submittal requirements for manufacturer's certifications when required in individual specifications sections - Reference any special project procedures for a specific project such as the acceleration of work. - Reference any special testing.	

NETWORK ANALYSIS SCHEDULES

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
STAFF REQUIRE-MENTS	• Coordinate Network Analysis Schedule requirements with General Conditions and discuss with Program Manager. • The contractor shall have personnel who specialize in CPM scheduling with a minimum of 1 year experience scheduling construction work of complexity comparable to the specific project being built, and have use of digital technology capable of delivering detailed graphic printout within 48 hours of request • The contractor's administrative personnel shall have 1 year minimum experience in using and monitoring CPM schedule on comparable construction projects.	
FORMAT	• Coordinate scheduling software with the Program Manager. • The scheduling format shall have listings reading from left to right, in ascending order for each activity. Identify each activity with applicable Specification section number with scale and spacing too allow for notations and revisions. • The contractor shall prepare Network Analysis Schedule and supporting mathematical analyses using Critical Path Method, under concepts and methods outlines in AGC's "Construction Planning and Scheduling" with diagrams to illustrate order and interdependence of activities and sequence of work.	

NETWORK ANALYSIS SCHEDULES

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SCHEDULE	• Schedule shall illustrate complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities and indicate early and late start, early and late finish, float dates and duration • Provide dates for procurement and delivery of critical products. • Include dates for installation and provision for testing. • Provide legend for symbols and abbreviations used. • Indicate fabrication, delivery and installation activities. • Include schedule for submission of shop drawings, samples, and mock ups showing dates required for all submittals and product delivery, including those furnished by owner. Provide time in schedule for review of submittals and mockups. • Show mathematical analysis tabulating each activity of detailed network diagrams, using calendar dates and identifying for each activity. • The analysis program shall be capable of compiling monetary value of completed and partially completed activities of accepting revised completion dates and re-computation of all dates and float • Contractor shall not sequester float through strategies including extending activity duration estimates to consume available float, using preferential logic, using extensive or insufficient crew or resource loading, use of float suppression techniques, special lead or lag logic restraints or imposed dates.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUBMITTALS	• A preliminary Network Analysis Schedule should be submitted within 14 days after date established in the Notice to Proceed, defining planned operations for first 60 days of work, with general outline for remainder of work. Include written certification that major mechanical and electrical subcontractors have reviewed and accepted proposed schedule and allow for sufficient time for Program Manager's and Architect's review. • All schedule submittals; including progress updates for duration of work, shall include electronic submittal in original file format, sent by e-mail or delivered on storage media agreed to by project team. Network schedule shall be updated with each Application for Payment. • Contractor shall maintain schedule to record actual start and finish dates of completed activities • Submit updated schedule at each scheduled project meeting or monthly, whichever is more frequent. • The network schedule shall be updated with each Application for Payment. • Indicate progress of each activity to date of revision with project completion date of each activity. Update diagrams to graphically depict current status of work. • Identify activities modified since previous submittal, major changes in work, and other identifiable changes • Indicate changes required to maintain date of Certified Completion. • Submit sorts required to support recommended changes. • Provide narrative report to define problem areas, anticipated delays and impact on schedule. Report corrective action taken, or proposed and its effect including effect of change on schedule of separate contractors. • After schedule is distributed for review the project team recipients must promptly report, in writing, problems anticipated by projections shown in the current updated schedule.	

SPECIAL ENVIRONMENTAL REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	• Indicate work in the project which includes special environmental, sustainable, and "green" building practices related to energy conservation and efficiency, indoor air quality, and resource efficiency, including the following - Practices to ensure healthy indoor air quality in final project - Recycled content in materials, products, and systems - Maximization of use of wood that is certified sustainably harvested by the Forest Stewardship Council (FSC) • Note information required on bid form. • The construction team is required to comply with sustainable building practices during construction. Insure that all sub-contractors are familiar with all of the project's environmental goals.	
SUBMITTALS	• Contractor shall submit the following information, including manufacturer's certifications, verifying information, and test data, where Specifications sections require submittals relating to environmental issues including but not limited to: - Recycled content including post-industrial recycled and post-consumer recycled content verifying they are the same as required by product specifications - Sustainably Harvested Wood for all wood products designated in their respective sections as "FSC certified" provide evidence of compliance. - When substituting for pre-approved products that are required to comply with Indoor Air Quality, submit emission test data produced by an acceptable testing laboratory.	

QUALITY REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	• Division 1 should reference quality assurance requirements for the following areas in coordination with the General Conditions: - Reference Standards - Quality Assurance and Control of Installation - Field samples - Mock ups - Project Inspector and inspections - Permits and fees - Codes, regulations and ordinances of the regulatory agencies - Verified reports - Manufacturers' field services and reports - Laboratory testing services • All work pertaining to and all materials supplied for executing and completing each project shall comply with provisions specified in the Contract Documents and with all applicable laws, codes, regulations and ordinances governing the work. • Should any existing conditions such as deterioration or noncomplying construction be discovered during a project which is not covered by the DSA approved documents and the finished work will not comply with title 24, California Code of Regulations, a construction change document, or a separate set of plans and specifications, detailing and specifying the required repair work shall be submitted to and approved by DSA before proceeding with the repair work. • If the contractor, subcontractors or suppliers, or any of their employees ascertain at any time that requirements of the project under contract conflict with or a e in violation of applicable laws, codes, regulations and ordinances, he shall not proceed with work in question, except at his own risk. He shall notify the Program Manager, the Architect, and the District in writing.	

QUALITY REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
REFERENCE STANDARDS AND CONTROL OF INSTALL-ATION	• The contractor shall conform to current date reference standards. For products or workmanship specified by Association, Trade or Federal Standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes. • Comply fully with manufacturers' instructions for installation including each step in sequence. If manufacturers' instructions conflict with the Contract Documents, request clarification from the Architect before proceeding with the installation. • Where experience minimums for workmen, applicators, companies or manufacturers are required in individual Sections, written certification and documentation substantiating such minimums shall be submitted and approved by the Architect, when requested.	
INSPECTORS	• An Inspector, referred to as the "Project Inspector" or "Inspector of Record" (IOR) will be employed by the District. The Project Inspector must be approved by DSA. • The construction work in all stages of progress shall be subject to the personal continuous observation of the Project Inspector. He shall have free access to any or all part of the work at any time. The contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the work and the character of the materials. Inspection shall not relieve the contractor from any obligation to fulfill his contract to supervise the work and follow the contract documents.	
PERMITS AND FEES	• The contractor shall obtain and pay for permits and fees, including, but not limited to, Demolition, Grading, Disposals, requirements of Water, Gas, Sewer, Flood and Sanitary Districts, Municipal and County Building Departments having jurisdiction for construction operations. - Fees for final utility connections shall be paid by the District. - Building Permits or approvals issued by DSA requiring fees will be obtained and paid by the District.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
VERIFIED REPORTS	• The contractor shall comply with CAC and issue verified reports through the Architect as required. The Program Manager and District shall be copied on all verified reports.	
MANU-FACTURERS' FIELD SERVICES AND REPORTS	• When specified in individual Specification Sections, product suppliers or manufacturers shall provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment and as applicable, initiate instructions when necessary. • Manufacturers' representatives shall provide a written report of observations, site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions submitted to the Program Manager, Architect, and District.	

QUALITY REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
LABORATORY TESTING	• The District will employ and pay for services of independent testing laboratory and special inspectors approved by the Architect and DSA to perform inspection and testing. • Offsite fabrication requiring inspection and testing: submit the qualifications of inspectors and laboratory, including proposals for services, to the District, Program Manager and Architect for approval of qualifications and costs • For initial testing required for a project the District shall pay the IOR, Testing Laboratory or both. • When initial testing fails, the IOR and Testing Laboratory costs attributable to required retesting shall be borne by the contractor and deducted by change order from funds due. • When tests and inspections are required on an overtime basis, initial payment will be made by District. At completion of the project, all costs for overtime testing and inspections will be deducted from the contractor's final payment by change order. • When materials tested fail to meet requirements specified, they shall be promptly corrected, removed and replaced, re-inspected/retested in a manner required by the Architect. • Submit laboratory reports verifying tests and inspections required have been completed and complies with the contract documents. • Laboratories shall be licensed to conduct testing and inspection operations in California and shall be approved by DSA and supervised by a State Licensed Civil Engineer who shall certify and sign all reports. • Immediately upon testing laboratory determination of a test failure, the laboratory shall telephone the results of test to the Program Manager and Architect. On the same day, laboratory shall send written test results to the District, IOR, special inspector, the contractor, and the structural engineer. • Laboratory testing authority and the contractor's responsibilities should be outlined. - The laboratory should not alter requirements of contract documents. - The laboratory may not approve or accept any portion of the work or assume contractor's responsibilities including stopping work or interpreting codes.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	- The contractor shall deliver to laboratory at designated location, adequate samples of materials proposed to be used which require testing. Selection of materials to be tested shall be by the laboratory or District's representative and not by the contractor. - The contractor shall notify the Program Manager, the Architect, Project Inspector and laboratory 48 hours prior to expected time for operations requiring inspection and testing services. - The contractor shall execute and submit a Statement of Responsibility regarding special inspections and testing required for principle wind- and seismic-load bearing systems to the Project Inspector, Program Manager, and the Architect. - The District, Project Inspector, or the Architect shall have the right to reject materials and workmanship that are defective or to require their correction. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the premises without cost to the District. If the contractor fails to correct such rejected work within a reasonable time, outlined by written notice, the District will correct the work and charge the expense to the contractor by change order. - If the testing laboratory is ready to test according to the established schedule, but is prevented from testing or taking specimens due to incompleteness of the work, extra charges for testing attributable to the delay shall be charged to the contractor by change order. - Any material shipped by the contractor from the source of supply prior to having satisfactorily passed designated testing and inspection or prior to the receipt of notice from said representative that such testing and inspection will not be required, shall not be incorporated in the project. • Schedule of Structural tests and inspections. - Field testing of concrete slabs, moisture testing per ASTM F1869 -2009. The test area should be at the	

QUALITY REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	same temperature and humidity expected during normal use, minimum testing conditions shall be 75+ 10 degrees F. and 50+ 10% relative humidity. Maintain these conditions 48 hours prior to, and during testing. Alkalinity testing: per ASTM F710, ranges shall not exceed those recommended by the flooring manufacturer. - Anchors complying with requirements of DSA Interpretations of Regulations (IR) 19-1 and allowable shear and tension values and test loads shall be acceptable to DSA. Post-installed anchors must be listed in a current evaluation report issued by an evaluation agency recognized by DSA. - Reports shall be submitted to the Program Manager, Architect, and District. All requirements for expansion-type anchors and epoxy-type adhesive anchors as well as testing for these anchors should be outlined in Quality Requirements of Division 1. - Powder-actuated fasteners may be used for limited application provided they meet allowable shear and tension loads. Quality Requirements of Division 1 should outline the requirements, when fasteners can be used, and required testing.	

TEMPORARY FACILITIES AND CONTROLS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	• Division 1 should reference the following areas information for Temporary Facilities and Controls: - Temporary Utilities - Temporary controls including exterior and interior barriers, enclosures, fencing, protection of work, and security - Construction facilities including project site access, parking, progress cleaning, project sign, and field office trailer - Special Controls including waste management disposal facilities, water control, dust control, erosion and sediment Control, noise control, pollution control. - Fire safety during construction through all phases of the project complying with all code and state and fi e local requirements - Many requirements will be made on a project by project basis depending on the nature and location of the project. All details for Temporary Construction Facilities Controls should be developed collaboratively with the Program Manager, District, and College. • The contractor shall provide a site plan to show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel and a phasing plan. Concept construction and phasing plans may be included in the Contract Documents and contractor submittal plans will confirm acceptance and provide additional detail. • The contractor with the District and Program Manager shall coordinate location, extent and type of construction staging area. • The contractor shall provide and maintain required facilities and enclosures. Existing facilities shall not be used.	

TEMPORARY FACILITIES AND CONTROLS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TEMPORARY CONTROLS	• The contractor shall provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities, and adjacent properties from damage from construction operations and demolition and allow for daily activities at the College. Coordinate with College. • Contractor shall protect installed work and provide special protection where specified in individual Specification Sections and prohibit traffic from newly landscaped. • Contractor shall construct and maintain temporary roads accessing public thoroughfares to serve construction area and modify as needed, public access to parking lots. • Contractor shall provide means of removing mud from vehicle wheels before entering streets.	
SAFETY AND SECURITY	• The contractor shall provide and maintain access to fi e hydrants, free of obstructions. Where required by local fi e authority, provide and maintain a 26 foot wide fi e apparatus access road. • Coordinate with District's security program and campus police. Replace or repair, to District's satisfaction, all surfaces or items damaged by graffiti during course of construction within 48 hours. • Where security or fi e detection systems are disabled for any reason, including where District/College has given approval for such system shutdown, provide fi e watch and security guard service as directed by District/College at no additional cost to the project.	
FIELD OFFICE	• The contractor shall provide a field office trailer. • The facility shall be weather tight with lighting, electrical outlets, communications capabilities, heating, cooling and ventilating equipment and equipped to adequately conduct meetings for construction operations, minimum size; 480 sq. ft. • Quantity of portable chemical toilet facilities shall be based on total number of workers and shall be in accordance with CAL/OSHA standards • Cost of use permits, occupancy permits and related fees, if any required by Governing Authorities for temporary construction facilities, shall be paid by the contractor. • Maintain facility until Substantial Completion of entire project. Remove within 1 week of Substantial Completion.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PROTECTION OF WORK	• The contractor is responsible for protecting completed work. • The contractor is responsible for the proper care and protection of all materials and equipment on the site. • Provide temporary and removable protection for installed products. Control activity in immediate work area to minimize damage. • Prohibit traffic from landscaped areas. • The contractor shall provide property insurance and protection. • The contractor shall remove temporary above grade or buried utilities, equipment, facilities, materials prior to Certified Completion inspection and clean and repair damage caused by installation or use of temporary work.	
RELOCATION OF UTILITIES	• The relocation of the any utilities should be addressed in the Temporary Facilities and Controls Section of Division 1. • This section should be coordinated with the Project Manager, District and College. • The contractor shall not have responsibility of removal, relocation or protection of public utility facilities that are not identified by the District in the construction documents. The District shall compensate the contractor for costs of locating and repairing damage not due to failure of contractor to exercise reasonable care in removing and relocating such public utility facilities. • If the contractor, while performing the contract, discovers public utility facilities not identified in the contract documents, he shall immediately notify the District and utility in writing. Contractor shall not be assessed liquidated damages for delay when delay was caused by failure of the District to provide for relocation for utility facilities.	

TEMPORARY FACILITIES AND CONTROLS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
POLLUTION + NOISE CONTROL	• Water control should be addressed. Surface water, rainwater or subsurface water or other liquids should not be allowed to accumulate in or about premises and project vicinity. Should such conditions be encountered or develop, control water or other liquid shall be suitably disposed of by means of temporary pumps, piping, drainage lines, troughs, ditches, dams or other methods as reviewed by the Program Manager and the Architect and approved by authority having jurisdiction. • Dust control should be addressed. - Earthwork operations must be conducted in a manner to prevent windblown dust and dirt from interfering with progress of work, the College's activities in existing occupied structures and in areas immediately adjacent as well. Dry high winds often occur on both campuses and constant precaution should be taken to control dirt and dust on the campus. - Water construction areas as required minimizing accumulation of dust and dirt. - Water spray or cover with tarpaulins truckloads of soil to additionally minimize generation of dust and dirt from construction operations. - Prevent dust and dirt from accumulating on walks, roadways, parking areas and from washing into sewer and storm drain lines. • Erosion and sediment control should be addressed. - The contractor should plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation. - The contractor should construct fill and waste areas by selective placement to avoid erosive surface silts or clays. - Earthwork should be inspected to detect evidence of erosion and sedimentation; and promptly corrected if there is a problem. - This section should be coordinated with the Storm Water Pollution Prevention Plan (SWPP) requirements.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	• Noise control should be addressed. Excessive noise where adjacent to College functions should be avoided. Coordinate work with excessive noise with the College for appropriate timing of work. - The contractor should provide a Noise Control Plan after the contract is awarded, prior to the commencement of the work. The contractor shall meet with the District, the Program Manager, and the College to discuss the proposed Noise Control Plan and to develop mutual understanding relative to College functions and needs and details of the plan. • Pollution control should be addressed. - The contractor should provide methods, means and facilities to prevent contamination of soil, water and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations. Approach and procedures must comply with state and local regulatory requirements and anti-pollution ordinances during course of construction and disposal operations. - Burning of refuse, debris or other materials will not be permitted on site. • Waste disposal facilities should be addressed and coordinated with input from the District, the Program Manager, and the College. - Comply with requirements of authorities having jurisdiction. Remove loose refuse and dispose off site legally. - The contractor shall provide and maintain trash bins of appropriate size on the project site. Trash bins shall be serviced on an as needed basis or as designated by the District and College. - The contractor shall provide enclosed waste chutes for higher fall over 8 ft. Provide disposals sufficiently sized to prevent debris from scattering around areas. - When using demolition chutes on a project, chute opening must be sealed when not in use. The chute and dumpster shall be sprayed with water to maintain dust control.	

TEMPORARY FACILITIES AND CONTROLS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	- Do not use the College's disposal systems or any waste or recycling bins.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PROTECTION OF EXISTING FACILITIES	• Protection of existing facilities and sitework should be addressed. Coordinate with the Program Manager, District, and College to develop a site plan showing proposed route of construction equipment and how disturbance and damage to existing sitework will be minimized. This will become part of the contract documents. • The contractor shall protect sidewalks, curbs, entry areas and utilities. • The contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) and irrigation on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workmen, the contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree pruning compound as directed by the Program Manager and in coordination with the District and College. • The contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are made known to or should be known by the contractor. The contractor shall be responsible to repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. • The contractor is responsible to repair landscaped areas, irrigation and sidewalks and any other damaged facilities where trucks, erection equipment or other construction equipment were used in removal and replacement of any equipment during construction, repairing damaged areas to match existing construction to satisfaction of the District and College, and at no additional cost to the District. • The contractor is responsible is responsible for cleaning up nails, and all construction debris to protect against personal or vehicular harm.	

TEMPORARY FACILITIES AND CONTROLS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
DRESS CODE	• The contractor conduct and dress code should be addressed. • Contractor's and subcontractors' personnel shall observe and abide by District and College requirements concerning appropriate conduct, loud noise (unrelated to construction activities) and dress requirements for a safe and un-disturbing work place. Conduct work activities in a professional manner at all times. • Dress Code requirements include contractor's personnel shall wear traditional work attire or uniforms without logos, graphics or wording detrimental to a college environment. Logos, graphics or wording for business identification purposes are acceptable. • Contractors and subcontractors shall wear orange safety vests along with other required safety attire including hard hats and safety glasses. • Identification badges issued by the District shall be worn at all times and displayed in full view and not concealed. • No radios are permitted on the job site. • The District/College reserves the right to remove any person(s) not observing conduct and dress requirements specified herein.	
ANIMALS	• Contractors' and workers' pets or animals any kind or not permitted on the campus, including being retained in a vehicle.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
MOBILIzATION	• Mobilization and demobilization should be addressed. • This section should be coordinated with the Program Manager, the District, and the College. • The work consists of the mobilization and demobilization of the contractor's forces and equipment necessary for performing the work required under the contract. It does not include mobilization and demobilization for specific items of work for which payment is provided elsewhere in the contract. Mobilization will not be considered as work in fulfilling the contract requirements for commencement of work. - Mobilization shall include all activities and associated costs for transportation of contractor's personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary general facilities for the contractor's operations at the site; premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable. - Demobilization shall include all activities and costs for transportation of personnel, equipment, and supplies not required or included in the contract from the site; including the disassembly, removal, and site cleanup of offices, buildings, and other facilities assembled on the site specifically for this contract - This work includes mobilization and demobilization required by the contract at the time of award. If additional mobilization and demobilization activities and costs are required during the performance of the contract as a result of changed, deleted, or added items of work for which the contractor is entitled to an adjustment in contract price, compensation for such costs will be included in the price adjustment for the item or items of work changed or added.	

TEMPORARY FACILITIES AND CONTROLS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
INTERIM LIFE SAFETY MEASURES	• INTERIM LIFE SAFETY MEASURES (ILSM) should be addressed. • This section should be coordinated with all applicable codes and local requirements. This section should be coordinated with the Program Manager, the District, and the Sheriff on site. • The contractor shall ensure that exits provide free and un-obstructive egress. • The contractor shall ensure free and unobstructed access to emergency departments and services for emergency forces. • The contractor shall ensure that fi e alarm, detection, and suppression systems, as well as structural and compartmentalized features of fi e safety outside the construction area are not impaired or compromised. • The contractor shall ensure that temporary construction barricades and barricade doors are smoke tight and made of non-combustible or limited combustible materials that will not contribute to the development of smoke or fi e. • The contractor shall provide a Safety Standards Procedures manual to the Program Manager and District upon contract. • The contractor shall provide additional fi e-fighting equipment and user-training for his personnel. • The contractor shall ensure the prohibition of smoking by his personnel. • The contractor shall develop and enforce storage and debris-removal practices that reduce the flammable and combustible fi e load of the construction area to the lowest level necessary for daily operations. • The contractor shall conduct a minimum of one fi e drill every month throughout the duration of the project. • The contractor shall provide daily hazard surveillance of the construction area with special attention to excavations, construction storage, and field offices • The contractor shall track all safety occurrences and provide a log to the Program Manager each week.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
MATERIALS	• Materials for temporary work may be new or used but are adequate in capacity for required use and loads. • Electrical materials should be appropriate for the project and meet all code requirements. Special project needs for this section should be reviewed with the Project Manager, the District, and the College. • Portable and fixed mechanical equipment may be new or used, temporary units that will not damage construction materials or processes, that will not create unhealthy conditions for workers and that can be operated with approval from the authorities having jurisdiction. Only devises that burn either natural gas or fuel oil may be used.	

VEHICULAR ACCESS AND PARKING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	• Division 1 should reference the following areas information for Vehicular Access and Parking: - Signs, Signals and devices - Construction Parking Control - Access from both land and air - Flagmen - Flares and Lights - Hauling Routes - Traffic Signs and Signal - Removal of construction signs • Coordinate this section on a per project basis with the Program Manager, the District, the Sheriff, the Collage, and the CAPS office . • Confine construction traffic to designated haul routes. • Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic	

CONTROL OF CONSTRUCTION NOISE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	• Division 1 should address control of construction noise on the project sites. • This section should specify the control of noise arising from construction operations and associated activities. • Noise control measures specified are an obligation of the contractor with the costs included within the various contract items of work. • After the contract is awarded, prior to the commencement of the work, the contractor shall meet with the Program Manager, the District, and the College to discuss the proposed Noise Control Plan and to develop mutual understanding relative to details of the plan. • The plan should outline time duration of any noise and the impact of the noise.	
NOISE CONTROL	• The contractor should provide equipment, sound-deadening devices, and take noise abatement measures that are necessary to comply with the requirements specified in the plan. • Sound level for noise exposure due to the construction shall be measured every 5 successive working days while loud work is performed. • Design team shall coordinate with Program Manager and District to identify specific construction noise control mitigation measures on a project by project basis.	

STORM WATER POLLUTION CONTROL

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	• Division 1 should address Storm Water Pollution Control for the project. This section should be written and coordinated with the project civil engineer. • Requirements for compliance with the Storm Water Pollution Prevention Plan (SWPPP) developed specifically for a project are the responsibility of the civil engineer. - SWPPP shall satisfy mandates of Federal Clean Water Act as enforced by State of California Water Resources Control Board and its Regional Water Quality Boards and all other applicable requirements. - The civil engineer is responsible for filing the Notice of Intent and obtaining the permit. - The civil engineer is responsible for payment of application and annual fees required by the State Water Resources Control Board (SWRCB) up until the date of Substantial Completion and will be reimbursed by the District or compensated in their fee. • SWPPP requires compliance of all trades on project that use or manipulate materials of any nature which can potentially enter natural storm-water drainage system. • Representative materials controlled by SWPPP include erosion of native soils and fill materials, leakage or spills from construction vehicles and machinery, stored fuels, concrete truck washout, chemical treatments, curing, compounds, paints, plasters, paving materials, adhesives and sealants, trash and general construction debris, pesticides, fertilizers, and any other material which can be carried by running water or percolate into earth. • The contractor is required to submit documentation certifying compliance with the SWPPP and notification of agencies of completion of operations providing all closeout submittals and documents. • The contractor shall be responsible for paying the necessary permit fees and complying with State Water Resources Control Board Order No. 92-08-DWQ, implementing provisions of the Clean Water Act relating to storm water discharges. • The civil engineer shall obtain the necessary General Permit	

CONTROL OF CONSTRUCTION NOISE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	from the State Water Resources Control Board and develop and implement Storm Water Pollution Prevention Plan in accordance with the State Water Resources Control Board requirements prior to commencing any portion of construction that will disturb land (i.e.; excavation, grading, etc.). • A copy of the plan shall be provided to the Program Manager, the District and the Architect and the civil engineer shall certify, in writing, compliance with the relevant rules, regulations and laws. • At completion of work, the contractor shall remove temporary SWPPP measures and dispose of any pollutants in legal manner offsite, or as otherwise required by SWPPP. • The civil engineer shall prepare and file closeout documentation certifying compliance with the requirements of the SWPPP in original form to the approving agencies and copies to the Program Manger, the District and the Architect.	

PRODUCT REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	• Division 1 should address General Product Requirements for the project including: - Definition of products - Transportation and handling of products - Storage and protection - Product options - Substitutions • Where products are specified by reference standards or by description only, provide products meeting those standards or that description, made by a manufacturer acceptable to the Architect. Where products are specified by naming one or more manufacturers, provide products of one of the named manufacturers that meets or exceeds specifications • Where any specific article, device, equipment, product, material, fixture, patented process, form, method, or type of construction is indicated or specified by name, make, trade name, or catalog number, whether with or without the phrase "or equal," such specification shall be deemed to establish the minimum qualities of function, dimension, appearance, and performance (collectively the Basis of Design) for that material, process, or article. Such specification shall be deemed to be followed by the phrase "or equal." When the phrase "or equal" is used or implied, it shall mean an equivalent product, approved by the Architect in accordance with the specific requirements. • Manufacturers and products listed in Specifications form basis for design and quality intended. Bidders may propose substitutions of equal design and quality and must be accompanied by completed Request Form in the bidding documents. Submit separate form for each proposed substitution. Substitution requests, if any, shall be submitted to the Architect 10 calendar days prior to the bid opening date. The Architect will issue addenda if accepted. This will allow all bidders to also bid on the accepted substitution. • Where expressly noted "no substitutions" in individual Sections, no product options are permitted.	

CONTROL OF CONSTRUCTION NOISE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TRANSPORT AND HANDLING	• Transport and handle products in accordance with manufacturer's instructions. • Promptly inspect shipments to assure that products comply with requirements, quantities are correct and products are undamaged. • Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement or damage.	
OWNER FURNISHED WORK	• There will be some owner-furnished and owner-installed furnishing, equipment and work and should be noted in this section. This work will be on a project by project basis so this section should be coordinated and reviewed with the Program Manager, the District, and the College. These items will be noted in the contract documents as OFOI (owner furnished, owner installed.)	

EXECUTION REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	• Division 1 should address Execution Requirements for the project including: - Field engineering and surveying - Requirements and limitations for cutting and patching of work - Cleaning throughout construction period - Project Record Documents - Closeout procedures - Adjusting - Operation and maintenance data - Warranty and guarantee - Spare parts and maintenance materials - Instruction to owner's personnel • Coordinate Execution Requirements with the Program Manager, the District, and the College on a specific project basis. • Closeout procedure should be detailed with specific requirements for the specific project.	

CONSTRUCTION WASTE MANAGEMENT

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	• Division 1 should address Construction Waste Management for the project. • The Section should cover contractor requirements for preparation, implementation, reporting and documentation of a Waste Management Plan for reusing, recycling, salvage or disposal of non-hazardous waste materials generated during demolition and/or new construction (Construction & Demolition (C&D) Waste), to foster material recovery and re-use and to minimize disposal in landfills • Collection and separation of all construction waste materials generated on-site, reuse or recycling on-site, transportation to approved recyclers or reuse organizations, or transportation to legally designated landfills, for the purpose of recycling salvaging and/or reusing a minimum of 75% of the construction waste generated. • The contractor should designate an on-site person to be responsible for instructing workers and overseeing the sorting and recording of waste/recyclable materials. • The contractor should provide waste management monthly progress reports.	

Division 2
SITE CONSTRUCTION

General Approach: Division 2 should be coordinated with Bid Requirements, General Conditions, and the specific delivery method for the project and tailored to each specific schedule and needs of the project being constructed. Division 2 should be developed in collaboration with the Program Manager, the District and the College. Coordinate and reference any Hazmat and existing conditions reports. All project Specifications, including Division 2 should be reviewed and approved with a signature by District and College facilities representatives. The intention of the criteria provided in these standards is not meant to be all inclusive or list everything that should be include in Division 2 but rather touch upon work that might be needed for a project. Not all of these sections will be required for every project. Some specialty projects or projects with unique conditions may need information not listed in this criteria.

BUILDING DEMOLITION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	• The contractor shall obtain and maintain current licenses and permits required by authorities having jurisdiction to conduct demolition operations including hauling and disposal of debris. • Sound level for noise exposure due to the construction shall be measured every 5 successive working days while loud work is performed. site improvements, indicated to remain. • Outline the salvage of designated building and facility components based on the specific project and coordination with the Program Manager, the District and College. • Include what structures or portions of structures and appurtenances shall be demolished. • The control shall address safety, dust, and sound control.	
HAz ARDOUS MATERIALS	• Note if hazardous material abatement, handling and disposal is part of the project. • If materials, believed to contain asbestos, PCBs or lead, that have not been rendered harmless, are encountered, and not noted to be handled or disposed of as part of the work in the project, stop work in the affected area and notify the Program Manager.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SAFETY BARRICADES	• The contractor shall obtain, place and maintain safety barricades and other items required to ensure safety of workers, all College personnel, students, and the public. • Safety barricades shall be of sufficient strength and design to block access and furnish full protection. • The contractor shall furnish other materials, whether or not indicated, that are required for proper completion of demolition and clearing.	
RODENT EXTERMI-NATION	• Materials used for rodent extermination shall be approved by the Health Department having jurisdiction and shall be applied by persons or companies fully licensed for rodent control operations.	
SAFETY	• The contractor shall assume total responsibility for safety of workers and public in and around demolition area, including adjoining rights-of-way. • The contractor shall provide adequate warning signs, lighting and devices for vehicular and public protection and keep fully maintained during period of work as required by applicable safety ordinances. • The contractor shall inspect safety devices and measures periodically and at end of each work day and maintain an adequate and responsible safety program.	

BUILDING DEMOLITION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
DISCON-NECTION AND PROTECTION OF UTILITIES	• Before starting demolition, the contractor shall disconnect, or arrange for the disconnection, of utility services such as water, gas, steam, electricity and telephone. He shall perform such work in accordance with requirements of the utility and authorities having jurisdiction. • The contractor shall preserve, in operating condition, any active utilities traversing the site and protect utility structures including, but not necessarily limited to mains, manholes, catch basins, valve boxes, poles, guys, lines and other appurtenances encountered. • The contractor shall phase utility disconnections and demolition to minimize interruption of services to the College's ongoing activities. Coordinate details with the Program Manager, District, and College. • The contractor shall arrange with utility companies furnishing gas, water, telephone, electrical or sewer service to remove equipment or to remove, disconnect, cap or plug or relocate their services to facilitate the project operations.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
EXECUTION	• The contractor shall schedule and execute demolition of indicated structures and appurtenances in careful manner with necessary consideration for neighbors and public and to prevent injury to persons and property. • The contractor shall take means necessary to prevent spread of dust during demolition and clearing operations. • The contractor shall wet down masonry walls just prior to, and during demolition and thoroughly moisten ground surfaces as often as may be required to prevent dust from being a nuisance. • The contractor shall maintain adequate water trucks, hoses and water supply. • The contractor shall cease operations and notify the Program Manager and Architect immediately if adjacent walls, ceilings, floors or structures of any kind, appear to be endangered and not resume operations until corrective measures have been taken as approved by the Program Manager and Architect. • Except where noted otherwise, the contractor shall immediately remove demolished material from site and dispose legally. • The contractor shall conduct demolition to minimize interference with adjacent structures on the campus.	
DAMAGE REPAIR AND CLEAN UP	• The contractor shall repair any damages to public or private property resulting from the demolition work whether directly or indirectly caused. • The contractor shall maintain cleanliness on roadways and other public areas used by equipment. • The contractor shall be responsible for immediate removal of spillage on pavement, sidewalks or adjacent properties.	

DISPOSAL SERVICES – LAMPS AND BALLASTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	• Include information on disposal of lamps and ballasts when applicable to a project. • Provide information for specific projects. • The contractor shall provide all labor, materials, equipment, transportation, documentation and services necessary for destruction of ballasts and fluorescent lamps. • The contractor shall provide waste reduction, recycling, refining and disposal of lighting retrofit waste as defined a specific material classification. (i.e. non-leaking PCB ballast leaking PCB ballasts, non PCB ballasts, fluorescent lamps) • Ballasts and lamps shall be placed in Department of Transportation (DOT) approved, POPS containers, or other packaging suitable for lamp transport provided by the contractor and transported to federal or state approved processing facility. • Fluorescent lamps or HID lamps shall be processed to reclaim recyclable components such as glass and aluminum end caps at facility approved in accordance with Code and regulations. Phosphor powder and mercury shall be reported by federal or state approved processing facility. • The contractor shall field verify number of ballasts and lamps to be processed under terms of the project. Cost for disposal of these ballasts and bulbs shall be included as a part of this work.	
CONTAINERS AND MARKING	• PCB ballasts and hazardous materials generated from project activities and cleanup operations shall be placed in USEPA specified containers. Only app oved drums, conforming to USEPA specifications (DOT 17C or POPS) shall be used to contain leaking and non-leaking ballasts. • The containers used shall be properly sealed, marked, labeled and dated. • Ballasts which are visibly leaking shall be packaged separately from those ballasts which do not show visible signs of leakage.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TRANSPORT-ATION TO DESTRUC-TION/ SERVICING FACILITIES	• Ballasts shall be transported to TSCA permitted processing/ destruction facility. • PCB containing capacitors, components, debris and potting compound shall be transported to a TSCA permitted incineration facility for ultimate destruction. • For disposal of leaking PCB ballasts and associated waste, the contractor and/or subcontractor and vehicles must be licensed for transportation and hauling of regulated materials/hazardous waste. Drivers of these vehicles shall be trained in laws, rules and regulations governing transportation of PCB materials. Vehicles must be plainly marked as specified by DO , USEPA, State Department of Health Services, State Police and State Department of Transportation. • Recovered lamp components must be certified as non hazardous through TCLP analysis.	
DOCUMENT-ATION	• The contractor shall coordinate all activities under this Section with the Program Manager. • The contractor shall provide information as to number of ballasts loading per ballasts on fluorescent tubes per same service. • The contractor shall provide the Program Manager and the District with comprehensive information on all firms to be involved in PCB and lamp related work activities as part of the project prior to commencement of the project. • The contractor shall provide the Program Manager and District with comprehensive documentation of work activities upon completion of the work and prior to final payment.	

LEAD PAINT REMEDIATION – ENCAPSULATION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	• Include this section when applicable to the project when needing to clean substrate and apply encapsulant coating over lead-based paint. Tailor to the specific details of the work on the project. Refer to any Existing Conditions Reports.	
ADMINI-STRATIVE REQUIRE-MENTS	• The contractor, sub-contractor, and material supplier, at any tier, and their employees or agents must follow the procedures in the SWPPP. • There should be a pre-installation meeting for this work. • The contractor shall submit product data for each type of encapsulant and accessory item including certifications for recycled content and VOC content. • Product shall include a written warranty for 20 years.	

LEAD ABATEMENT AND LEAD RELATED CONSTRUCTION WORK

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	• Include this section when a specific project includes abatement, lead related construction work or painting of lead-containing materials and/or lead based paint. • This section should reference the District's Lead Abatement Report for the project. • Include information for the following: - Policy and Procedures - Site Security - Emergency Planning - Licensing - Contractor Qualification - Training - Exposure Assessment - Submittals - Employee Protective Equipment - Execution of Lead Related Contraction Work - Execution of Abatement - Waste Handling and Transportation - Monitoring	
POLICY AND PROCEDURES	• The District has a zero-tolerance policy for uncontrolled lead releases during lead related construction work, lead containing paint disturbance, or abatement activities. A lead release requiring an emergency response is any disturbance resulting in the uncontrolled release of lead containing materials. Upon observation of any visual emissions, the contractor should immediately stop the work, vacate the work area, and provide written notification to the Program Manager. • The Program Manager shall provide oversight for all projects that have the potential to disturb lead containing paint or lead based paint. Prior to the commencement of such work, the contractor should provide written notification to the Program Manager.	

LEAD ABATEMENT AND LEAD RELATED CONSTRUCTION WORK

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SITE SECURITY	• The work area is restricted to authorized, trained, and protected personnel. A list of authorized personnel will be established and posted at the entrance of the work area by the Program Manager prior to commencement of the work. • The contractor shall report to the Program Manager any unauthorized entry into the work area. Following notification, a written report of the incident shall be provided to the Program Manager. • Access to the abatement work area shall be through the "Decontamination Enclosure System" only. All other means of access shall be blocked or locked so as to prevent entry to or exit from the work area. Emergency exits shall be operable from inside the work area. • The contractor shall maintain the work area security during abatement and/or lead related construction work. All work areas and ancillary equipment accessible to non-authorized personnel shall be protected from unauthorized access by constructing a barrier.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
EMERGENCY PLANNING	• Emergency planning and procedures shall be developed, submitted, reviewed, and agreed to by the Program Manager and the District prior to the commencement of lead-related construction and/or abatement work. • Emergency procedures shall be provided in the written languages understood by all employees working on the project and shall be prominently posted at the entrance of the "Decontamination Enclosure System." Prior to entering the work area, all parties must read and sign these procedures to acknowledge receipt and understanding of the work area layout, location of emergency exits, and emergency procedures. • Emergency planning shall consider the effects of fi e, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, confined spaces, and heat related injury. The contractor shall develop and provide written procedures and training to all employees. • Employees shall be trained in evacuation procedures in the event of workplace emergencies. • In the event of non-life threatening situations requiring medical treatment, injured or otherwise incapacitated employees shall decontaminate following normal procedures with assistance from fellow workers if necessary, before exiting the work area. • Telephone numbers of all emergency response personnel shall be prominently posted at the entrance of the Decontamination Enclosure System along with the location of the nearest telephone. In addition to the 911 emergency number, the contractor shall post the address and telephone number of the nearest emergency medical services provider. • The contractor shall provide at least one 4A/60BC dry chemical extinguisher in the decontamination compartment. All workers shall be trained in the proper operation of fi e extinguishers. • Emergency exits shall be provided and clearly marked with arrows or other clearly visible markings to permit easy identification f om anywhere within the work area.	

LEAD ABATEMENT AND LEAD RELATED CONSTRUCTION WORK

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	• Exits shall be secured to prevent access from uncontaminated areas while still permitting emergency egress. Exits shall be properly sealed with polyethylene sheeting, which can be cut to permit emergency egress. Emergency exits may lead through the "Decontamination Enclosure System" or other alternative exits as required by fi e officials	
LICENSING	• The work shall be performed by an entity appropriately licensed in the State of California in accordance with all regulations.	

MOLD REMEDIATION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SUMMARY	• Include this section when removal and disposal of mold is required on a project. • Coordinate the details of this section for the specific project with the Program Manager and the District. • Include information for the following: - References and Standards - Pre-construction meeting - Submittals - Quality Assurance - Containment - Protective Clothing - Respiratory Protection - Hepa Filter Equipment - Cleaning Agent - Project Monitoring and Air Sampling - Hazard Communication - Temporary Utilities - Containment Barriers - Negative Pressure - Record Keeping/Daily Log - Clearance Preparation - Final Clearance Inspections - Post-Remediation Air Sampling - Restoration of Utilities, Firestopping and Finishes	

CAST IN PLACE CONCRETE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	
CONCRETE MATERIALS	• Portland Cement - ASTM C150 • Concrete Aggregate - ASTM C33 • Structural Concrete for Buildings - ACI 301 • Sheet Materials for Curing Concrete - ASTM C171 • Standard Methods of Sampling and Testing Fly Ash and Natural Pozzolans for Use as a Mineral Admixture in Portland Cement Concrete - ASTM C 311 • Coal Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Concrete - ASTM C618 • IR 19-3 Interpretation of Regulations, Fly Ash and Natural Pozzolans Used in Concrete • Water Vapor Transmission of Materials - ASTM E96 • Test Method for Measuring Moisture Vapor Emission - ASTM F1869 • Determining Relative Humidity in Concrete Floor Slabs Using In-Situ Probes - ASTM F2170 • Aggregate for Stone Concrete: ASTM C33 • Aggregate for Lightweight Concrete: ASTM C330 • Fly ash may be used at 15% replacement of the Portland cement, at a 1:1 replacement ratio by weight. The fly ash shall meet the requirements of ASTM C 618 with the exception that the Loss on Ignition (a measure of the loss in mass of a fly ash sample when placed in a 750 degrees C oven) shall not exceed 1.0%. Only Class F material is permitted, CBC Section 1903A.5. When fly ash is used the quantity of water shall be determined on a water-cement plus fly ash basis	

CAST IN PLACE CONCRETE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
INTERIOR FLOOR SLABS	• Float Finish only for non-critical floor tolerances – overall value FF 25/FL 20 with min. local value – FF 20/FL 17 • Trowel Finish 1 for classrooms, corridors, and rooms under 1,000 s.f. - overall value FF 30/FL 23 with min. local value – FF 25/FL 20 • Trowel Finish 2 for classrooms and spaces over 1,000 s.f. - overall value FF 36/FL 25 with min. local value – FF 30/FL 22 • Trowel Finish 3 for special spaces such as gyms, performance spaces, etc. – steel trowel slab to a true level and finished smooth and straight to a tolerance of 1/8" in any 10 ' radius • Use an Underslab Vapor Barrier ASTM E 1745, Class A, 15 mils thick, Permeance as tested before and after mandatory conditioning (ASTM E 1745 Section 7.1 and sub-paragraphs 7.1.1 – 7.1.5): less than 0.01 grains/(ft² • hr • inHg). • Detail power/data floor boxes to prevent water infiltration • Under Interior Slabs on Grade install 4 inches thick crushed aggregate base or Class 2 CCS as capillary break. Over aggregate base place 15-mil vapor barrier in largest practical sections. Seal all 6-inch lapped seams, penetrations and foundation perimeters using manufacturer-approved tape only and install per manufacturer instructions. Install pipe boots at pipe penetrations. Install reinforcement and concrete as required. Installation of vapor barrier shall be in accordance with ASTM E 1643 and manufacturer's instructions. Tapes, mastics, sealants, and other products used with vapor barrier shall be from same manufacturer as, and certified compatible with vapor barrier. • Do not exceed 0.50 water-cement ratio by weight for floor slabs • Install Vapor Emission Treatment Systems if tests reveal presence of more than acceptable moisture level in accordance with Test Method ASTM F1869 or ASTM F2170. • Vapor Emissions Treatment System – refer to Division 7. Do not use for curing compound. • Use a combination Hardener and Sealer on exposed concrete floors. This cannot be applied over a curing compound without removing the compound. Coordinate with Structural Engineer for approval. • Conform to Section 01 40 00 requirements for testing for vapor, humidity and alkalinity conditions per ASTM F1869 and ASTM F2170 and specifically adhering to requirements for maintaining specific temperature conditions to acclimate the spaces at test locations to produce accurate readings.	

Division 4
MASONRY

General Approach - Exterior masonry for building facades should support the District's intension of creating a cohesive and unified appearance on campus. Masonry design should support the District's sustainable initiative and allow for energy efficient operation. Masonry detailing on facades should avoid horizontal ledges where birds will perch or nest and exterior openings or niches where birds, bees, or insects can create nests or hives. Consider the need for utility interface and signage mounting in detailing in modular layout. The project budget must be considered in the selection and use of masonry and stone in the design.

MORTAR AND GROUT

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
MORTAR	• Portland Cement - ASTM C150, Type I or II • Hydrated Lime – ASTM C207, Type S • Chemical mixtures for concrete - 494 • Use colored pigmented mortar for face brick, special finish CMU or CMU veneer units • Color of mortar to match or coordinate with existing buildings on campus • Selected mortar color must be part of a mockup and approved • Do not use anti-freeze compounds to lower the freezing point of mortar • When atmosphere is extremely dry, dampen the masonry surfaces with a light fog spray for 3 days during the curing period for mortar. • Minimum compressive strength after 28 days, 1800 psi	
GROUT	• Aggregates for masonry grout - ASTM C476 • Grout for masonry – ASTM C476 • Use fine g out for cavity behind masonry and brick cavity and at grouted door frames and course grout for all filled cell masonry.	

UNIT MASONRY

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CLAY MASONRY UNITS	• Match brick unit selection to existing buildings or coordinate any deviation from existing campus brick with District • A mockup of masonry exterior wall with all selected materials is required. The mockup wall must reflect bond and proposed joint tooling. • Comply with ASTM C216, Grade SW for exterior exposure, Type FBS. • Avoid extreme texture on units • Provide brick that has been tested according to ASTM C67 and is rated "not effloresced". • Masonry should receive an anti-graffiti coating to approximately 10' above the ground with a clear water repellent sealer above. Coordinate transition of coating with banding design or other design element as the water repellent sealer will alter the appearance of the masonry.	
CAST STONE	• Acceptable as column covers, partial wall and stairway caps, lintels and window sills, coping, belt courses, water tables, and special features • Units to comply with ASTM C 1364 with Portland Cement – ASTM C 150, type 1 • Color Pigment – ASTM C979 • Provide large color sample to District and college for approval	
STONE MASONRY	• Limestone – ASTM C 568 • Acceptable as column covers, partial wall and stairway caps, lintels and window sills, coping, belt courses, water tables, and special features. Coordinate with college for use.	
CONCRETE MASONRY	• ASTM C90 • Coordinate colors with other materials on campus • Avoid split face block on areas below 7' or in interior of building unless it is a banding feature	

STRUCTURAL STEEL/METAL FRAMING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
QUALITY	• Structural Steel and fasteners shall be manufactured in the United States. Fabricators shall furnish proof of U.S. manufacture and should be within a 160 mile distance off site. • Fabricator and erector shall be companies specializing in performing structural steel work with a minimum of 5 years of experience in this area. • If applicable on a project, erect a mockup for architectural exposed structural steel for approval before installing entire area of project.	
HORIzONTAL FRAMING MEMBERS	• Design of floor members shall include consideration of the relative perceptibility of floor vibrations based on the use of the space as well as requirements to avoid mechanical equipment vibration. • Design steel floor systems to conform to Acceptance Criteria for Human Comfort as outlined in the AISC Steel Design Guide Series 11 – Floor Vibrations Due to Human Activity.	
SUSTAINABLE APPROACH	• Provide structural steel with a minimum of 90% post-consumer recycled content	
FINISH	• Finish all exposed steel unless specifically app oved by college and District.	

METAL DECK

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ACOUSTICAL	• Design metal deck to meet acoustical performance criteria outlined in Division 51. • If proposing the use of exposed metal deck for an occupied space discuss and receive approval from college and District.	

METAL FABRICATIONS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
EXTERIOR RAILINGS	• Coordinate design with appearance and design of other railings on campus. • Square tube members for support with round tube for handrails. • Finish should be satin stainless steel or have a high performance coating. • A galvanized finish can be used in areas such as parking garages or other maintenance areas. • Provide design to prevent skateboard use and abuse of railings.	
EXTERIOR STAIRS	• Exterior stairs should be metal pan filled with concrete if they are not solid poured concrete stairs. • Do not use exposed metal grid for stair treads. All treads shall be a continuous solid surface. • Contrasting color tread nosing should not be painted - use integral metal nosing set in concrete.	
INTERIOR STAIRS	• Treads shall always include a floor finish and solid tread. • Railings and handrails to be either stainless steel or finished with a high performance coating.	

General Approach - Storage and workspace needs should be identified by use s and any casework concepts for spaces should be reviewed in detail with users and District representatives. Consider whether loose furnishings, which can often provide more flexibility over time, may be a more appropriate solution for storage and work area needs instead of fixed casework. Consider all plumbing components and electrical needs for equipment interface and coordinate with all disciplines. Design casework for easy universal use and safety, avoiding sharp edges and difficult areas to reach. Custom wood casework detailing for feature areas such as office areas needs to consider durability and maintenance. Determine what cabinets need to be secure considering that lockable cabinets and drawers will add cost but provide the most flexibility for use as secure storage needs can change over time.

CASEWORK

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PLASTIC LAMINATE CASEWORK	• Use laminate casework in all spaces except in special areas • Casework should be Custom Grade in accordance with WI Manual of Millwork • Installer must be WI certified • Shop drawings must include the WI Certified compliance label • Fabricator shall have been in business for a minimum of 5 years and completed at least 5 projects of similar size and scope in that time period. • Inspections by authorized WI inspectors will be required through out the installation and written confirmation of all inspections will be required. • Full size mockup of base cabinet with drawers and wall cabinets is required on contracts over $25,000. Approved units will provide a standard of quality for the project. • Minimum recycled content for structural fiberboard – 80-100% total recovered material content • Style A frameless Type 1 self-supporting units rigidly joined together. • Flush overlay drawers and doors • Countertops shall be .048-inch thick with smooth finish and conforming to NEMA HGS standards. • Exposed horizontal surfaces except countertops shall be nominal .028 inch thick minimum with low luster textured finish and conforming to NEMA HGS standards • Exposed Vertical Surfaces shall be .028-inch thick minimum with low luster finish and conforming to NEMA VGS standards. • Semi-Exposed Surfaces, including shelves shall be .020-	

CASEWORK

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PLASTIC LAMINATE CASEWORK	inch thick CLS cabinet liner conforming to NEMA standards or melamine. • Backing Sheet on Concealed Surfaces shall be .020-inch thick, conforming to NEMA CLS standards for cabinet liner. Must use to balance face laminate. • Edge banding on all doors and drawers – 3 mm high impact PVC. Barbed T banding not acceptable. • Edge banding on countertops or worksurfaces – 3 mm high impact PVC. Barbed T banding not acceptable. • Finished hardwood edge accepted in specific office or high profile areas if not in a wet area • 1mm PVC edge on all shelves • AG Fiber Particleboard shall comply with ANSI A208 formaldehyde-free binder • Medium density fiberboard shall comply with ANSI 208.2 formaldehyde-free binder • Shelves to be adjustable in most casework – ¾" thick if 24" or less, 1" thick if over 24" • Provide removable or false backs for access or concealment of heating or plumbing items. Coordinate utility cutouts with all disciplines/trades. Provide grommets and covers. • Scribe tops to walls and other adjoining vertical surfaces. Provide backsplashes only in wet areas or where desired by college. • Filler Strips: Provide as needed to close spaces between cabinets and walls, ceilings, and indicated equipment. Fabricate from same material and with same finish as cabinets • Reinforce bottoms on wide drawers with front to back inset stiffeners, 1 at 24 inch wide drawers, 2 at 36 inch and 4 at 48 inch; glue, fasten, and seal perimeter with hot melt adhesive. • Drawer box shall be a maximum of 1" less in height than drawer opening in face of cabinet. • Kick space should be finished with rubber base used in the space • Avoid using solid dark colors as they are difficult to clean and avoid very light solid colors for countertops. Do not use textured laminate on countertops or worksurfaces. • The manufacturer shall warrant products from delamination, loose edges, defective or broken hardware, broken casters, loose wood trim, and horizontal or vertical members coming apart from each other and in general against defects in materials or workmanship for 5 full years after substantial completion.	

CASEWORK

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
WOOD CASEWORK	• Use wood-faced casework in special areas as budget allows and as approved by District and college on project • Casework to be Custom Grade in accordance with WI Manual of Millwork • Installer must be WI certified • Shop drawings must include the WI Certified compliance label. • Fabricator shall have been in business for a minimum of 5 years and completed at least 5 projects of similar size and type in that time period. • Inspections by authorized WI inspectors will be required throughout the installation and written confirmation of all inspections will be required. • Full size mockup of base with drawers and wall cabinets is required on contracts over $25,000. Approved units will provide a standard of quality for the project. • Minimum recycled content for structural fiberboard – 80-100% total recovered material content. • Grade A hardwoods and veneers • The manufacturer shall warrant the products from delamination, loose edges, defective or broken hardware, defective or broken casters, loose wood trim, and horizontal or vertical members coming apart from each other and in general against defects in materials or workmanship for five full years after substantial completion.	
CASEWORK HARDWARE & ACCESSORIES	• Hinges for plastic laminate casework to be semi-concealed 5 knuckle complying with BHMA A156.9, Grade 1, with interlaying leaves capable of 270 degree swing. They shall be of nominal .090-inch minimum thickness steel and shall be hospital tipped with non-removable pins fastened with 4 screws each leaf into faces – electrostatic baked powder coat finish. No edge fastening allowed • Hinges for wood or specialty casework to be concealed half overlay 170 degrees except where attached to end vertical panels with wood trim which would then receive an inset 95 degree hinge. Hinges shall be snap closing. Only use in areas with limited use.	 

CASEWORK

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CASEWORK HARDWARE & ACCESSORIES	• Drawer Slides: zinc-plated or powder-coated, metal-channel, self-closing drawer slides, designed to prevent rebound when drawers are closed, with nylon-tired, ball-bearing rollers, and complying with BHMA A156.9, Type B05091, and rated for the following loads: Box Drawer Slides: 100 lbf. File Drawer Slides: 150 lbf. Pencil Drawer Slides: 45 lbf. Keyboard Slide: 75 lbf. • Catches: zinc plated or powder coated nylon roller spring catch or dual, self-aligning, permanent magnet catch. • Locks: 5 pin tumbler – keys to match building keying system • Wire pulls for plastic laminate casework – U shape • Adjustable shelf supports must have a minimum 300 pound capacity. Use seismic restraint clips on open shelves. • Include silicon stops on all doors and drawers. • Include 1" and 2" grommets and wire management for all areas with cable and cords. Coordinate electrical access.	 

SOLID POLYMER FABRICATIONS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SOLID SURFACE MATERIALS	• Use for countertops, worksurfaces, and kickspaces in high use areas. Include backplashes in all wet areas. • Use for restroom countertops with integral sinks and backsplash and shelf above sinks. • Homogeneous solid sheets of filled plastic resin complying with material and performance requirements in ANSI 2124.3 • Tensile strength, ASTM D638: Min. 4000 pounds per sq. ft. • Elongation, ASTM D638: .3 % maximum • Hardness, ASTM D785: 90 Rockwell M • Weight per sq. ft., ¾ " – 7 lbs. • Fabricator shall have been in business for a minimum of 5 years and completed at least 5 successful projects of similar size in that time period. Fabricator will be required to provide references from 5 projects. • Fabricator shall warrant fabrication and installation for 5 full years for any defects or installation failures with written warranty to the District required.	

General Approach - New buildings should comply with code and strive to perform 10% better than energy baseline performance. All buildings will be designed and built with energy efficient materials, practices, and technologies. Existing buildings should comply with code requirement and strive to perform 8% better than energy baseline performance. There are two methods for achieving Title 24 compliance in California. The most flexible method of title 24 compliance is the performance method.

Prescriptive Method
The prescriptive method is the simplest approach to Title 24 compliance where each individual component of the proposed building must meet a prescribed minimum energy requirement. However, the prescriptive approach is also the least flexible, as the requirements are stringent.
Performance Method
The use of Energy Commission-approved energy modeling provides the most flexibility and accuracy when seeking Title 24 compliance. While this approach requires the most effort, it also provides the greatest flexibility. Detailed accounting of energy trade-offs between measures is possible with this compliance approach. The computer program automatically calculates the energy budget for space conditioning and compares it to a baseline version of the same design. The baseline version of the building is in compliance with the prescriptive package conservation features. Therefore, when using the performance method, the design case building will be compared to a prescriptive method compliant building.
With either of these Title 24 compliance paths, there are mandatory measures that still must be addressed. The mandatory measures are required features with either the prescriptive or performance standards. The mandatory measures require minimum effective R values for roof, wall, and slab insulation. Effective R value takes into consideration all thermal transfer through the assembly. Where superseded by a more stringent requirement to achieve compliance with the energy budget or prescriptive package, the more stringent feature becomes mandatory. These requirements will most likely continue to change. The design team should review options to achieve the required R values for the building envelop and the impact on exterior envelop wall systems with the District and College and discuss strategies and initial and life cycle costs for alternates options. The combined envelope should strive to meet an overall envelope assembly performance of 10-15% better that Title 24 baseline (not including MEP systems and process loads).

CONCRETE SLAB - VAPOR EMISSIONS TREATMENT

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CONCRETE ADMIXTURE	• All concrete slabs scheduled to receive flooring to include a vapor emissions admixture. • Product must provide a 10 year manufacturer's warranty, specifically written for the project covering all moisture related failures, including all floor finish materials and lab .	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	• Testing ASTM D-5084 or ASTM 4263 only. • Manufacturer's representative to be present for final inspection of ASTM D-4263 test. • Manufacturer must have 10 years of product service with "no fail" products. • Manufacturer's representative to be present during installation.	
WEATHER AND VAPOR BARRIER FILMS	• Synthetic building wrap is standard. • Acceptable Manufacturers include: DuPont™ Tyvek® CommercialWrap® and related assembly components, Reemay Inc., Firstline Corp. or equal approved by District • Air Penetration: 0.001 cfm/ft2 at 75 Pa, when tested in accordance with ASTM E2178. Type I per ASTM E1677. ≤0.04 cfm/ft2 at 75 Pa, when tested in accordance with ASTM E2357. • Water Vapor Transmission: 28 perms, when tested in accordance with ASTM E96, Method B. • Water Penetration Resistance: Minimum 280 cm when tested in accordance with AATCC Test Method 127. • Basis Weight: Minimum 2.7 oz/yd2, when tested in accordance with TAPPI Test Method T-410. • Air Resistance: Air infiltration at >1500 seconds, when tested in accordance with TAPPI Test Method T-460. • Tensile Strength: Minimum 38/35 lbs/in., when tested in accordance with ASTM D882, Method A. • Tear Resistance: 12/10 lbs., when tested in accordance with ASTM D1117. • Surface Burning Characteristics: Class A, when tested in accordance with ASTM E84. Flame Spread: 10, Smoke Developed: 10.	
WATER REPELLENTS	• Masonry wall water repellent and anti-graffiti coating on all masonry buildings. • Provide mock up for review on minimum 4'x4' masonry wall. • Acceptable manufactures: Prosoco Inc. Sure Klean weather Seal Blok-Guard and Graffiti Control II Water Repellent or equal. • Test repellent using ASTM E514 (RILEM Test Method 11.4)	

WATERPROOFING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
WATER-PROOFING-HOT RUBBERIz ED ASPHALT-SPLIT SLAB SYSTEMS	• Single-component, 100% solids, hot-applied rubberized asphalt, complying with ASTM D 6622-01 • Neoprene Sheet Flashing: 60 mil minimum, non-staining, uncured sheet neoprene with manufacturer's recommended contact adhesives • Exposed Membrane Flashing: 160-mil APP modified bitumen, granule surfaced sheet as provided by primary waterproofing material manufacturer • Polyester Reinforcing Fabric: Membrane should be manufacturer's recommended polyester fabric reinforcing • Separator Sheet: ASTM D 4397, polyethylene sheet, 6 mils thick minimum • Protection Sheet: ASTM D 5147, for sampling and testing modified bitumen roofing membranes, 80 mils thick. • 15 year manufacturer's joint warranty	
SHEET SYSTEM-BELOW GRADE WALLS AND ELEVATOR PITS	• Sodium Bentonite: Complying with ASTM D 5890-06, specially selected Wyoming granular bentonite containing approximately 90% montmorillonite with 10% maximum unaltered volcanic ash and other native sediments. Free Swell Rating: 2 grams sifted into deionized water swells to occupy a minimum volume of 16 cc. Grading: Granular bentonite passes 90% through a 20 mesh sieve and less than 10% through a 200 mesh sieve. • Waterstops: Bentonite waterstops to be used at all cold joints • Drainage Board: Composite drainage board as provided by primary waterproofing material manufacturer. • System must have 10 year manufacturer's joint warranty. • At elevator pits, install bentonite waterproofing system beneath slab and along vertical walls. • At below-grade wall penetrations, incorporate link seals.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
COLD FLUID-APPLIED MEMBRANE FOR PLANTERS	• Include on all planters • A one-component moisture-curing aliphatic polyurethane, cold liquid applied moisture curing urethane complying with ASTM C 836; roller, spray, or squeegee grade as required for application • Composite Drainage Board as provided by primary waterproofing material manufacturer. • Must have a 10 year manufacturer's joint warranty. • For electrical vaults, check with SDG&E for waterproofing criteria. For all other vaults, apply a fluid-applied u ethane waterproofing membrane, applied at a rate of 90 dry mils using a product such as Tremco 250GC or equal.	
VAPOR BARRIER BENEATH FLOOR SLABS	• Refer to Division 3	

WINDOWS AND CURTAIN WALL

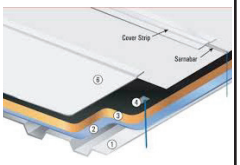
SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SYSTEM PERFORMANCE	• System to provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F without causing detrimental effects to system or components • Design and size members to withstand dead loads and live loads and dead loads caused by pressure and suction of wind as calculated in accordance with requirements of the CBC and ASCE 7. • Uniform Load: A static air design load of 20 PSF shall be applied in the positive and negative direction in accordance with ASTM E330 • Limit water infiltration to zero at 8 pounds force per square foot per ASTM E331. • Sound attenuation through wall system, not less than STC 38 measured in accordance with ASTM E413. Refer to Division 51 for additional criteria. • Mock ups are required for all window systems and curtain wall assemblies. • Water testing of all window assemblies should be specified to meet ASTM Standards.	

ROOFING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
NEW ROOF-LOW-SLOPED ROOF MEMBRANE SYSTEM	• Adhered Systems: Minimum 80-mil thick fiber glass reinforced membrane with a lacquer coating manufactured using an extrusion coating process. Membrane shall conform to ASTM D4434-96 (or latest revision), "Standard for Polyvinyl Chloride Sheet Roofing." Classification: type II, Grade I. • Approved Manufacturers: Sarnafil, remco, and Johns Manville • Color of all membrane shall be "Energy Star Tan" or the preferred "Tan." The membrane shall have an initial solar reflectance of 73% and a corresponding emissivity of 85%. In combination the total solar reflectance index value (SRI) of the membrane shall be 89 and must meet standards of the State of California Title 24 latest requirements. • VOC compliant adhesive for membrane attachment. • 60-mil thick fiber glass reinforced membrane with a lacquer coating for base and wall flashings • Walkpad layout from roof access to and around all serviceable mechanical units. • Polyisocyanurate rigid roof insulation board shall be used for pre-tapered systems and for meeting project R-value criteria. Insulation board shall receive a cover board minimum 1/4" thick, with a DensDeck Prime board or equal. Insulation and cover board may be mechanically attached or adhered using a Factory Mutual approved low-rise foam adhesive. • Penetrations shall receive either pre-fabricated boots or field-fabricated boots, including stainless steel cinch bands and sealant. The top edge of the boots shall receive a storm collar fabricated from the single-ply roof membrane and attached using a secondary cinch band and sealant. • The roof system shall provide a 30-Year Full-System Warranty from the roofing material manufacturer. The warranty shall include for an 80-mph wind uplift. A manufacturer's should be on site observing installation.	

ROOFING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
NEW ROOF-LOW-SLOPED ROOF MEMBRANE SYSTEM	• Manufacturer to provide inspection services during warranty period, per manufacturer's criteria. Owner will contact manufacturer to arrange for roofing inspection. Inspection will include a report indicating any routine maintenance required as well as any repairs that are required (these may be covered under warranty or be non-warranty related).	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
NEW ROOF-STEEP SLOPED ROOF SYSTEM	• Color of standing seem metal panels to match campus standard color, width and style of standing-seam metal roof of other campus buildings. • Approved Manufacturers: Tremco, Berridge Manufacturing Company, and MS Metal Sales. • Engineered safety tie off posts shall be provided for all steep sloped metal roof sections. • Underlayment for the standing-seam roofs shall consist of a one-layer of a high-temperature, self-adhering underlayment designed specifically for beneath a standing seam metal roof. • A rosin sheet may be recommended to divorce the self-adhering membrane and the bottom side of the panels. • A single-ply membrane shall be used along valley areas at the base of the standing seam metal roof system. • Roof system must have a 10-year manufacturer's joint warranty.	
ROOF REPLACEMENT-LOW-SLOPED ROOF MEMBRANE SYSTEM	• Adhered Systems: - 80-mil thick fiber glass reinforced membrane with a lacquer coating manufactured using an extrusion coating process. Membrane shall conform to ASTM D4434-96 (or latest revision), "Standard for Polyvinyl Chloride Sheet Roofing." Classification: type II, Grade I. • Approved Manufacturers: Sarnafil, remco, and Johns Manville. • Color of all membrane shall be "Energy Star Tan" or the preferred "Tan." The membrane shall have an initial solar reflectance of 73% and a corresponding emissivity of 85%. In combination the total solar reflectance index value (SRI) of the membrane shall be 89 and meet standards of the State of California Title 24 latest requirements. • The roof system shall provide a 30-Year Full-System Warranty from the roofing material manufacturer. The warranty shall include for an 80 mph wind uplift. • VOC compliant adhesive for membrane attachment. • 60-mil thick fiber glass reinforced membrane with a lacquer coating for base and wall flashings • Walkpad layout from roof access to and around all serviceable mechanical units.	 

ROOFING

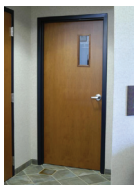
SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ROOF REPLACEMENT-LOW-SLOPED ROOF MEMBRANE SYSTEM	• Design Professional shall perform a visual inspection of the existing roof to review the following: - Existing slope and overall drainage of the roof. Roof replacements require a minimum 1/4 inch per foot slope throughout the roof. Elevations of existing walls and units need to be reviewed in conjunction with adding the new required slope. - Existing roof drain bowls. Identify overflow drains and/or scuppers. - Environmental related materials located on the roof. - Existing elevations of curbs, pipes, etc. that may need to be modified to achieve a minimum 10 inch elevation above the roof membrane elevation. - Review existing mechanical units and their current condition and efficiency - Review interior of building to identify prior leak areas and potential damage to the existing substrates. - Field test cuts should be taken down to the deck to identify the number of roof systems, etc. - Identify existing R-value of insulation either above the roof or below the roof, additional insulation may be required. Consideration should be given at decks with no insulation to incorporate in the design a new minimum insulation and cover board to meet current code. - Pre-painted sheet metal copings should be utilized at all parapet walls, including termination saddle flashings	
ACCESSORIES FOR ROOFING	• Ladder access is required to all roof sections. Ladder should be interior or concealed. • Roof access hatches should be 4 foot by 4 foot to accommodate a hoist. A 3 foot by 3 foot access hatch is acceptable if there is another access to accommodate the hoist. • Roof access hatches must be a minimum 8 inches above the roof membrane elevation. • Metal Safety rails are required around all roof access hatches.	 KeeHatch Roof Hatch Railing System Model: RHSR-O (Offset Handles)

HOLLOW METAL DOORS AND FRAMES

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
EXTERIOR STEEL DOORS AND FRAMES	• Exterior doors to comply with ANSI A250.8/SDI-100, Level 3, and ANSI A250.4 for physical endurance, extra heavy duty, 1 ¾ " thick, 16 gauge cold-rolled face sheets min., ASTM A653. • End closures should be 18-gauge minimum and 14 gauge for temperature-rise doors. • Doors to have seamless, continuously welded seam, dressed smooth hollow steel construction. Closed top and bottom with flush channel. (Model 2 • Frames to be 14 gauge steel • Grout frames - ASTM C1107 • Provide asphaltic emulsion coating at frame surfaces exposed to grout material. • Metal coating protection required, ASTM A653, hot-dip galvanized with A60 coating. • Consider oversized doors for maintenance/equipment areas • Refer to Division 51 for acoustical performance.	
INTERIOR STEEL DOORS AND FRAMES	• Interior doors – ANSI A250.8/SDI-100 ANSI A250.4 for physical endurance,, Level 3, extra heavy duty, 1 ¾ " thick, 16 gauge cold-rolled face sheets, ASTM A653. • End closures should be 18-gauge minimum and 14 gauge for temperature-rise doors. • Doors to have seamless, continuously welded seam dressed smooth hollow steel construction. Closed top and bottom with flush channel. (Model 2 • Frames to be 16 gauge steel • Grout frames in masonry/concrete walls - ASTM C1107. Reference Division 51 for need to grout stud walls. • All louvers to be 18 gauge • Doors to have kick plates • Consider oversized doors for maintenance/equipment areas • Refer to Division 51 for acoustical performance.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ALUMINUM DOORS AND STOREFRONTS	• Aluminum framed doors and storefront is used on both campuses and provides the open and transparent entry to buildings that is recommended in Section 2 guidelines. • Incorporate a thermal barrier. • Consider building orientation and environmental conditions of the building when determining use. • Prepare components with internal reinforcement for door hardware and door operator hinge hardware. • Include applied stop with weather stripping. • Consider the compatibility and continuity of existing frame finish and tint of glass used on the campus when selecting finishes • Consider cleaning and maintenance of glass in the design of the building. • Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes • Refer to Division 51 for acoustical performance.	

WOOD DOORS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
FLUSH WOOD DOORS	• Meet or exceed ANSI/WDMA I.S.1-A Quality Standard conforming to premium grade requirements. • Doors should be 5-ply construction solid core 1 ¾ " in thickness. • Doors should be premium grade with "A" face veneer. • In general use plain sliced, book matched hardwood faces unless discussed and approved by District and college. • Prep doors to receive hardware at factory. Doors must have a factory finish • Doors to be CARB compliant • Interior wood doors for all classrooms, offices, conference rooms, and work rooms are to have an 8" x 16" vision panel. Wood frames should match face veneer of door when possible. • Vision Lights should meet requirements of ICC A117.1 and ADA-ABA Standards *"404.2.11 Vision Lights. Doors, gates and side lights adjacent to doors or gates, containing one or more glazing panels that permit viewing through the panels shall have the bottom of at least one glazed panel located 43 inches (1090 mm) maximum above the finish floor"*. This may cause light/lock conflicts that affect manufacturer's warranty or encroach on the required distance between cutouts on fi e-rated doors. Generally 5.5 inches are required. • Do not use wired glass in door openings in fi e-rated doors. A "Firelite Premium" product is recommended for maximum clarity. • Doors should include a kick plate on the corridor or entrance side of the door. • Refer to Division 51 for acoustical performance.	 

WINDOWS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
EXTERIOR WINDOWS	• Aluminum windows that comply with AAMA/NWWDA 101/I.S.2. for performance class and performance grade should be used for punched opening. • Other approaches to window products should be approved by the District and the college. • Thickness of material shall not be less than .125 inch. Frames shall be factory glazed. • Exterior windows should not be operable unless approved by District and college. • Do not include units with integral blinds. • Windows shall be glazed with tempered glass where subject to human impact. • Consider the compatibility and continuity of existing frame finish and tint of glass used on the campus when selecting finishes • Frame finish should comply with NAAMMs "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes • Provide a mock-up of a wall with sample window during construction for approval before ordering all windows. Approved sample will be the standard for installation quality. • Refer to Division 51 for acoustical performance.	

TUBULAR DAYLIGHTING DEVICES (TDD)

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL	• Use Tubular daylighting devices when possible to bring in natural light to interior spaces and save on energy costs for lighting. • Coordinate light levels and placement in spaces with electrical engineer to and other lighting sources. • The unit shall consist of a roof dome, reflective tube, ad diffuser. • Manufacturer should be Solatube or equal.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TDD UNIT	• Tubular Daylighting Devices General : Transparent roof-mounted skylight dome and self-flashing curb, reflective tube, and ceiling level diffuser assembly, transferring sunlight to interior spaces. • Flashing Base should be one piece, seamless, leak-proof flashing functioning as base support for dome and top of tube and identify if Roof Flashing Turret Extensions are required for specific project. • All units in instructional spaces and conference rooms shall include a local dimmer control utilizing a butterfly baffle design of "Spectralight Infinity" reflective material to minimize shadowing when in use. Provide with dimmer switch and cable. Coordinate with bank of light switched in instructional space. • Use a wire suspension kit when additional bracing to the structure is required for the unit. • Provide exhaust fan and exhaust vent cap if needed. Switches shall be located on wall adjacent to dimmer switch. • Install in accordance with manufacturer's printed instructions. After installation of first unit, field test t determine adequacy of installation. Conduct water test in presence of Inspector and Architect, and Program Manager for acceptance. Correct installation procedure if needed before proceeding with installation of subsequent units.	

DOOR HARDWARE - HINGES

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ARCHITECTURAL HINGE GENERAL SPECIFICATION	• (3) Knuckle, Concealed Bearing, Full Mortise Hinge • ANSI Certification A156.1, Grade • Standard Weight – gauge .134, Standard Size – 4.5" x 4.5" • Heavy Weight – gauge .180, Standard Size – 4.5" x 4.5" • Heavy Weight – gauge .190, Standard Size – 5" x 4.5" • Brass, Stainless Steel, Steel (base material) • Standard Finish – 626/630/652 • Electric Transfer Option – Through Wire (TW) • Non Removable Pin (NRP) Option – Exterior/Security Outswing Locations	
INTERIOR HINGE 3'0" WIDE DOORS	• Standard Weight, Size - 4.5" x 4.5" • Standard Finish –630 Satin Stainless Steel • Medium traffic locations (new doors/frames	
INTERIOR HINGE/ EXTERIOR HINGE 3'0"-3'6" WIDE DOORS	• Heavy Weight, Size - 4.5" x 4.5" • Standard Finish –630, Exterior Finish – 630 Satin Stainless Steel • High traffic locations (new doors/frames	
INTERIOR HINGE/ EXTERIOR HINGE 4'0" WIDE DOORS	• Heavy Weight, Size – 5" x 4.5" • Standard Finish –630, Exterior Finish – 630 Satin Stainless Steel • 4'0" wide door locations (new doors/frames)	
ELECTRIC POWER TRANSFER HINGE INTERIOR/ EXTERIOR	• Through Wire (TW) Option applies to full mortise hinges above • (4) Wire – TW4, (8) Wire – TW8 - interior locations • Access Controlled Locations (new doors/frames)	
CONTINUOUS HINGE INTERIOR/ EXTERIOR	• Aluminum Geared – 6063-T6 Aluminum • ANSI Certification 156.26, Grade • For doors weighing up to 450 lbs • Full Mortise – Edge Protector • Exterior/high traffic locations (new doors/frames • Continuous hinges are standard at all exterior storefront aluminum door locations as all doors in high abuse/ traffic locations. All doors using continuous hinges are to receive full length hinge edge reinforcement and the manufacturers recommended screws.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CONTINUOUS HINGE EXISTING INTERIOR/ EXTERIOR	• Aluminum Geared – 6063-T6 Aluminum • ANSI Certification 156.26, Grade • For doors weighing up to 550 lbs • Full Surface – Center Pivot - Adjustable • Exterior/high traffic locations (existing doors/frames	

DOOR HARDWARE - LOCKS/PRIVACY FUNCTION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
MORTISE LOCKS GENERAL SPECIFICATION	• ANSI Certification A156.13, Series 1000, Grade 1 Operational and Security, UL listed for 3-hour fi e door, grade 2 w/interchangeable core cylinders • Stainless Steel (base material) - Standard finish – 63 • Lever Style – Curved, cast stainless steel • Rose Style – Wrought Rose 2-1/8" diameter • Standard Backset – 2-3/4" • Bolts – 1" throw stainless steel deadbolt and ¾" throw stainless steel latch w/anti-friction tongue	
ALL LATCH/ LOCK AND EXIT DEVICE TRIMS	• Lever Style – Curved, cast stainless steel	
AT ALL LOCKING FUNCTIONS WITH A THUMBTURN	• ADA Thumbturn	
PASSAGE FUNCTION CONFERENCE ROOMS TOILET ROOMS-MULTI	• Passage Latch; latchbolt retracted by lever from either side at all times. Inside lever always free for immediate egress.	
PRIVACY FUNCTION TOILET ROOMS-SINGLE	• Privacy Lock; latchbolt retracted by lever from either side unless outside is locked by inside thumbturn. Operating inside lever or closing door unlocks outside lever. To unlock from outside, remove emergency button, insert emergency thumbturn (furnished) and rotate. Inside lever always free for immediate egress.	
PRIVACY FUNCTION W/ OCCUPIED INDICATOR FACULTY TOILET ROOMS NOTE: FURNISH (2) EMERGENCY KEYS PER LOCK	• Faculty/Toilet Room Lock; latchbolt retracted by key outside or by lever inside. Outside lever is always fixed. Deadbolt thrown or retracted by inside thumbturn. When deadbolt is thrown an "Occupied" plate is displayed and all keys become inoperative except emergency keys. Turning inside lever retracts both deadbolt and latchbolt simultaneously. Inside lever always free for immediate egress.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ENTRANCE/ OFFICE FUNCTION: OFFICE	• Entrance Lock; latchbolt retracted by lever from either side unless outside is locked by inside thumbturn or by key outside. Deadbolt thrown or retracted by thumbturn. Outside lever remains locked until thumbturn returned to vertical position. Keyed access only from outside when locked. Inside lever always free for immediate egress.	
CLASSROOM FUNCTION: ENTRY OFFICE, CORRIDOR CONFERENCE ROOMS	• Classroom Lock; latchbolt retracted by lever from either side unless outside is locked by key. Unlocked/locked by key outside. Can be left unlocked, cannot be locked without a key. Inside lever always free for immediate egress.	
CLASSROOM FUNCTION: CLASSROOM DOORS	• Classroom Security Holdback Lock-w/Vandal resistant outside trim; latchbolt retracted by inside lever or by key outside. Outside trim can be locked from inside the classroom. Electronic card access only from outside when locked. Inside lever always free for immediate egress.	
STOREROOM FUNCTION: FACILITIES/ JANITOR/ UTILITY	• Storeroom Lock; latchbolt retracted by inside lever or by key outside. Outside lever is always inoperative (cannot be left unlocked). Keyed access only from outside when locked. Inside lever always free for immediate egress.	
STOREROOM W/DEADBOLT FUNCTION: PERIMETER/ SECURITY	• Storeroom Lock w/Deadbolt; latchbolt retracted by inside lever or by key outside. Outside lever is always inoperative (cannot be left unlocked). Deadbolt thrown or retracted by key outside or thumbturn inside. Keyed access only from outside when locked. Inside lever always free for immediate egress.	
ELECTRONIC MORTISE LOCKS ELECTRICALLY UNLOCKED FUNCTION (FAIL SECURE) INTERIOR/ EXTERIOR ACCESS CONTROLLED	• Electrified Lock w/Request to Exit (RX); outside lever electrically unlocked by 24V AC or DC after presentation of a valid access credential. An internal micro-switch (RX) monitors the lever action to signal the use of the opening to security systems. Latchbolt retracted by inside lever or by key outside. Outside lever cannot be left unlocked. Inside lever always free for immediate egress. • Coordinate electrified lock with District s Access control company" Millennium Group. • Install on all classroom, office, conference room, storage and MDF and IDF rooms. Install at department and administration suite doors. Install on all exterior doors. • Other doors may require Electronic Mortise Locks. Coordinate all locations with District and college staff. See Division 28.	

DOOR HARDWARE - EXIT DEVICES/CLOSERS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
EXIT DEVICES: SPECIFICATION	• ANSI Certification A156.13-2001, Grade 1 Operational and Security, UL listed for 3-hour fire door • Push Bar Operating Force – 5lb (operation for immediate egress) • Quiet Operation, fluid damped push bar • Smooth External Surfaces • Stainless Steel (base material) - Standard finish – 630 • Lever Style – Curved, cast stainless steel • Escutcheon Plate – 2 ¾" x 10 ¾" x 27/32" • Standard Backset – 2-3/4" • Standard Projection – 2-7/8" • Concealed Vertical Cable (CVC) at exit/cross corridor pairs of doors • Vandal Resistant Pulls (where required)	
EXIT DEVICE	• Mortise Exit Devices (MED), fire rated as required • Type 3	
EXIT WAY: DOORS EXTERIOR	• Rim Exit Devices (RIM), fire rated as required • Type 1	
EXIT WAY: DOORS INTERIOR	• Rim Exit Devices (RIM), fire rated as required • Type 1	
CLASSROOM DOORS W/EXIT DEVICES	• Rim Exit Devices (RIM), fire rated as required • Type 1 • Double cylinder option as required to provide lockout function • Vandal Resistant Pulls (where required)	
PAIRS OF EXIT DOORS W/ REMOVABLE MULLION	• Rim Exit Devices (RIM), fire rated as required • Type 1	
PAIRS OF EXIT DOORS W/ CONCEALED VERTICAL CABLE	• Concealed Vertical Cable (CVC), fire rated as required • Type 8 • Less Bottom Latch (LBL) at exterior or interior locations	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CLOSER LOCATIONS AT POCKETED DOORS	• Utilize closers templated for wall mount installations to allow for recessed door orientation • Cast Iron • Forged Steel Arm (pull side mounting) • Extra Duty Forged Steel Arm (push side installations) • Double Heat Treated Pinion • All Weather Fluid • Generally, closers to be installed on least conspicuous side of door • Incorporate hold-open feature into the closer where required (consult with architect). This feature should replace overhead holder/closer combinations or floor/wall stop holder/closer combinations • Hold-Open features available on pull or push side closer installations • Use electrically controlled closer/holders or magnet door holders integrated into the building fire alarm system at fi e-rated openings	
AUTOMATIC DOOR OPERATORS GENERAL SPECIFICATION	• Consider for restrooms and other areas that may be beneficial even if not required by code if budget permits • Utilize low energy electrohydraulic operators on low to medium use frequency openings and low energy electro-mechanical operators on high use openings.	
DOOR CONTROLS COORDINATOR	• Bar type, filler bar & mounting bracket	
DOOR CONTROLS AUTOMATIC FLUSH BOLTS	• Hollow metal door type • Less bottom flush bolt at interior location • At fi e-rated openings, use automatic flush bolts with auxiliary fi e latch.	

DOOR HARDWARE - EXIT DEVICES/CLOSERS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
DOOR STOP (FLOOR) EXTERIOR/ ABUSIVE LOCATIONS	• Heavy Duty, grouted installation, cannot be removed	
DOOR STOP (FLOOR) EXTERIOR/ INTERIOR LOCATIONS	• Utilized where door is undercut for threshold	
DOOR STOP (FLOOR) INTERIOR LOCATIONS	• Utilized where door has minimal undercut • All doors should have door stop to prevent hitting wall, architectural feature or casework.	
DOOR HOLDER/STOP (FLOOR) INTERIOR LOCATIONS	• Utilized where door needs to be held-open and can be located next to an adjacent wall • Review all locations per project with college. • Consider using an overhead stop included on the closer when possible to avoid floor stop	
DOOR STOP (WALL) INTERIOR LOCATIONS	• Utilized where floor stops a e potential trip hazards, must have backing provided in the wall during framing phase	

DOOR HARDWARE - MISC DEVICES

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
OVERHEAD DOOR STOP EXTERIOR/ INTERIOR LOCATIONS	• Utilized where floor stops a e trip hazards and no adjacent wall for a wall mounted stop. • Surface mounted on the push side of the door • Use only when there is no other option • If opening is receiving a door closer, then incorporate a stop feature into the closer.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
DOOR PROTECTION INTERIOR LOCATIONS	• Standard Finish – 630 • Standard Mounting – Screw applied • Protection plates to have a minimum thickness of .050" • Mop Plates (6" height x 2" less than the door width) at pull side installation in areas where there is frequent mopping (kitchens, multi-stall toilet rooms) • Kick Plates (12" height x 2" less than the door width) at push side installation of doors with closers • Armor Plates (16-34" height x 2" less than the door width) at push side of doors with closers in high traffic/abusive environments Note: Height of armor plate dependent on fi e rating • Push Plates (4-6" wide x 16" height) • Custom sizes only when needed.	
DOOR EDGE PROTECTION INTERIOR LOCATIONS	• Standard Finish – 630 • Standard Mounting – Screw applied • Edge Protection to have a minimum thickness of .050" • Full height will require preparation for hardware • "U" Shapes (recommended) available for beveled and non-beveled edge doors • Use only where requested by college staff in specific areas. • Hinge edge protection can be incorporated into stainless steel continuous hinges on doors with closers in high traffic/abusive environments.	
SEALS GENERAL SPECIFICATION	• Fire Rated Seals to meet requirements of UL10B & UL10C • Air Infiltration to meet requirements of ASTM E-283 • Sound Seals to meet requirements of ASTM E 90-2009 • Smoke Seals to meet requirements of NFPA 105-2010 • Screw Installed Application	
THRESHOLDS GENERAL SPECIFICATION	• Standard Finish – Aluminum (mill finish • Maximum Height – 1/2" • Standard Mounting Exterior – Screw applied into lead shielded anchors, set in a bed of sealant • Standard Mounting Interior – Screw applied into lead shielded anchors	
HEAVY DUTY THRESHOLDS	• Minimum Thickness – 1/4"	

DOOR HARDWARE - MISC DEVICES

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
STANDARD DUTY THRESHOLDS	• Minimum Thickness – 1/8"	
SADDLE THRESHOLDS	• Applied at conditions where the flooring elevation is the same from one side of the door to the other	
TRANSITIONAL THRESHOLDS	• Applied at conditions where the flooring elevation changes from one side of the door to the other (maximum 1/4" differential)	
KEYING INFORMATION	• Schlage Large Format Interchangeable Core, "C" keyway at Grossmont College • Schlage Hardware "C" series with Yale core at Cuyamaca College • Design architect and contractor must coordinate a keying conference with the District and College to establish protocols and format for conveyance of keying information • Factory Supplied Permanent Key System • Construction key system required • Factory Supplied Permanent Key System • Provide a minimum of (1) Grand-Master keys • Provide a minimum of (1) Sub-Master keys • Provide a minimum of (1) Control key • Provide a minimum of (5) Change keys per lock • Confirm quantities with the District prior to final construction documents • Permanent keys, cores and cylinders to be shipped directly to the District Representative from the respective factories • Provide the approved hardware and keying schedules to the District and College Representatives, including the College locksmith for final review. • Grossmont Facilities to install permanent cores upon receipt from the factory • Cuyamaca Facilities to install permanent cores upon receipt from the factory	
CONFIGURING HARDWARE SETS BEST PRACTICE	• Consider cost impact of redundant/superfluous hardware. • Consider cost of the hardware as well as the cost of the installation.	

GLAZING

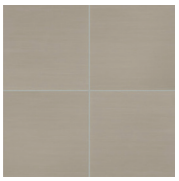
SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL GLASS STANDARDS	• Float glass should comply with ASTM C 1036 Type 1, Quality Q3. • Heat treated glass products, fully tempered glass should comply with ASTM C 1048, Type 1, Quality Q3. • Laminated glass units should comply with ASTM C1172.	
EXTERIOR GLAz ING	• Exterior glazing will be greatly influenced by title 24 requirements. • Glazing tint color should be coordinated with Section 2 and other buildings on campus. • Avoid using clear glass. • Installed glazing systems shall withstand normal thermal movement and wind without failure including loss or glass breakage. • Air and Watertight infiltration per ASTM E283 and ASTM E331 • Perform installation in accordance with GANA Glazing Manual and GANA Sealant Manual and IGMA/SIGMA Glazing Manual, Class CBA. • All glazing shall have a 1 year manufacturer's warranty from substantial completion for defective products including broken, cracked, or otherwise damaged glass not caused by vandalism. • Sealed glass units shall have a 10 year manufacturer's special warranty from seal failure, and interpane dusting or misting. Complete unit replacement required for failure required.	
MIRROR GLASS	• Use safety glass mirrors in restrooms. • Safety glass shall comply with ANSI z971.1 and testing requirements of 16 CFR Part 1201	

General Approach - All selected finishes (both interior and exterior) should be durable, sustainable, easy to maintain, and cost effective for the project. Finish selections must also take into consideration required acoustical performance of the space. Acceptable finishes and performance criteria for projects are listed in this Division. Other finishes may be considered on a limited basis but should be reviewed and approved by both the District and the college. Refer to Section 3, Space Standards for additional information for location of certain finishes.

The use of certain finishes should be avoided in a project. These include:

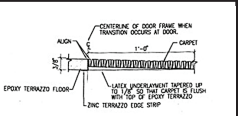
- Exposed sealed or stained concrete in interior spaces (except in utility rooms)
- Light colored grout
- Slate on floors or patio
- Porous ceramic tile, stone, or travertine flooring
- Marble floor
- Porcelain tile for ground surfaces on exterior entries or patios or walkways
- Fabric or vinyl wallcovering (use on in limited special areas - on approved basis)
- Plaster or gypsum board ceilings with no access panel

FLOORING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PORCELAIN TILE	• 8" x 8" or 12" x 12" units (to minimize grout)with porcelain tile cove base for restrooms • Use 12" x 12" or larger units in lobbies and large areas with a porcelain base • Tile units to comply with ANSI A137.1. • Installation materials and setting methods to comply with ANSI Standards referenced in the TCNA latest addition • Non-abrasive, smooth, or with minimum texture (only if there is a concern for extreme slip resistance is needed) • 3/8" nominal thickness • Face: plain with cushion edges • Avoid white or very light colored tile. Medium values with a minimal small pattern should be used. • Use dark epoxy group in restrooms and lobbies – light grout should not be used. • Use waterproofing membrane for thin-set installation in restrooms or other areas where water is present and only if a mud-set installation is not possible due to a renovation situation or budget constraints. • Use crack-suppression membrane for thin-set tile installations in lobbies and large areas.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PORCELAIN TILE	• Tile units larger than 18" x 18" should have a thick mud set installation. • Metal edge protection strips should be used on floor tile installations with a flush floor finish for all installation • Provide a 2 % or other agreed on amount with college of repair stock tile from same color run as installation.	
CARPET	• Consider carpet tile in locations where tile replacement is beneficial - quarter -turn design installation to help conceal replacement tile color wear difference • Roll goods are acceptable in certain areas and should be considered for appropriate areas for budget alignment/ cost. • Use carpet on open stairs unless otherwise discussed and approved by District and college. • Yarn to be type 6 or type 6.6 multi-color nylon • Consider products with space dyed yarn system with integral permanent stain resistance with 10 year warranty for carpet replacement if stain cannot be removed – provide manufacture's letter to District for warranty. • Static resistance of carpet construction to provide a minimum of 3.0Kv resistance at 20 percent R.H. at 70 degrees F. –AATCC 134 • Carpet to have a grey scale rating of 4 or better on product's darkest colors after 180 standard fading hours as compared to AATCC Grey Scale for evaluation of color change. - AATCC 16E-2012 • Use dark multi-color products. Do not use light color or solid color carpets. Carpet must be darker than a 4 on a grey scale of 1-8. • Primary and secondary backings to be a thermal plastic or vinyl composition which is non-water soluble, impervious to liquid damage, and will provide a liquid barrier fully fused to provide for no delamination • Install with chemically welded seams on all roll goods installation. • Must have a 20 year written warranty against any edge ravel, backing delamination, 20 pound average tuff bind under wet or dry conditions. Warranty must be written to the District by the manufacture.	

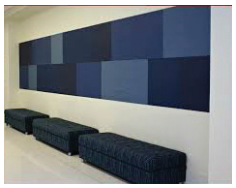
FLOORING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CARPET	• Products shall meet or surpass criteria of the Green Label Plus Indoor Air Quality Test Program. • Provide 2% repair stock of same color and run lot. • Product should NOT be installed until concrete floor moisture test has results acceptable to carpet manufacturer for carpet installation. • Use with straight rubber base (6" high in classroom) • Include appropriate floor surface transitions for installation. Refer to conceptual details in this section.	 Epoxy Terrazzo to Carpet Transition 
VINYL COMPOSITION TILE	• Use in workrooms, storage rooms, public corridors. • 12" x 12" x 0.125 " thick min. unit • ASTM F 1066 Class 2, through tile pattern • Consider Vinyl Enhanced Tile exceeding ASTM F 1066 with static load of ASTM F970, psi -400 min. with polyurethane or UV/ceramic coating in high traffic areas or with use in rooms with furniture. • Use with rubber cove base – vinyl base is not acceptable. • Adhesives: water-resistant type recommended by manufacture and meet required VOC limits. • Include appropriate floor surface transitions for installation. Refer to conceptual floor transition details in this section. • Provide a 2 % or other agreed on amount with college of repair stock tile from color run. • Install with a basket weave pattern (quarter turn)	 
RUBBER TILE	• Use in Classrooms and other higher volume gathering spaces. • Can be used in high volume interior stairwells. • 12" x 12" or 24" x 24" tile and sheet flooring products acceptable. • ASTM F1344, Class 1-A or 1-B, 0.125 " thick homogeneous rubber. • Hardness: Not less than 85 as required by ASTM F 1344, measured by using Shore, Type A durometer per ASTM D2240 • Smooth surface except if used on stairs where a texture can be considered. Texture must be approved by District and college. • Adhesives: water-resistant type recommended by manufacture and meet required VOC limits.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
RUBBER TILE	• Use with rubber base with pre-molded corners – vinyl base is not acceptable – 6" high in classrooms. • Include appropriate floor surface transitions for installation. Refer to conceptual floor transition details in this section. • Product should NOT be installed until concrete floor moisture test has results acceptable to rubber manufacturer for rubber tile installation.	
TERRAzz O	• Consider as an option for building lobbies and high traffic public corridors and restrooms if budget and construction schedule permits. • Determine best material (epoxy low profile or traditional sand cushion terrazzo) for application. • Epoxy installations should include a crack isolation membrane between the matrix and slab. • Comply with NTMA standards. • Consider recycled particle and glass content. • Installer must have a minimum of 10 years of experience in terrazzo installations completing at least 6 projects of similar type and scale in the last 4 years. • Documentation should include details of control joints and divider strips. • Surface should be smooth. • Use with either integral terrazzo base or pre-molded straight terrazzo base or tile base. • Base detailing should be approved by college and District staff during design. • Include appropriate floor surface transitions for installation. Refer to conceptual floor transition details in this section.	
EXPOSED SEALED CONCRETE FLOORS	• Avoid the used of exposed sealed and colored concrete floors in any spaces other than custodial, mechanical electrical , and storage rooms • When exposed concrete floors a e used in utility spaces finish floor slabs with tolerances of FF = SOV 45 and FL SOV 35, FF = MLV 30 and FL = MLV 24. • Seal concrete with combined hardener and sealer. • Refer to Division 3 for additional information.	

WALL FINISH OPTIONS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GYPSUM WALL BOARD	• Abuse resistant Gypsum Board should be used in all public areas including classrooms, labs, and corridors. • In general, a level 4 finish should be used as a standard finish • Use a level 5 finish in areas where there is lots of natural light or other direct lighting accenting a wall and ceilings. • Light texture such as a minimum texture orange peel may be acceptable but should be approved by District and college. • On wet walls install cement backer board complying with ANSI A118.9 of thickness indicated and in maximum lengths available to minimize end-to-end butt joints on wet walls behind tile. • Use sound attenuation blankets in walls. Coordinate with Division 51.	
PORCELAIN TILE	• 8" x 8" units with porcelain tile with anti-graffiti coating for restrooms. • On wet walls install on cement backer board. • Accent bands are acceptable. • Wall tile should extend from floor to ceiling if budget permits, otherwise it should extend to a minimum of 6' up the wall. • Installation in restrooms should use epoxy grout. Always use a medium to dark grout. Avoid light grout colors. Coordinate wall grout color with floor g out color.	
PAINTED GYPSUM BOARD AND OTHER SURFACES	• Majority of spaces will have a painted gypsum board finish • Refer to paint products in this section. • Refer to gypsum board in this section for materials and finishes • Avoid very light colored paints on lower portion of public corridors. • Do not use a flat paint on walls without app oval from District and college. • Include a 6" high impact vinyl wrapped chair rail in all classrooms to protect painted gypsum board walls. • Consider corner guards in high traffic areas. Review with College and District for appearance. • Consider ridged PVC wall panels for a lower wainscot in high traffic public corridors.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
FIBERGLASS REINFORCED PLASTIC PANELS	• Include in all custodial rooms • Consider for food service back of house preparation areas. • Must include USDA acceptable material label and required classifications numbers on product. • 3/32" thick interior liner panels should be chemical, stain, odor, moisture, and impact resistant. • Provide aluminum molding and seam covers at all edges and panel joints. • Use neoprene based VOC compliant adhesive. • Install from floor base to ceiling over finished gypsum board.	
VINYL WALL COVERING	• Only use in special spaces. Use must be approved by District and college. • If specified, the material should be type 2 material • Use corner guards with vinyl wallcovering.	
ACOUSTICAL WALL PANELS	• Refer to Division 51 for guidance in when and how much of this material to use for acoustical control. • Consider for classrooms, corridors, and conference rooms. • Use high impact wall panels with reinforced hardened edges when panels are mounted below 7'. • Panel testing for acoustical rating should conform with ASTM C423. • Nominal Core Density: 6 to 7 lb/cu.ft. • Fabric must be durable and rated and tested for vertical panel use. • Mount with mechanically mount with metal clip and bracket system.	

PAINT

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL	• All interior paint products must be tested and have laboratory test reports indicating that the product has passed the California Department of Health Services "Standard Practices for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."	

PAINT

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL	• Paint colors will be selected prior to commencement of construction. All paint colors and finishes must be reviewed and approved by the District and college. • Before proceeding with paint application of entire building, a mock-up should be completed of one finished surface (vertical and horizontal) of each color scheme for approval by the District and College of color, finish texture, and workmanship. Approved mockups will serve as a minimum standard for painted work though out the project. • Painting contractor shall have 5 years of experience with painting installation and have references for 5 successful projects of a similar scale. • Upon completion of project contractor shall provide a comprehensive digital coating maintenance manual which includes paint color number, color formula, and color strike off of each paint color used on the project and its location. • One gallon of each color of paint clearly labeled with color, color formula, and date should be turned over to the college for touch up.	
EXTERIOR	• New or previously painted stucco, plaster, concrete – satin finis - Primer/Sealer -latex, MPI #4, 8mils wet, 3.2 mils dry - 2 coats – latex, MPI #15 with gloss level 3-4, 4 mils wet, 1.5 mils dry per coat • New Concrete masonry block – satin finish - Block filler – latex, 8.0 mils DFT/coat - 2 coats – latex, MPI #15 with gloss level 3-4, 4 mils wet, 1.5 mils dry per coat • Wood – avoid painted exterior wood finishes • Steel hollow metal doors and frames – water-based light industrial coating- semi-gloss - Primer/Sealer- rust inhibitive water-based, MPI #107, 5-10 mils wet, 2-4 mils dry - 2 coats – water-based latex, MPI #163 with gloss level 5, 4 mils wet, 1.5 mils dry per coat • High performance coating on shop primed ferrous metal- semi-gloss - Coat 1 epoxy urethane MPI #108 , 7-13 mils wet, 5-10 mils dry	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
EXTERIOR	- Coat 2+3 – , epoxy urethane MPI #174 with gloss level 5, 4.5 mils wet, 3 mils dry per coat • High performance coating on previously painted metal - Coat 1- epoxy MPI #108 , 7-13 mils wet, 5-10 mils dry - Coat 2-3 – , epoxy urethane MPI #174 with gloss level 5, 4.5 mils wet, 3 mils dry per coat • Concrete steps of ramps – avoid painted steps/ramps except visual cue steps	
INTERIOR	• New gypsum board walls and ceilings– should be eggshell finis - Primer - latex, MPI #149 X-Green, 4 mils wet, 1.5 mils dry - 2 coats – latex, MPI #52 X-Green with gloss level 3, 4 mils wet, 1.7 mils dry per coat (John what is the difference between MPI # 52 and #145) • Water-based dry-fall system - fla - Top coat – flat latex, MPI #118, 6 mils wet, 1.7 mils dry • Hollow metal doors and window/door frames – water-based light industrial coating – semi-gloss - Primer – water-based, rust-inhibitive MPI #107, 5-10 mils wet, 2-4 mils dry - 2 coats – semi-gloss water based epoxy, MPI #153 with gloss level 5, 4 mils wet, 1.5 mils dry per coat • Metals including hollow metal doors and window/door frames – latex– semi-gloss - Primer – water-based acrylic, rust-inhibitive, MPI #107, 5-10 mils wet, 2-4 mils dry - 2 coats – semi-gloss water based epoxy, MPI #147 X-Green with gloss level 5, 2.5-4 mils dry per coat • New wood painted surfaces- semi-gloss - Primer/sealer – latex, MPI #39, 4 mils wet, 1.4 mils dry - 2 coats –latex, MPI #43 with gloss level 4, 4 mils wet, 1.6 mils dry per coat • New wood painted surfaces- eggshell - Primer/sealer – latex, MPI #39, 4 mils wet, 1.4 mils dry	

FINISHES

PAINT

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
HIGH PERFORMANCE COATINGS	• If any railings must be painted on a project they must have a high- performance coating - semi-gloss finish - Coat 1 epoxy urethane MPI #108 , 7-13 mils wet, 5-10 mils dry - Coat 2-3 – , epoxy urethane MPI #174 with gloss level 5, 4.5 mils wet, 3 mils dry per coat	

CEILING TILES

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ACOUSTICAL CEILING TILE	• Comply with ASTM E 1264 • Use 24" x 48" acoustical ceiling tile with a 15/16" score in the middle to appear like a 24" x 24" ceiling tile in majority of general spaces including all classroom spaces. • Light reflectance should be .90 • Reveal edge on tile is acceptable. • Coordinate acoustical performance of ceiling tile to be specified with the acoustical requirements of each type of space as outlined in Division 51. • Higher acoustical rated products such as a cast tile product with a foil backing should be used where acoustical control and sound transmittance is critical and required to meet acoustical recommendations in Section 51. Offices should have a high sound transmittance. The foil also helps prevent tile staining and moisture damage from mechanical system leaks, etc. above the ceiling but the product has a premium cost. Use must be balanced with project budget. • Ceiling tile in areas where food is being prepared should meet USDA requirements and approval. • Avoid installing thermal or acoustical insulation on the back of suspended acoustical tile ceilings. This is generally not recommended by the manufacturer. Excess loading	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	caused by added weight of insulation can cause sagging and unsafe installations. Condensation may occur if ceiling insulation places the dew point inside the plenum. • Use of specialty ceiling tile should be reviewed and approved by District and college. • Recycled content should be a minimum of 80%	
ACOUSTICAL CEILING TILE GRID	• Generally ceiling tile grid should be a standard 15/16" metal grid system conforming to ASTM C635, ASTM E84, and ASTM E580. • Specialized ceilings such as a concealed spline system or a decorative suspended system can be used as a design feature in certain public areas but should be minimized. Coordination with light bulb replacement, above ceiling access, and system cleaning must be considered in the selection and final ceiling design. All specialty ceiling systems should be reviewed and approved by the District and college.	
GYPSUM BOARD AND PLATER CEILINGS	• Restrooms should have a drywall or hard lid ceiling system with large, well placed access panels. • All gypsum board and plaster ceilings should have an access panel for above ceiling maintenance. Access location and size should be coordinated with above ceiling systems and reviewed and approved by District and college. • If hard lid ceilings are used in a space, acoustical control must be address with other finishes to meet acoustical requirements of that space.	
EXPOSED CEILINGS	• Utility rooms such as custodial closets, mechanical and electrical rooms, or large maintenance storage rooms should have an exposed ceiling. MDF and IDF rooms should have a lay in tile ceiling. • Generally exposed ceilings are discouraged in occupied spaces since they don't provide acoustical control, minimize light reflectance, and a e often costly to visually control utility coordination for a finished space. Any design proposing to have an exposed ceiling should be discussed and approved by the District and college.	

VISUAL DISPLAY BOARDS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
MARKER BOARDS	• Sizes will vary with different rooms depending on space – use standard sized for economic approach when possible. Typically use 4' high units. • Face material to be magnetic porcelain face with 3/8 " particleboard sub-straight and .005" thick aluminum foil backing • Anodized extruded aluminum trim • Include marker tray and 1" display rail at top with cork insert • Surface color to be white	 
TACKBOARDS	• Vinyl fabric faced industrial fiberboard – type II vinyl • Trim to be factory-applied anodized aluminum. • Avoid exposed cork	
SLIDING VISUAL DISPLAY UNITS	• For specific classrooms (science or math) if budget permits • Vertical units - coordinate with ceiling heights • Must be coordinated with ceiling height • Face material to be magnetic porcelain face with 3/8 " particleboard sub-straight and .005" thick aluminum foil backing • Include marker tray • Trim to be anodized extruded aluminum	

SIGNAGE

Signage General Approach - Signage Standards were developed for the District in 2011. Refer to the graphics for more detailed information for signage standards and sizes in the Appendix of this document. All buildings, parking lots, and gathering areas should be identified on campus along with a wayfinding map directory at key entry points on each campus. Directional signs need to be included. Specific types of interior and exterior signs for a project and surrounding areas are identified in the signage drawings in the Appendix for both colleges. All signage should be consistent on the campus and follow the standards with the same color and font.

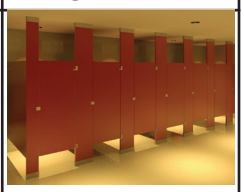
SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
EXTERIOR SIGNAGE	• Projects involving any parking lots should include primary and secondary parking lot signage. • Parking lots should be identified with Lot number on signage located on light poles. • Primary directories should be placed at key circulation points for easy wayfinding • Directional signage should be placed along the roads and at pedestrian path intersections.	
BUILDING IDENTIFICA-TION	• Building identification should be post mounted to buildings. • Buildings on the Grossmont College Campus are labeled numerically. • Buildings on the Cuyamaca College Campus are labeled alphabetically . • Building name should be under the building identification letter or number. • Building letters and numbers shall be fabricated from welded aluminum sheet and painted with an epoxy polymer coating. Characters shall be smooth, flat faces, sharp corners, and precisely formed lines and profiles, free from pits, scale, and holes, or other defects. • Metal finish shall comply with NAAMM “Metal Finishes Manual” for finish designations and applications recommendations. (AA – Aluminum Association) • Some letters are stainless steel. Refer to specific signage drawings for each college in the appendix for specific materials, finish, and font	

SIGNAGE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
INTERIOR SIGNAGE	• Interior signage should include a building directory with floor plans • Building interiors should include directional signage in corridors to rooms and department offices, and other key spaces. • Interior room signs should include building designation with room number. Offices should have a clear acetate vision panel for name insert and a roller bar flush with the front of the sign for inserting paper. This is used by faculty and staff for displaying messages to students. • Evacuation plans should be included on each floor. Plan should be a multi-color vinyl insert with HP 600 DPI. Plan must be coordinated and approved by local fi e marshal.	
ROOM SIGNS - INCLUDING RESTROOM SIGNS	• Unframed Panel Room Signs shall be fabricated signs with an eased edge mechanically and smoothly finished to comply with the following requirements. • Room signs shall be made with cast acrylic sheet (no extruded or continuous cast) methyl methacrylate monomer plastic sheet with a minimum flexural strength of 16,000 psi when tested according to ASTM D 790, with a minimum allowable continuous service temperature of 176 degrees F. • The raised letters and braille shall be formed as an integral part of the sign face using manufacturer's standard process for producing copy complying with all current accessibility requirements and code. Surface applied letters and braille are not allowed. All letters, numbers, and/or symbols shall contrast with background either light characters on a dark background or dark characters on a light background. Characters and background shall have matte finish • Raised letters, braille, and pictograms shall be precisely formed characters with square cut edges free from burrs and cut marks. • Include a solid backer sheet, 1/8 inch thick of acrylic sheet for all signs occurring on glass windows or sidelights. Color shall match sign background color.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ROOM NUMBERS	• Room numbers on signs should match numbers on architectural plans. Design team must plan out room numbers for plan room numbers on construction documents for effective wayfinding in the facility and review room number layout with District and college for approval before finalizing plan room numbers. This will allow coordination with Record Set Documents and final project model, the Fire Alarm System, room keying and other critical space related and digitally stored information with the actual signage room number.	

RESTROOMS PRIVACY COMPARTMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TOILET PARTITIONS	• 1" solid core reinforced high-density homogenous through-color composition of dyes, organic fibrous material, and polycarbonate and phenolic resins • Edges have same through-color • Graffiti resistant finis • Recycled content – 30% • Floor mounted and overhead brace units • Continuous wall bracket to be stainless steel • Vandal- resistant fasteners to be stainless steel • Shoes to be stainless steel • Hinges, door latches, and door strikes to be bright dip anodized aluminum heavy duty hardware • Continuous self-closing hinges on door • Latch and keeper need emergency access	
URINAL SCREENS	• Include in all student restrooms • 1" solid core reinforced high-density homogenous through-color composition of dyes, organic fibrous material, and polycarbonate and phenolic resins • Edges have same through-color • Graffiti resistant finish • Recycled content – 30% • Wall mounted and overhead brace units • Continuous wall bracket to be stainless steel • Vandal- resistant fasteners to be stainless steel	

RESTROOM ACCESSORIES

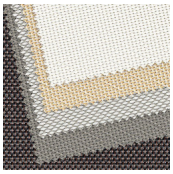
SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PAPER TOWEL DISPENSERS	• Included in staff restrooms and workroom and classroom sink areas. • C-fold style towel dispenser by sinks at specialty labs and classrooms and workrooms - verify with District on each project. District may supply this unit. • Stainless steel recessed combination C-fold style towel dispenser and trash receptacle in staff restrooms. • Stainless steel – AISI Type 304 – 22 gauge all welded construction • Trash door shall be equipped with a full length stainless steel piano hinge with tumbler lock keyed alike with all restrooms in building • Unit capable of dispensing 400 C-fold or 525 multi-fold towels without adjustments • Install with vandal resistant fasteners.	
GRAB BARS	• Grab bars should be stainless steel with smooth satin gripping surface • Concealed manufacture's standard flanges and anchorage • Wall thickness not less than 0.05 "	
MIRRORS	• Mirrors in restrooms to be individual stainless steel framed mirror over sink. • Meet ASTM C 1503 • Safety mirror glass	
SOAP DISPENSERS	• Soap dispensers will be provided and installed by the District.	
HAND DRYERS	• Install in all restrooms • Hand dryer should be a fast dry product (hands dry in 10-15 seconds) • Stainless steel finish • Stainless steel – AISI Type 304 with polished No. 4 finis • 110/120 volt • 5 year warranty	
COAT HOOKS	• Install in all toilet stalls on back of door – surface mount flat head stainless steel coat hooks with radius edges - 1 5/8 " D • Stainless steel – AISI Type 304 with polished No. 4 finis • Concealed 16 gauge mounting plate with stainless steel lock screw	

RESTROOM ACCESSORIES

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TOILET PAPER DISPENSER	• Stainless steel multi-roll unit - recessed in ADA stalls • Install with vandal resistant fasteners • Toilet paper dispensers in non-ADA stalls will be supplied by college's supplier.	
TOILET SEAT COVER DISPENSERS	• Include stainless steel seat cover dispensers in all toilet stalls • Stainless steel – AISI Type 304 with polished No. 4 finis	
NAPKIN DISPOSALS	• Install stainless steel disposals in all woman's toilet stalls • Stainless steel – AISI Type 304 – all welded construction • Satin finis • Door shall have concealed full length piano hinge • Furnish with a removable leak-proof molded polyethylene receptacle • Must be mounted to the partition.	
SANITARY PRODUCT DISPENSER	• Install stainless steel dispensers in all woman's restrooms • Stainless steel – AISI Type 304 – all welded construction • Satin finis	
MOP & BROOM HOLDER	• Include surface mounted mop and broom holders in all custodial closets • Stainless steel – AISI Type 304 • 4 spring-loaded rubber cam holders	
DIAPER CHANGING STATION	• Include diaper changing station in restrooms in public assembly spaces	

Furnishings General Approach - All products should be selected to serve the need of building occupants while allowing for ease of maintenance and durability. Site furnishings should provide a consistent unified appearance throughout the campus. Refer to Division 32 for site furnishing. Interior furnishing will be coordinated by the District. Review all products with District and College for approval.

WINDOW TREATMENT

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
WINDOW ROLLER SHADES FOR GLARE AND HEAT GAIN PROTECTION	• All offices, classrooms, and labs should have solar roller shades with visually transparent single-fabric shade cloth. Fabric should be single thickness non-raveling 0.030-inch thick vinyl fabric, woven from .018-inch diameter extruded vinyl yarn comprising of 21% polyester and 79% reinforced vinyl, in a range of colors. The color selected should be consistent for the entire building for visual exterior uniformity. Fabric should be easy to clean with a damp cloth. • Consider the orientation of building and window location for open % of weave. Generally it should be 1% density. • Shadebands include the fabric and must have a hembar and hempocket. Fabric hempocket with RF - welded seams (including welded ends) and concealed hemweights. Hemweights must be of appropriate size and weight for shadeband and must be continuous inside a sealed hempocket. Match hempocket construction for all shades in same rooms. • If windows are high in a space or if there are more than 4 exterior windows in a room or if there is over 30 feet of continuous window span the shades should be motorized with easy access to controls at either the door or, if in a classrooms, on the technology podium. • Use extruded aluminum shade roller tube of diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 2.55" in diameter are not acceptable. Include the manufacturer's fascia concealer if unit is exposed to room. • Fabric and roller should have a 10 year warranty.	 

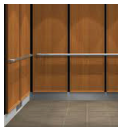
WINDOW TREATMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
MOTOR CONTROL SYSTEM FOR MOTORIz ED SHADES	• Provide power to each shade motor via individual 3-conductor line voltage circuits connecting each motor to the relay based intelligent controllers. • Control system components provide appropriate (spike and brown out) over-current protection (+/- 10% of line voltage) for each of the four individual motor circuits and shall be rated by UL or ETL as a recognized component of this system and tested as an integrated system. • Motor control system allows each group of four shade motors in any combination to be controlled by each of four local switch ports, with up to fourteen possible "sub-group" combinations via local 3-button wall switches and all at once via a master 3-button switch. System shall allow for overlapping switch combinations from 2 or more local switches. • Multiple "sub-groups" from different IQ/MLC control components may be combined to form "groups" operated by a single 3-button wall switch, from either the master port or in series from a local switch port. • Control system shall have two standard operating modes: Normal Mode allowing the shades to be stopped anywhere in the window's opening height and Uniform Mode allowing the shades to only be stopped at the predefined intermediate stop positions. Both modes shall allow for all up/all down positioning. • Control system components shall allow for interface with low voltage Audio Visual system components via a dry contact terminal block. • Motors on units to have a 5 year warranty.	
BLACKOUT SHADES	• Provide blackout shades where noted in the space standards or in specialty spaces such as physics labs requiring complete darkness in a room or where there are windows facing west or southwest. Develop a solar model and then discuss and confirm with user and college • Provide black out shade on a dual roller shade unit with other solar window shades. • Fade resistant fabric should be 100% opaque polyester with acrylic backing. Fabric must be easy to clean with a damp cloth. Fabric should have a 10 year warranty. • Review all locations for blackout shades with District.	

ENTRANCE MATS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
FLUSH ALUMINUM FRAMED MATS	• All building entrances should have a recessed aluminum framed linked tread type floor mat with removable carpet inserts flush with the finished floor inside the building with a depth of at least 10' from the door and width of the entrance doors. Ideally the mats are inside the building but if there is an overhang they can be placed outside the door if space does not permit an interior installation. • Mat framing should be 6063 T52 aluminum alloy, coped at corners and assembled with stainless steel screws. Any surfaces in contact with masonry should have one shop coat of zinc primer. Finish should be satin stainless steel. • Loading shall be 200 pounds per square foot. • Tread surface should be fusion bonded carpet insert of 28 oz. level cut DuPont Antron nylon filament. Only dark colors should be used. • Surface rubber or carpet mats should be avoided.	

HYDRAULIC PASSENGER ELEVATORS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ELEVATOR UNIT	• Comply with ASME/ANSI Safety Code for Elevators A17.1 • Provide a single acting holeless hydraulic unit • Elevator should go to roof (where applicable) • Capacity to be 2500 pounds unless a special need is indicated on a specific project. • Rated Speed should be 100 feet per minute. • Clear inside car dimensions should be a minimum of 80" x 51" with a platform of 84" x 64" and a clear cab height of 96." • Provide door reopening devices with a uniform array of 36 or more microprocessor-controlled, infrared light beams projecting across car entrance. Interruption of one or more of the light beams shall cause doors to stop and reopen. • Provide retractable edge shoes on elevator entrance doors that cause doors to stop and reopen upon contacting an obstruction. Include photoelectric device with timed cutout that projects dual-light beams across car entrance at 5 inch and 29 inch heights; the beams, when interrupted, cause doors to stop and reopen. • Elevator should be on emergency power supply. • Include emergency phone connected to Campus Security Station with rollover to designated service. • Elevators shall either be inside a structure or at a minimum have a complete protective cover in a vestibule over the entrance to the elevator to prevent water infiltration via the door opening. • Elevator Shaft sump shall be pumped to the sewer and shall be pumped to the storm drain or any exterior curb outlet. • Include battery operated emergency car lowering/door opening system on all elevators.	
ELEVATOR FINISHES	• Vertical surfaces to have removable plastic laminate panels that can be easily replaced if damaged. Laminate color should be easy to wipe clean with damp cloth. Dark solid colors should be avoided. • Ceilings should be metal with recessed LED lights. • Flooring should be dark colored carpet tiles. • Doors should be stainless steel ASTM A 666, Type 304, with No. 4, directional satin finish. void using enamel paint on doors.	 

FIRE SUPPRESSION DESIGN

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL DESIGN GUIDELINES	• Fire sprinkler design shall comply with NFPA 13 Guidelines, local fi e code, and design guidelines provided by the Authority Having Jurisdiction (AHJ). • Fire sprinkler design shall comply with NFPA 13 Guidelines, local fi e code, and design guidelines provided by the Authority Having Jurisdiction (AHJ). • Fire At least one tamper shut-off valve shall be provided for each floor of a building • The consulting engineer shall determine design approach for fi e risers, lateral lines, sprinkler heads, flow switches and other components and coordinate with design team and District. The consulting engineer will determine flow requirements and sprinkler head design configurations. • Areas where the introduction of water from a fi e sprinkler system would have devastating effect on continuing operation such as computer, server and telecommunication rooms shall be protected by a clean agent fi e suppression system. Non-ozone depleting agents such as HFC-227ea and FM-200 shall be used. • CFC agents such as Halon® are prohibited.	

Plumbing General Approach - The design for the project plumbing systems shall provide efficient and reliable system operation as well as ease of maintenance. The design and installation of the plumbing systems shall be in accordance with all regulatory agencies.

Plumbing systems shall be designed in accordance with American Society of Plumbing Engineers (ASPE) Standards and provide efficient and easily maintained systems. System designs shall consider life cycle owning and operating costs as well as first costs to provide the District with the best value Plumbing systems. Efficiency measures that have a total lifecycle cost payback within 10-years or 50 percent of the equipment life shall be considered.

Plumbing system design shall provide access to and working space for ease of maintenance around all equipment and system components that require access for operation or maintenance. All equipment shall be installed per the manufacturer's recommendations. Where the word "should" is used in the manufacturer's instructions, substitute the word "shall". Provide access panels for access to system components above hard lid ceilings that require service, adjustment, or periodic maintenance. Service access for all systems and equipment shall meet OSHA requirements.

The District has set the goal to strive for overall building energy efficiency to exceed the requirements of California T-24 Energy Standards by 20%. Provide higher building efficiencies where required to meet project LEED energy targets. Submit supporting documentation using California approved computer simulation program. Buildings that do not meet this goal require justification indicating the program basis for the lower overall building efficiency

Plumbing Exterior to Structures General Approach – The general approach to plumbing exterior to structures is to provide reliable service for the least amount of capital cost while providing a system that does not require a great deal of maintenance. When maintenance is required the access, cost and man-hours required are factors to consider when designing a system or adding to an existing system. Exterior plumbing systems to the building or structure include storm drains, sewer or waste water, domestic water supply, irrigation, and natural gas. Irrigation is covered in Division 32.

All Irrigation lines shall be assumed to be Reclaimed Water in the Future. As reclaimed water irrigation lines shall be treated as sewer lines with respect to spacing required from water supply required by the State Department of Environmental Health and shall maintain a 10 foot separation edge to edge. This spacing is only required on main lines and is not required on the actual irrigation distribution that is beyond the sectional operation valve at the irrigation main line. Point of Connections or POC's for the plumbing systems are covered in Division 32. The design guidelines and requirements for design are different inside and outside of structures. Each section for the different systems will discuss the performance criteria for that part of the project.

Every building shall be metered separately. The building plumbing concept design shall be coordinated with the District master infrastructure team and submitted to the District for review and approval prior to proceeding with the final building design and documentation.

STORM DRAIN SYSTEMS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL	• The Storm Drain Systems for Cuyamaca and Grossmont Colleges have been analyzed in the Utility master plan. Cuyamaca is in the County of San Diego and Grossmont is in the City of El Cajon. Storm drains should be sized using hydrology developed by the County of San Diego Hydrology Manual (latest edition) using the modified rational method. • Maximum runoff flows conveyed in the storm drains shall be open channel flow in a 10 year storm event. Any pipe flowing more than 80% full shall be considered flowing full and the maximum capacity of the pipe considered not more than full flow capacity • Flows from Storm events greater than 10 years and up to 100 years shall be contained inside the storm drain system and the Energy Grade Line or EGL shall never be above the finished surface grade and the Hydraulic Grade Line shall be 6-inches below the top of grate or the inlet opening as occurs. Pressure flow on RCP pipes over five feet in equivalent water height s ll have an O-ring gasket. Designer should be aware that gasket pipe and beveled end RCP requires special order and a longer lead time during construction. The preference would be to add a cleanout or make the pipe size larger than use special order items. • On grade inlets must be designed for full interception for the 50 year storm event and may bypass up to 15% of the flow for a 100 year storm event. Sag Inlets must be designed for full interception for a 100 year storm event. Coordinate with the county of San Diego Hydraulic Design Manual (latest edition). • All plans for storm drains shall show plan and profile with utility crossings and the HGL and EGL plotted for the 100 year storm event. Velocity and flow for the pipe each shall also be shown. • Storm drain pipes shall not be routed underneath buildings.	
CODE	• Code Differences-The plumbing code dictates roof drain and over flow piping. Exterior to the building the code is the County Hydrology and hydraulics manuals. The Plumbing Code assumes a static rain intensity. The Hydrology manual assumes the maximum flow in any pipe is time dependent and requires that inlets and pipes be checked for capacity when the runoff flow is at its maximum.	

STORM DRAIN SYSTEMS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
STORM DRAIN PIPE	• Diameter or 18" and larger shall be RCP or Reinforced Concrete Pipe. • Diameters 15" to 6" size pipe shall be SDR 35, PVC pipe. • No double wall or single corrugated wall HDPE pipe allowed • No storm drains shall be below 6" in diameter. Landscaping and foundation drains may be 4" in diameter but 6" is preferred.	
CLEANOUTS	• Pipes up to 8" in Diameter may use a Sewer type cleanout with a spacing of less than 90 feet between cleanouts. • Storm drain cleanouts are to be San Diego Regional standard D-9 Type A Cleanout. The Size is a minimum of 4 feet and shall be one foot larger on the internal dimension than the largest pipe diameter connected. The largest cleanout by standard is an A-8 which is 4 feet by 8 feet inside. • If larger cleanouts are required then the cleanout must be designed by a civil or structural engineer. • All manhole covers and grates shall be bolted down in at least two places for grates and three places for Manhole covers. • Cleanout access must not be in a walk path and must be accessible at all times.	
CATCH BASINS AND CURB INLETS	• Catch basins shall be pre-cast or cast concrete with ADA compliant grates in walkways and bike friendly type grates in roadways. • Precast Catch basins shall be square in grate size and the grate shall be one of three sizes: 12", 18" or 24". • Pipe connected to precast basins shall connect to the side of the catch basin and never the bottom. • Cast concrete inlets and curb inlets shall be San Diego regional standards (Latest Edition)	
RUNOFF FLOWING ALONG CURBS	• Asphalt Dikes are not to be used. • When Runoff will collect at a parking lot or pavement edge, there will be a concrete gutter. The preference is to use the regional standard Type G Curb and Gutter per G-2 of the regional standards.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
RUNOFF FLOWING ALONG CURBS	• No concentrated runoff may be directed back on the pavement after being collected in a gutter. The flow must enter a catch basin, curb inlet or planter. Once in the planter the flow must enter the storm drain via an inlet or sub-drain. • No runoff flow may be directed over a slope edge. The runoff must collected and conveyed in the storm drain • Runoff flow may not be directed in concentrated form over a walking path or walkway surface. • Landscaped areas may not drain over the walkway.	
TRASH ENCLOSURES	• Storm runoff is not allowed to run into or through a trash collection container enclosure. • Trash container enclosures must be covered and gated. Container must not be visible from the outside surrounding area.	

WATER

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL	• Water Supply for the Grossmont College is provided by Padre Dam Water district. Cuyamaca College is supplied by Otay Water District. Both water districts use the same standard, label W.A.S. for Water Agency Standards. All Water mains and services will comply with this W.A.S. standard.	
CODE	• Code Differences – The plumbing codes size pipes are based on Fixture units. The W.A.S. and the civil engineering community size water mains are for fi e hydrant flow and the number of people using the campus at any one time. The sizes from these two calculations can yield different results. The most restrictive calculation shall apply.	
WATER MAIN ROUTING	• Consult Utilities Master Plan for each campus. Preliminary design documentation is available. Water supply and pressures can be found in the water portion of the Utility Master Plan.	

WATER

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
VALVE LOCATION	• Valves and covers should not be in walk ways. If unavoidable then place to the outer edge of the walkway. • Valves shall not be inside parking stall locations • A group of valves should not be separated by a fence.	
EXISTING MAIN MATERIAL	• Many of the Campus Water mains are Asbestos Cement. Removal of these Mains requires special handling and the existing pipe will not be cut. Removal requires removing whole sections of pipe. Disposal requires special handling described in the W.A.S. Specification • Connection to the existing ACP pipe end requires an adaptor fitting • Do NOT plant trees within 10 feet of water mains.	
METAL PIPE MATERIALS	• The soil near the colleges is corrosive to metals. All metal pipe in the ground shall have a passive cathodic protection system. • Individual cast iron bends or fittings shall be epoxy coated and poly wrapped. • All water lines above 4" in diameter size shall have cast iron fittings and valves • Copper lateral line shall have a sacrificial anode at the build valve location.	
WATER MAIN	• Water mains shall maintain California Department of Health separation standards from Sewer lines and irrigation mains 10 feet edge to edge and preferred to be above the sewer in elevation. If the water line passes below the sewer main then there are conditions that must be met in order to be acceptable. • This includes from the outside edge of a sewer manhole. • Water mains shall maintain a 5 foot separation edge from an electrical encasement or buried conduit. • Vertical separation in a crossing is 12 inches or one foot edge to edge • Preferred pipe material is PVC, blue in color. • Minimum Pipe size for mains is 8 inches in diameter.	

SEWER

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL	• Sewer collection for the Grossmont College is provided by Padre Dam Water district. Cuyamaca College is collected by Otay Water District. Both Sewer districts use the same standard, labeled W.A.S. for Water Agency Standards. All sewer mains, laterals and Manholes will comply with this W.A.S. standard.	
CODE	• Code Differences – The plumbing codes size pipes and vents based on Fixture units. The W.A.S. and the civil engineering community size sewer mains for the number of people using the campus at any one time. The sizes from these two types of calculations can yield different results. The most restrictive calculation shall apply. Engineering judgment is required to resolve the difference.	
SEWER	• Consult Utilities Master Plan for each campus. Preliminary design documentation is available. Water supply and pressures can be found in the water portion of the Utility Master Plan. • Lateral minimum slope is 2.0 % • Cleanouts required at a 90 foot maximum spacing • Cleanout also required for change of direction • Minimum lateral size is 4" in diameter • Per W.A.S Standard Drawing SC-1	
SEWER MANHOLES	• W.A.S. Standard Drawing SM-1 • Manholes are generally located in the following areas: - Change in direction of flow. - Change in pipe size or material. - Change in grade. - Intersections of mains. • Manhole spacing is typically determined by the available sewer maintenance methods and equipment. Maximum spacing of manholes shall be four hundred feet (400') for mains. • At main ends a manhole is preferred. A cleanout is acceptable ,but is not preferred. • Manholes shall not be located in the following locations: - Inaccessible areas - Gutters and other depressions or areas subject to inundation - In sidewalks or crosswalks - In driveway aprons	

PLUMBING

SEWER

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SEWER MAIN LOCATION	• Do NOT plant trees within 11' of sewer mains or manholes. • Preferred location is in the center of a roadway • Below water mains in elevation • One foot separation vertically from crossing utilities • Five foot edge to edge separation from electrical, gas and communication lines • Green in color, SDR 35 PVC preferred • Eight inch diameter minimum size	

PLUMBING FIXTURES

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
DRINKING FOUNTAINS	• Provide stainless steel recessed units. • Provide water coolers. • Provide bottle refill section with water counter to quantify water used.	
LAVATORIES	• Integral solid surface lavatory designs are preferred. • Arrange multiple lavatories with plumbing chase behind fixtures forming a shelf above the lavatories. • Faucets shall be of solid-brass design with velvet chrome finish for consistent appearance and ease of cleaning. • Faucets shall have hard wired hands-free sensor activated operation. • Ball valve type angle stops shall be provided for each faucet to allow for repair or replacement. Access space shall be suitable for maintenance purposes. • Faucets for lavatories shall be deck mount design with 3-hole. • Counter elevation, depth and width, faucet set-back, and other relevant dimensions shall comply with ADA Accessibility Guidelines. • An operations and maintenance manual and warranty shall be provided with each sensor.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
URINALS	• Provide vitreous china low flow units. Maximum allowable flow is 0.5 gpf; 0.125 gpf is preferred. • Provide a clean out for each fixture bank. • Waterless urinals are not permitted.	
WATER CLOSETS	• Water closets (toilets) shall be floor-mounted. Closets shall be vitreous china. • Provide low-flow 1.28 gpf or less toilets in compliance with CCR Title 24. • Toilets with dual-flush capability a e acceptable; however, if dual-flush is installed, signage with operating information and pamphlets showing how units are operated shall be provided.	
FLUSH-OMETER VALVES	• Urinal and water closet flushometer shall be manual operation design and comply with CCR Title 24 requirements. • A warranty shall be provided with each flushometer.	
SHOWERS	• Provide low flow push button type operation for student shower valves. Upon activating the button, thermostatically controlled tempered water will be delivered via the shower head. Maximum water temperature shall be 118°F. • For faculty showers, a thermostatic pressure balanced single lever control shower valves shall be provided. • Maximum flow rate is 2.2 GPM. Provide lower flow units where required to meet LEED water use targets.	
SINK	• Stainless steel with sound deadening material • Gooseneck fitting with single lever control	
JANITOR SINK	• Floor mounted enamel cast iron • Stainless steel guard • Dual handle faucet with vacuum breaker and pail hook/ support.	
ROOF DRAIN & OVERFLOW	• Cast iron with sump receptor and clamping ring where required • Roof drainage shall be sized for minimum 3.8”/hr rainfall intensity.	

SOUND CONTROL IN PLUMBING SYSTEM

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SOUND CONTROL FEATURES	• Provide cast iron piping for all waste and storm drain piping above the ground floor. • Limit velocity in water piping to 6 FPM maximum velocity within building. • Provide acoustical insulation for restrooms to protect administrative offices and other occupied space adjacent to restrooms from noise during flush cycles. Refer to Division 51	

PLUMBING IDENTIFICATION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
IDENTIFICA-TION	• Provide identification for all Plumbing equipment and piping systems. • Provide engraved laminated plastic nameplates for equipment labels. Coordinate label identification with design documents. • Comply with ASME A13.1 for piping identification. Provide pre-tensioned pipe labels. Provide brass or stainless steel valve tags. • Identify piping at 50 foot intervals and where piping passes through floors and full height walls. • Provide engraved laminated plastic warning and safety signs.	

PLUMBING INSULATION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
EQUIPMENT AND PIPING INSULATION	• Unfiltered service water storage tanks as well as service hot water supply and recirculation piping shall be insulated in compliance with CCR Title 24, Article 2, Division 7. Include insulation for piping run-outs. • Provide mineral fiber or cellular-glass type insulation with minimum thickness for cellular glass 1½" thick. • Closed cell elastomeric insulation may be used for condensate drain lines and refrigeration piping. • Valve stems shall extend beyond the insulation. • Provide embossed stainless steel or aluminum metal jackets for insulation exposed to the weather. All insulation exposed to view shall have ASJ jackets suitable for painting. • Provide removable insulation jackets for valves, flanges, and other piping components that require periodic maintenance. • Provide removable insulation box for pumps. Include interlocking joints to maintain vapor barrier. Arrange insulation box to allow for periodic removal and reinstallation without damage to the insulation box.	

BUILDING DOMESTIC WATER PIPING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
DOMESTIC WATER SYSTEM	• Systems shall be designed for safe and sanitary domestic water distribution with an expected useful life of 50 years. Systems shall be designed for low maintenance and operating costs. • Toilet room piping shall not be exposed. Each restroom or group of fixtures shall be provided with isolation valves. Full port ball valves shall be used for hot and cold water. • Metallic tracer wires or tube shall be installed over all below-grade piping.	
PIPING MATERIAL	• All domestic water lines within buildings and above ground shall be type L copper. Domestic water piping below grade shall be type K soft copper. • Fittings may be wrought copper brazed or lead free solder type. Underground hot water piping fittings shall be brazed. • Provide polyethylene encasement for water piping below grade or floor. • Galvanized steel and plastic water piping are not permitted.	
PRESSURE REGULATION	• Pressure regulators are required when water pressure exceeds 80 psig. • Strainers shall be provided ahead of all regulators. • Two regulators in parallel may be used for service up to 75 gpm and 2-inches pipe size. One regulator will control high-flow and one low-flow. • Services over 100 gpm and pipe sizes above 2 ½ inches shall have multiple regulator assemblies. Gate valves shall be installed above ground on the line from the meter(s) and on the line to the building. The contractor shall provide two wrenches of a length adequate to operate any gate valve installed.	
WATER HAMMER	• Water hammer arresters shall be located, sized and certified according to manufacturer's recommendations. • Branch lines in toilet rooms, laundries, and other piping feeding batteries of fixtures shall be equipped with water hammer arresters. • Air chambers are not acceptable. • Access panels shall be provided for removing and replacing water hammer arresters.	

BUILDING DOMESTIC WATER PIPING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
HOSE BIBS	• Hose bibs shall be provided every 100' around the exterior of buildings on all floor levels in lockable flush boxes. Hose bibs in finished areas shall be chrome plated; all others shall be rough brass. Where hose bibs are accessible to students, vandal-proof types shall be used. • A chrome-plated, lock shield cold water hose bib in a chromed recessed box with cover shall be provided for men's and women's restrooms. • Hose bibs shall be provided at each rooftop mechanical area and exterior of each floor. • All hose bibs shall include an integral vacuum breaker.	
SHUT OFF VALVES	• Shut-off valves shall be installed so that each building can be isolated from the domestic water supply system. Valves shall be clearly labeled and located either on an exterior wall or inside the building in a custodial or other service room with access to attic space. Where the valve must be located in the ground, a concrete box shall be provided. • Shut-off valves shall be provided for each restroom fixture • Shut-off valves shall be provided for branch mains serving fixtures in a battery. Valves shall be located at pipe space. • A separate shut-off valve shall be provided for lines serving single fixtures such as hose bibs or sink. Concealed lines shall be provided with partition stops.	

SANITARY SEWER AND ROOF DRAINAGE PIPING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
WASTE PIPING GENERAL	• Systems shall be designed for easy accessibility and maintenance. Design shall be of 50+ year quality standards. • Provide trap primers for restroom floor drains to ensure adequate weir levels are maintained in P-traps. • Provide access panels for access to trap primer valves. Partition stops shall be accessible through access panels. • Provide accessible clean outs with opening to practical clear space adequate for service equipment and personnel to service the cleanout. • After installation of storm drains and sewers, and prior to occupancy, contractor shall pressure jet system to insure pipes are free of construction debris. • Contractor is to video-tape sewers and storm drains to verify alignment, full and drainage. Video must show a wet run water test with inspector present.	
VENT LINES	• Plumbing vents may be service weight cast iron pipe with no hub or neoprene type gasketed fittings; or DWV type copper drainage piping, with wrought copper or cast brass solder joint fittings. Include proper roof flashing • Roof vent termination points shall provide flashing and appropriate protection against roofing material or debris entering vent system and away from any air intake.	
CLEAN OUTS	• Minimum requirements include cleanouts installed per the plumbing code. Provide additional cleanouts to allow effective system maintenance. Maximum spacing within building interior shall be 50 feet. • Locate cleanouts in floors or in walls that are accessible without disturbing classroom activities.	
SANITARY SEWER & ROOF DRAINAGE PIPING MATERIAL	• Pipe materials above grade shall be cast-iron piping with no-hub couplings and stainless steel clamps or compression gaskets. Cast iron pipe shall be procured only from a domestic US manufacturer with CISPI certification • Sanitary sewer piping below grade shall be DWV polyvinyl chloride (PVC) pipe with a 35 Standard Dimension Ratio (SDR). • Asbestos cement piping shall not be used.	

WATER SOFTENER EQUIPMENT

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SOFTENER SYSTEM	• Water softeners shall be an ion-exchanging resin type that uses sodium chloride salt regeneration and dual-tank softener system. Continuous monitoring of the water hardness for regeneration cycles is preferred. • Installations shall comply with the manufacturer's recommendations.	

HOT WATER SYSTEMS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL REQUIRE-MENTS	• The hot water system shall comply with the Uniform Plumbing Code and of CCR Title 24, Article 2, Division 7, Service Water Heating. System components, distribution systems, hot water requirement estimates, and equipment sizing shall follow ASHRAE Current Systems Handbook, "Service Water Heating", recommendations. Where national, state or local codes or regulations are more stringent, they shall be used. • The hot water system shall have adequate capacity for full recovery. Multiple high efficiency type heaters with fast recovery shall be used for high demand projects. Condensing type domestic water heaters are preferred. • Re-circulating lines and pump shall be installed on hot water systems to limit the time for DHW for fixtures to 20 seconds maximum time. Type L copper shall be used on all circulation systems. Fittings shall be cast brass copper sweat type.	
DOMESTIC WATER HEATERS	• Natural gas is the preferred energy source for heating domestic hot water. Electric heat may be used for remote isolated fixtures and when installation of natural gas is cost prohibitive. • Gas water heaters shall be AGA certified, power vented, and glass-lined commercial type. High-efficiency and condensing type boiler equipment are preferred. • Ball valves and check valves shall be provided on cold water piping and outlet piping at heater and shock absorber and thermometer. • Hot water piping from the heater shall have an ASTM rated	

HOT WATER SYSTEMS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
DOMESTIC WATER HEATERS	T&P relief valve. • Heaters serving isolated or remote locations, or individual portable classroom buildings may use electricity as a heat source. In these situations 6-gallon heaters with drain pan or the use of multiple smaller heaters installed in a manifold arrangement may be used. This design is preferred to use of one or two large boilers. • Electric water heaters shall be of a commercial type with magnesium anode, immersion type thermostats and heating elements. Heaters shall be UL 174 rated and labeled. Ball valve and check valves shall be provided on cold water piping to the heater; shock absorbers, a ball valve, adjustable thermometers, and an ASME T&P relief valve shall be provided on hot water piping from the heater. Adequate service space shall be provided in front of the heater service panel. • Electric booster heaters for dishwashers shall be of stainless steel and have a rod-type element, aquastat, and T&P relief valve to the outside. Heaters shall be ASME and UL approved. • Where approved by District, non-storage type instant point-of-service heaters may be used. • Water heater supply company shall be able to provide local service and parts. • Provide expansion tank for DHW systems to control water expansion.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
HOT WATER STORAGE TANKS	• Hot water storage tanks shall be rated for 150 psig service and display an ASME label. Tanks shall be equipped with magnesium anodes. Larger storage tanks shall either be unlined steel and equipped with magnesium anodes, or lined with a six millimeter Socco Keysite® or Heresite® coating applied in three coats minimum with baking between each coat. • Hot water shall be stored in tanks at 140F to control bacteria growth. • Hot water storage tanks shall be equipped with a shut off valve and check valve installed in the cold water supply to the storage tank and in the hot water outlet side. A thermometer shall also be installed at the hot water outlet. • Properly sized commercial on-demand tankless water heaters may be used where approved by the District.	
SOLAR WATER HEATING SYSTEMS	• Solar water heating may be acceptable for certain applications. Solar water heating systems will be dedicated to no more than one building being served. Perform a life cycle cost analysis (LCCA) to determine a cost / benefit ratio. The LCCA shall include factors such as costs associated with installation, operation and maintenance, system deterioration, annual utility consumption and estimated utility costs. After LCCA review the District shall determine if the system is acceptable. • Minimum LLC payback shall be 50 % of the project life of the equipment of 10 years whichever is less. • Solar water heating shall not be designed as central plant generation with distribution to multiple buildings.	

HOT WATER TEMPERING VALVES

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
HOT WATER TEMPERING	• Electronic-monitored type thermostatic mixing valves shall be used to control hot water supply to student showers. Shower water temperature shall not exceed 118°F delivered to the fixture to prevent scalding. • Thermostatic mixing system shall be a point-of-use design. • A separate return loop and circulation pump shall be provided for each thermostatic mixing valve. Return loop systems shall be designed to assure that the minimum tempering valve flow required for stable operation is maintained continuously.	

DOMESTIC WATER PUMPS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
DHW CIRCULATING PUMPS	• In-line circulating pumps shall have a 150 psig working pressure. They shall have all bronze body, flanges and impeller; a stainless steel shaft; and an ODP premium efficiency motor that is maintenance free self-lubricated type. • Floor-mounted circulating pumps shall be direct connected, close coupled, centrifugal, and rated at 1750 RPM. Pumps shall be equipped with enclosed type bronze impellers, a mechanical seal, a drip-proof premium efficiency moto , and reinforced metal flexible connections on suction and discharge sides. • All circulating pumps shall be approved for potable water service. • Provide time of day and thermostatic control for DHW circulating pumps.	

GAS PIPING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
METERING	• Gas service to each building shall be metered. • Meters shall be monitored by the building DDC system.	
PIPING MATERIALS	• Gas piping above grade shall be schedule 40 black iron. • Gas piping below grade shall be HDPE. • All u/g piping shall include a tracer wire. • Gas piping within a building shall be low pressure piping. • Provide earthquake valve for each building gas service. Earthquake valves shall require manual reset.	

HVAC General Design Approach: The design for the project heating, ventilating and air conditioning (HVAC) systems shall maintain occupant comfort, indoor air quality, acceptable noise levels, energy efficiency, reliable operation, and ease of maintenance. The design of the system and location of equipment shall minimized disruption of college functions.

HVAC systems shall be designed in accordance with ASHRAE Standards and applicable Codes to provide efficient and easily maintained systems. System designs shall consider life cycle owning and operating costs as well as first costs to provide the District with the best value HVAC systems. Efficiency measures that have a total life cycle cost payback within 10-years or 50 percent of the equipment life shall be considered.

HVAC system design shall provide access to and working space for compliance with OSHA standards and ease of maintenance around all equipment and system components that require access for operation or maintenance. All equipment shall be installed per the manufacturer's recommendations. Provide access panels for access to system components above hard lid ceilings that require service, adjustment, or periodic maintenance.

The District has set the goal to strive for an overall building energy efficiency to exceed the requirements of California T-24 Energy Standards by 20%. Provide higher building efficiencies where required to meet project LEED energy targets. Submit supporting documentation using California approved computer simulation program. Buildings that do not meet this goal require justification indicating the program basis for the lower overall building efficiency

Building HVAC concept designs shall be coordinated with the District master infrastructure team and submitted to the District for review and approval prior to proceeding with the final building design and documentation.

HVAC SYSTEMS

<table>
<tr><th>SYSTEM/ MATERIAL</th><th>PERFORMANCE CRITERIA</th><th>IMAGE</th></tr>
<tr><td>HVAC DESIGN TEMPS</td><td>
• Design temperatures for HVAC systems shall be based on the conditions noted below unless other requirements are specifically coordinated with and approved by the District. HVAC design loads shall include requirements for equipment that may be furnished during construction or installed after construction by the District.
<table>
<tr><td colspan="2">Outside Design Conditions</td></tr>
<tr><td>Summer
91 oF dry bulb
70 oF wet bulb</td><td>Winter 34 oF</td></tr>
<tr><td colspan="2">Inside Design Conditions</td></tr>
<tr><td>Summer
75 oF dry bulb
50% RH (not controlled)</td><td>Winter 70 oF</td></tr>
<tr><td colspan="2">Inside Design Conditions (IT & other Computer Rooms)</td></tr>
<tr><td>Summer
72 oF dry bulb
50% RH +/-10%</td><td>Winter 65 oF</td></tr>
<tr><td colspan="2">Inside Design Conditions (Special Application Rooms)</td></tr>
<tr><td>Summer
* oF dry bulb
* RH</td><td>Winter
* oF</td></tr>
</table>
*Coordinate requirements for specific project.
</td><td></td></tr>
<tr><td>ACCEPTABLE SYSTEMS</td><td>
The preferred HVAC systems shall include Central Station Variable Air Volume air handling systems with heating hot water and chilled water supplied from the existing campus distribution HHW and CHW piping system.
• Central Station HVAC equipment shall be located in mechanical equipment rooms or on the roof with ample access for ease of maintenance. Screening shall be provided for rooftop mounted HVAC equipment.
• Where central HHW or CHW piping is not available, provide local gas fired heating hot water systems and local air cooled chiller systems or rooftop Central Packaged VAV systems.
• All rooftop HVAC units shall be curb-mounted with down flow ducting arrangement. Ductwork routed on the roof is not permitted without specific District approval.
</td><td></td></tr>
</table>

HVAC SYSTEMS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ACCEPTABLE SYSTEMS	• Provide separate dedicated HVAC systems for building areas such as IT rooms that require continuous operation for environmental control. Use "Ductless Split Systems" for room loads of 1-ton and less. Use "Split System" Computer Room Air Conditioning (CRAC) units for cooling loads over 1-ton capacity. • Server rooms shall include redundant cooling systems. • "Thru-Wall" HVAC equipment is not permitted except for temporary construction and prefabricated modular type buildings. • Fan-coil type systems with equipment located in the ceiling space above classrooms are not permitted. • Variable refrigerant flow (VFR) systems are permitted only where central CHW is not available. If VFR systems are used the fan coil units shall be located in accessible mechanical rooms • Provide separate air handling systems for building areas that have different occupancy schedules to allow for securing HVAC for portions of the facility when not in use.	
HVAC MOTORS	• Provide premium efficiency motors for HVAC equipment. Motors ½ horsepower and larger shall be 480V or 208V three-phase. Motors ½ horsepower and smaller shall be 120V single phase. The use of ECM type motors is encouraged for increased energy efficiency • Fan motors shall be sized for a minimum of 110% of the full load horsepower required for the fans. Requirements shall include drive losses and system effects for ductwork configuration. Provide additional motor capacity where required to prevent motor overload under all operating conditions. • Minimum requirements include NEMA design B rating with ODP motors for interior locations and TEFC motors for exterior locations or where subject to moisture. • Motor service factors shall not be considered in the selection of the motor sizing for HVAC equipment.	
REFRIGERANTS	• HVAC system refrigerants shall be either type 134A or 410A.	

HVAC SYSTEMS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
HVAC ACOUSTICS	HVAC systems shall be designed to control noise generated from equipment, piping and ductwork. Comply with ASHRAE standards for recommended room criteria (RC) sound levels in occupied rooms. Sound attenuators and appropriate design are required for sound control; internal fibrous acoustical duct liner is not permitted. Refer to Division 51. Additional requirements include: • Classrooms: RC(N) 25-30 • Libraries: RC(N) 30-35 • Private Office RC(N) 25-30 • Open Office RC(N) 30-35 • Conference Rooms: RC(N) 25-30	

HVAC SYSTEM REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL	• HVAC systems shall be designed in accordance with ASHRAE Handbook of Fundamentals and related Standards and all applicable codes and standards of the Authority having Jurisdiction. HVAC equipment located outside shall be rated for 3,000 hour salt-spray test. Equipment located inside shall be rated for 500 hour salt-spray test. Additional requirements are noted below. • HVAC systems equipment and materials used for installation of HVAC systems shall be manufactured in the United States.	
CENTRAL AIR HANDLING SYSTEMS	• Air handling systems of 2,000 CFM capacity and greater shall include economizer systems capable of using 100% outside air for free cooling when weather conditions permit. • Air handling systems of 5,000 CFM and greater shall include both supply and return air fans. • Multiple fan arrays for supply and return air are encouraged to provide partial (reduced) airflow in the case of a single fan failure. Fans should be direct drive. • Airflow monitoring is required for all VAV systems and	

HVAC SYSTEM REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CENTRAL AIR HANDLING SYSTEMS	for constant flow systems over 5,000 CFM. Monitoring shall be provided for supply air, return air, and for OSA. Provide additional airflow monitoring where necessary to address specific project requirements. • Where possible, provide internal vibration isolation for fans and compressors within Central Station equipment. • All air supply systems shall include filters with filter gauges to monitor the filter pressure loss. Gauges shall be marked to indicate the appropriate filter change-out pressure loss. • To the extent possible standardize filter sizes. Preferred filter sizes are 24"x 24" and 12"x 24" sizes. Prefilters shall be 2" thick throwaway Class-1 or Class-2 type. Final filters shall be 12" thick throwaway Class-1 or Class-2 pleated cartridge type. • Maximum face velocity for filters in air handling units of 5,00 CFM and over shall be 350 FPM except that extended surface type cartridge filters may be 500 FPM. Face velocity for air handling systems less than 5,000 CFM shall be 500 FPM maximum. • Systems subject to 100% outside air intake shall include moisture eliminator filters at the OSA intake. • HVAC equipment of less than 5,000 CFM shall include as a minimum MERV 8 filters. Provide additional filter rating where necessary to address specific room requirements. • HVAC equipment of 5,000 CFM and greater shall include MERV 8 prefilters and ME V 13 final filters. • Airflow velocity through Central Station AH-Unit cooling coils shall be designed for maximum 450 FPM face velocity to prevent condensate carry-over from coils. Provide lower coil velocity for coated coils where required to prevent condensate carry-over. • Cooling coils shall be constructed with copper tubes and either aluminum fins or copper fins. Maximum fin spacing f copper fins shall be 10 fins per inch. Maximum fin spacing f copper fin coils shall be 11 fins per inch. Cooling coil frame shall be stainless steel. Drain pans shall be insulated double wall stainless steel with positive slope to the drain connection. • Equipment installations shall allow service space for coil removal without damage to building construction. • Fans should be direct drive with VFD control. Direct drive fans and VFDs shall be rated for operation to 80H2 minimum.	

HVAC SYSTEM REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CENTRAL AIR HANDLING SYSTEMS	• Preferred VPD manufacturers are ABB, Danfoss or Trane. Provide VFDs with Nema 12 rating.	
CENTRAL HHW AND CHW EQUIPMENT	• Where central distribution piping for CHW and HHW are not available and chilled water and hot water systems are provided, the central equipment shall be Energy Star rated where available and shall include the following requirements: • Water chiller units shall be air cooled type with dual independent refrigeration circuits. Refer to Board resolution on designated brands included in the appendix for manufacturer for each college. • If used, cooling towers shall be induced draft type with construction of type 316 stainless steel. • Heating hot water boilers shall be condensing type boilers. Dual units shall be provided and each boiler shall be sized at minimum of 60% of the total heating hot water load required for the facility. • Two redundant pumps shall be provided for the HHW and for the CHW systems. Each pump shall be sized for 100% of the required load. Pumps shall be selected to operate within the top 15% of the efficiency operating curve. All pump motors shall be selected for non-overloading characteristics throughout the entire range of the pump operating curve. • Rooftop packaged VAV systems shall include HHW reheat for zone control.	
HVAC SYSTEM zONING	• Temp control zones shall be arranged to provide for separate control for each orientation within the building (north, east, south, west, interior, etc.). Provide additional zone control where required to maintain proper environmental control. • HVAC systems shall be arranged so that each of the following room types are controlled as a separate temperature control zone: Classrooms, Lecture Halls, Conference Rooms, Lounges, IT, AV, and Server Rooms, Other rooms that have special environmental control requirements. • No more than 5 office rooms shall be included on a single temperature control zone. • The maximum area for a single temperature control zone shall be 2,000 SF.	

HVAC SYSTEM REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
HVAC SYSTEM zONING	• All zone control VAV boxes shall include HHW reheat coils. Heating coils shall be sized to maintain required space temp. at minimum airflow settings • Locate VAV boxes and other zone control components above corridor ceilings or other areas outside the classroom areas.	
EXHAUST SYSTEMS	• Locate exhaust fans with clearance for ease of access for service and maintenance and to prevent entrainment of the building exhaust air into the HVAC system outside air ventilation systems • Provide local exhaust for equipment or processes that generate dust, heat or noxious odors such as printing equipment, kitchen equipment, and laboratory hoods. • Provide stainless steel ductwork for corrosive exhaust fumes. Minimum discharge velocity for corrosive or other hazardous exhaust fumes shall be 3,000 FPM. The minimum height for the discharge of these exhaust systems shall be 7 feet above the roof. • Parking areas, including parking garages, shall be arranged as open garages without requiring garage exhaust systems. • Provide supply fan (not exhaust) for water heater, boiler rooms and other rooms with gas fired equipment rooms.	
DUCTWORK SYSTEMS	• Ductwork systems shall be constructed of sheet metal in accordance with the California Mechanical Code, NFPA Standards, and SMACNA HVAC Duct Construction Standards for Metal and Flexible Ducts. • Provide insulation with vapor barrier for supply and return air duct systems. Internal fibrous acoustical duct liner is not permitted for duct systems. Ductwork/insulation surface exposed to view shall be suitable for paint finish • Provide balancing dampers at each branch tap-off. • Provide flexible ducts at connections to air distribution diffusers, registers, and grilles. Flexible ducts shall be UL Class 1, with factor connection collars and maximum 7 foot length. • Exterior ductwork and ductwork exposed to weather shall be weatherproof. Include sloped top for rain runoff to prevent standing rain water on exterior ducts. • Ceiling supply diffusers shall be modular core type with or without perforated face. Sidewall supply diffusers shall be double deflection type. Sidewall return and exhaust registers and grilles shall be single deflection type	

HVAC SYSTEM REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PIPING SYSTEMS	• HHW piping above ground shall be schedule 40 Steel with welded of flanged fittings; or type "L" copper with braze or flanged joints for piping 2.5" and larger. Provide type "L" copper with brazed fittings for piping 2" and smaller. • CHW piping above ground shall be schedule 40 Steel with welded of flanged fittings; or type "L" copper with solder brazed or flanged joints for piping 2.5" and larger. Provide type "L" copper with brazed fittings for piping 2" and smaller. • HHW piping and CHW piping below ground shall be factory pre-insulated piping system with polyurethane foam insulation and epoxy coated steel casing. Carrier pipe as noted above. -O-ring seal fittings are not permitted. -Provide isolation valves at connections to existing underground piping. Valves and Flanges shall be locate in accessible vaults. -Provide cathodic protection for underground piping system. • Include provisions to accommodate piping expansion and contraction using piping expansion loops and ells. • Piping expansion joints, bellows, and O-ring seal connections for expansion are not permitted. • Provide dielectric isolation for dissimilar metals to prevent corrosion. • All piping shall be manufactured in the U.S.	
INSULATION OF EQUIP. PIPING, + DUCTWORK	• Provide insulation in accordance with California Title-24 Energy Standard. Installation shall be in accordance with the manufacturer's recommendations. • Provide embossed stainless steel or aluminum metal jackets for insulation exposed the weather. All insulation exposed to view shall have ASJ jackets suitable for painting. • Provide removable insulation jackets for valves, flanges, and other similar piping components that require periodic maintenance. • Provide removable insulation box for pumps. Include interlocking joints to maintain vapor barrier. Arrange insulation box to allow for periodic removal and reinstallation without damage to the insulation box or its ability to maintain the vapor barrier.	

HVAC SYSTEM REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
INSTRUMEN-TATION AND DIRECT DIGITAL CONTROLS	Provide a complete and fully operational open non-proprietary Direct Digital Control (DDC) system for the facility in compliance with the exhibit in the Appendix labeled GCCCD Building Automation System Guidelines. The system architecture shall consist of BACnet BTL listed field level equipment controllers communicating over a high speed MSTP network. The supervisory control network shall consist of distributed BACnet BTL listed network integration supervisors communicating over a BACnet/IP Ethernet network using Niagara AX or N4 protocol. Network integration supervisors shall communicate with the campus' central Niagara AX/N4 building automation server through the campus Ethernet wide area network (WAN). Control integration requirements for each project shall include updating the central server programming and graphics and all required operating and configuration licenses to fully integrate the new project controls with the existing campus DDC system. • Controls systems for new buildings and major renovations at Grossmont and Cuyamaca College shall conform to the GCCCD Building Automation Standard and shall utilize one of the pre-qualified building automation systems and contractors. Contact the District for the most current list of pre-qualified BAS systems and contractors • Control systems modifications for existing buildings at Grossmont College shall utilize Automatic Logic Control systems per District Resolution. Contact Sunbelt Controls – Integrated Energy Solutions (858) 292-8642. • Control systems modifications for existing buildings at Cuyamaca College shall utilize Alerton BACtalk Control systems per District Resolution. Contact CLIMATEC - Building Automation Systems (858) 391-7000. • DDC systems shall be based on ANSI/ASHRAE Standard 135-2012, BACnet. This system is to control mechanical equipment specified using native BACnet-compliant components. Control systems and algorithms shall comply with ASHRAE BACnet requirements. • Design construction documents shall include fully coordinated control drawings including complete system architecture, control diagrams, and sequence of operation for each HVAC system.	

HVAC SYSTEM REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	• Division 26 Electrical design documents shall indicate all line voltage electrical requirements of the control systems. Coordinate requirements under this division with Division 26 for a complete and fully operational system. • Each project control system shall include sensors and control monitoring necessary to maintain the sequence of operation required for each system. Refer to the exhibit in the Appendix for a list of minimum control points for each type of system. • All control components including controllers and VFD's located outside shall be rated for operation at elevated temperatures (120F). • Provide NEMA 12 rating for control panels located in interior equipment rooms. Provide NEMA 3R rating for exterior control panels and where located in wet locations. All conduit connections for control panels shall be located on the bottom of the panel. • Redundant VFDs preferred with automatic switchover to backup VFD on failure of primary VFD. Minimum requirement includes VFD with automatic by-pass switch to allow for service of the primary VFD while the bypass or redundant VFD in in operation. • DDC systems shall include interface to monitor building automatic day-lighting control systems. • Provide appropriate meters to monitor building utility services including natural gas service, domestic water service, and electrical service. Include monitoring and control interface with renewable energy systems including solar heating/cooling and PV systems where applicable.	

HVAC SYSTEM REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
IDENTIFICA-TION	• Provide identification for all HVAC equipment, piping, ductwork and control systems. • Provide engraved laminated plastic nameplates for equipment and control components labels. Coordinate label identification with design documents • Comply with ASME A13.1 for piping identification. Provide pre-tensioned pipe labels. Provide brass or stainless steel valve tags. • Provide painted stencil or adhesive type duct identification. Identify airflow direction and type of duct (supply, return, exhaust, etc.). • Identify ductwork and piping at 50 foot intervals and where piping or ducts pass through floors and full height walls • Provide engraved laminated plastic warning and safety signs.	
EXTENDED WARRANTY	• An extended warranty (minimum 2 years) is required for all chillers, boilers, water heaters, and CRAC units. • Provide an extended warranty (minimum of 5 years) is required for all factory pre-insulated underground HHW abd CHW piping systems and for all variable refrigerant flow (VRF) systems.	

HVAC SYSTEM REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TESTING, ADJUSTING, BALANCING	• Provide complete Testing and Balancing (TAB) of all air and water distribution systems and HVAC equipment. Comply with the requirements of AABC or NEBB test and balance standards. • Test and Balance contractor shall be certified by AABC or NEBB. TAB contractor shall be a first tier subcontractor. • Include as part of the TAB requirements Duct Air Leakage Testing (DALT) for all duct systems with a static pressure of 1" and over in accordance with SMACNA HVAC Air Duct Leakage Test Manual, 2nd Edition. • TAB contractor shall review the construction documents and provide a pre-TAB report identifying any elements of the design that will prevent effective balancing of the HVAC systems. The report shall be submitted within 45 days of the construction contract award. No adjustment in contract price will be permitted for TAB design issues after the report is issued.	

HVAC SYSTEM REQUIREMENTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
COMMISSION-ING	• All projects shall include Commissioning in accordance with ASHRAE 202. • Include requirements for LEED Fundamental and Enhanced Commissioning for all LEED certified projects. • Include commissioning review of all design submittals. • Projects specifications shall include requirements for contractor commissioning for all HVAC and Plumbing systems including documentation of all commissioning procedures including functional performance of all systems, training, and system documentation. • The District may retain a Third Party Commissioning Authority to provide independent review and oversight of the commissioning process. Include requirements for contractor support of the District commissioning verification process. • The District inspector shall be notified of all on-site commissioning meetings, site observations, and functional performance verification activities.	

Electrical General Design Approach: The focus of all campus design is to create and enhance the learning experience for the students and staff. Key to this experience is a well planned and executed electrical power and lighting controls system.

In addition to the design meeting all applicable codes and regulatory requirements, NFPA standards, and NECA standards for installation, which are outlined in this section. The District has preferences and performance criteria for the electrical and lighting systems Both campuses have strict guidelines for working on energized electrical systems. Personnel are not allowed to access live conductors or bussing. Prior to removal of electrical covers, the associated part of electrical system is de-energized.

The electrical system should be organized to allow District staff to maintain the system in an orderly fashion, while minimizing any disruptions to instruction and other functions on campus. The most successful methodology to minimize classroom disruptions is to focus on specifying cost-effective quality systems and components designed for durability and minimal life cycle costs.

The district has set a target of overall building efficiency to meet the requirements of LEED Silver. This affects lighting, lighting controls, power system controls and transformer design.

Building electrical concept design shall be submitted to the District for review and approval prior to proceeding with the building design. The electrical design approach for each project should consider the campus mater plan, future projects and power needs as well as existing available power and coordination with recent past and proposed future projects for electrical infrastructure.

ELECTRICAL GENERAL PROVISIONS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
DEMOLITION	• Contractor shall return all #8 and larger copper wire to the District.	

INTERIOR ELECTRICAL INFRASTRUCTURE/DISTRIBUTION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PRODUCTS GENERAL	• Shall be listed by underwriters laboratories and shall bear the U.L label. • Shall be suitable for the environment in which they are located. • Shall be factory assembled per construction documents. • EEOR, utilizing the latest version of SKM, shall provide a circuit breaker coordination, Short circuit and Arc Flash study for the entire system up to the 12KV distribution transformer regardless of the scope of work. • Finishes shall be baked enamel factory painted in manufacturer's standard color. • Provide front accessibility for wire ways on each side of overcurrent protective devices. • All electrical distribution equipment shall be provided by one manufacturer. • All devices shall be provided by one manufacturer. • All bussing shall be silver-coated copper.	
EXECUTION GENERAL	• Coordinate with other disciplines to identify conflicts with locations (clearances), notify the engineer of any conflicts • Coordinate all equip. with structural engineer for anchoring, mounting and concrete housekeeping pad size. • All equipment shall be installed in accordance with manufacturer recommendations.. • Install equipment plumb and square to structure and adjacent surfaces. • Connect and inspect all ground bonds prior to energizing equipment. • Adjust and set all equipment devices for proper operation. • Test all over-current protection devices for voltage level, continuity, ground fault and short circuits. • Touch up scratched paint and finishes • Clean interior and exterior closures/equipment/devices prior to handing over to District.	

INTERIOR ELECTRICAL INFRASTRUCTURE/DISTRIBUTION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PANEL BOARDS PRODUCTS	• Provide commercial panelboards with bolt-on circuit breakers. • Panelboards shall be rated 600VAC and shall not exceed 400A amperage capacity. • Circuit Breakers above 225A shall be electronic-solid state 100% rated. • Provide heavy duty "door-in-door" panelboard covers. • Panelboard circuit quantity shall not exceed 80% of the available space and capacity. The remaining 20% of space and capacity shall be reserved for future loads. • Provide 20A, single pole circuit breakers in all future spaces. • Load centers are not acceptable.	
PANEL BOARDS EXECUTION	• The site safety standard requires all maintenance personnel to de-energized panelboards prior to accessing the conductors or other live parts. In order to minimize disruption to the students and staff, the District prefers segregated panels at each building for HVAC, Egress Lighting (standby emergency power), Normal Lighting, Exterior Lighting and Interior Lighting. This standard increases the number of panels, but will allow the staff to minimize disruption. • Panelboards shall be mounted no higher than 6'-0" to the highest device from finished floor and no lower than 24 above finished floor. Provide panel skirts. • Do not install panelboards in classrooms, offices, conference rooms or other user occupied spaces in constant use. Install panelboards in electrical rooms and closets when possible. Installation of a panelboard in a corridor is acceptable. • Based on the site safety standard, double lugged panels and feed thru lugs are not allowed. Panels feeding panels shall be limited to one level. • Panelboard lugs should only be use only to feed a single panelboard enclosure. • Provide a copper ground bus in each panelboard. • Consider the use of 200% neutral panelboards in areas with high harmonic loads. • Provide 42 circuit panelboards except in IDF/MDF rooms. • Provide 24 circuit panelboard in IDF rooms. Panelboards with less than 42 circuits will be considered on case by case.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PANEL BOARDS EXECUTION	• Minimum circuit breaker size in a panelboard should be 20 Amps. • Coordinate IT room panel breaker amperage and phase with college. • Provide spare conduits for future. (3) ¾" conduit above each new panel. Stubbed conduit into the nearest accessible ceiling space. • Place typewritten panel schedule in a sleeve on the interior of the panel board indicating loads and areas connected to each circuit.	
SWITCH BOARDS PRODUCTS	• Products shall be dead front, metal enclosed, self supporting floor standing sections with housekeeping pads • Equip with lifting eyes. • Provide with IR scan windows in each section of back of accessible equipment. • Provide ground bus in each switchboard section with connecting ground bonds between sections. • Vertical sections shall contain overcurrent protective devices including circuit breakers and fuses. • Main circuit breakers should be provided and shall be solid state trip type. • Circuit Breakers above 225A should be electronic-solid state 100% rated. • Provide 25% spare breaker space and load capacity.	
TRANS FORMERS PRODUCTS	• Transformers should be designed to an efficiency standard higher than the lowest legal standard for the purpose of contributing to LEED Energy and Atmosphere (Optimize Energy Performance) and utility rebates. • Transformers designed to the lowest code compliant efficiency standard do not provide the contributions listed above, are not acceptable for meeting the above requirements. • Transformers should be UL 1561 listed and labeled with K-9 rating or above. • Windings should be continuous wound copper with brazed or welded terminations. • Maximum winding temperature rise: 130 degree C in a 40 degree C maximum ambient.	

INTERIOR ELECTRICAL INFRASTRUCTURE/DISTRIBUTION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TRANS FORMERS PRODUCTS	•The use of "buck-boost" and "auto-transformers should be limited. • Transformers should have IR scan windows. • Insulation and varnish systems: UL recognized 220 degree C class; epoxy polyester impregnation. • All materials, including those for changing taps, must be readily accessible by removing a front cover plate. • The transformer shall have a basic impulse level of 10KV BIL. • Neutral terminals shall allow cables for 250% of nameplate current, accommodating loads requiring 200% neutrals. • Voltage Taps: -15KVA-300KVA, Provide (2) 2-1/2% full capacity taps above and (4) 2-1/2% below nominal primary voltage. • Enclosure type shall be NEMA 2 with a minimum manufacturing clearance of 3" to comply with NEC450.9. • Sound level per KVA rating shall be 3 dB below NEMA standard. • Impedance shall be the manufacturer standard.	
TRANS FORMERS EXECUTION	• Mount on housekeeping pads. • Provide rubber vibration isolation between transformer and floor, structure or any fixed surface (including wireways). • Install all conduit connections to transformer with liquid tight flexible conduit • Test all transformers for voltage level at primary and secondary windings. • Provide premium efficiency motors for HVAC equipment. • Should be fused.	
PRODUCTS BUS DUCTS/ MOTOR CONTROL CENTERS	• Evaluated on a project by project basis.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
DISCONNECTS	• Electrical requirements should include drive losses. Provide additional motor capacity where required to prevent motor overload under all operating conditions. • Minimum requirements include NEMA design B rating with ODP motors for interior locations. • TEFC motors for exterior locations or where subject to moisture. • Motor service factors should not be considered in the selection of the motor sizing for HVAC equipment. • Motors ½ horsepower and larger shall be 480V or 208V three phase. • Motors ½ horsepower and smaller shall be 120V single phase. • The use of ECM type motors is encouraged for increased energy efficiency • Fan motors shall be sized for a minimum of 110% of the full load horsepower required for the fans. • Provide premium efficiency motors for HVAC equipment. • Should be fused.	
GENERATORS	• Existing generators at each campus are dedicated to code required life safety loads: interior path egress, exterior light fixtures and fi e alarm panels. • No new generators are anticipated.	
SURGE PROTECTIVE DEVICE (SPD)	• Required only at IT panelboards. • Provide exterior (SPD) directly adjacent to IT panel.	
INVERTER/ BATTERY PACKS	• Lighting inverter should only be utilized for egress path lighting that cannot be restored to full capacity in 10 seconds or less. • The use of individual fixture mounted battery packs should be avoided.	

GROUNDING AND BONDING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GROUNDING FOR PERMANENT STRUCTURES	• Each building should be considered a service entrance. • Provide single point ground system; UFER ground, cold water ground, bond to the fi e sprinkler system and incoming natural gas. • Connect ground system to IDF ground plate with #1 bare copper.	

RACEWAY AND BOXES

RACEWAY PRODUCTS	• All items should be listed by underwriters laboratories and shall bear the U.L label. • Rigid Galvanized Steel (RGS) Conduit (aluminum is not allowed). • Set screw connectors or thread less type are not acceptable	
RACEWAY EXECUTION	• Raceway should be seal and plug to eliminate water entering the conduit. • Provide pull rope, a minimum of 3/16." • Provide bushings. • RGS shall be use where conduit is expose to damage or weather.	
BOXES PRODUCTS	• All items shall be listed by underwriter's laboratories and shall bear the U.L label.	
BOXES EXECUTION	• Junction boxes should be accessible. • Junction boxes should be installed above grade. • Provide pull boxes by each landscape light fixture and light poles for accessibility. • Connector devices are not allowed. • Maintain a minimum of 12" clear above all accessible ceiling. Except for connections to devices of fixtures mounted in the ceiling not conduits, junction or pull boxes should not intrude into this space. •Organize branch circuit systems to allow for easy access to all junction boxes and pull boxes. Removal and re-installation of systems that do not meet this criteria will be required.	

LIGHTING CONTROLS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
HEAD-END SYSTEM	• The head-end system for the GCCCD controls network is a Graphical User Interface located at the security offices of both campus's. The head-end system coordinates all network communications, locally within one campus and across campus locations. • The head-end system is currently configured to provide additional capacity at each campus up to approximately 40 additional medium sized panels, 200 additional classrooms of control. Refer to Appendix "diagram A" for additional information for TECH BULLETIN DLM Network Configurations • Should the need to expand the system beyond the current capacity the designer will need to add components to the head-end as follows: - Add 1ea LMSM-6e Segment Manager to the head-end configuration will increase the extensibility of the system by 60 additional panels, up to 300 additional rooms. - LMSM Segment Managers may be added as needed to extend the system as far as required for the campus operations.	
PANEL SYSTEMS	• Panel systems, approximately 30 existing panels at each campus currently, are used primarily for building level controls, i.e. the control of building mounted lighting, security or "vandal" lighting, nearby walkway lights, parking area lighting and roadways. Panels may also act as the "bridging" device for room control networks described below in section 3. • The District has adopted 3 standardized panels, euphemistically referred to as small, medium and large. These three panel sizes are outlined below and shown as Details 3, 4 and 5 in the Appendix. • The small panel provides up to 8 relays for control. The panel will accept CAT5 wired devices such as switches and sensors as required. A complete listing of devices is available in the Appendix diagram B DLM wiring details. • The medium panel supports up to 24 control relays with 4 dedicated as emergency circuits. Additional EM circuits may call out up to 6 contactors or 24 total "20A	

LIGHTING CONTROLS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PANEL SYSTEMS	rated poles" of egress lighting circuits. Panel supports connection of CAT5 wired DLM components such as switches or sensors as required for control functions. • The large panel supports up to 48 control relays with 8 dedicated for emergency circuits. Additional EM circuits may be called out up to 6 contactors or 24 total "20A rated poles" of egress lighting circuits. Panel supports connection of CAT5 wired devices such as switches or sensors as required for control functions. • If a building is sufficiently large to require more than one panel for control, panels may be locally connected within a building for example using MS/TP BACnet cabling. Any single panel or local network of panels within a building must be connected to the head-end system • When specifying a panel, or local network of panels as noted above, a Network Communications Interface is required. To connect new panels to the District Lighting Controls Network a BACnet router is required. The Districts standard configuration for the panel communications interface is as noted in Detail 1 in the Appendix. • When Specifying a PANEL system there is an additional requirement to provide additional GRAPHICS at the head-end. Typically two graphic screen updates are required for any new panel installation, Master Campus Map update and a "quadrant" screen updated graphic to include any GRAPHICAL objects that may be part of the panel system, i.e. building mounted lights, vandal lights, roadway or parking lights as the primary examples.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ROOM CONTROLS	• Room controls may be connected to LCP panels or directly to the campus network as required. Room controls would be classrooms, meeting rooms, labs, offices, and common areas such as restrooms etc.. • Rooms are configured using DLM components (Room controller(s), switches, sensors) as required for the specific functions, i.e. room controllers are available as relay switched or dimming controls with devices to accept a single feed circuit and distribute up to three independently controlled switch legs per device. Room controllers may be grouped to provide as many independently controlled switchlegs as required by the space. Rules for building a room network are included in the Appendix "diagram B" DLM wiring details. • It is the discretion of the District as to any Graphics requirements for ROOM CONTROL networks. Currently there is no implementation of classroom or room level graphics at the head-end. • As with panels, room control networks are to be linked to the head-end system in order to make available programming, scheduling and troubleshooting over the campus wide network. This does not require graphics for these functions, but rather, programming and configuration software exists at the head-end to enable campus wide or inter-campus programming via the network. The connection to the head-end required for any room control networks is outlined below as Detail 2. • One of these drops, as outlined in Detail 2, is required to link room control sub-networks to the campus wide system. From this campus wide network connection a whole sub-network of rooms, i.e. a block of new classrooms in a new building for example can be linked to the head-end system via this communications node with each independent room requiring only the LMBC-300 device to make its BACnet connection to the communications node. So with one of these control boxes, for example, all the classrooms in a new building could be designed and linked into the head-end.	

LIGHTING CONTROL

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
FIRE ALARM SYSTEM	• Refer to Division 28.	
SECURITY - DIGITAL VIDEO RECORDERS AND ANALOG RECORDING DEVICES	• Provide power supply: 220W (120/240VAC) • Power supply shall be energy efficient, Energy star compliant per manufacture requirements. • Coordinate exact location of devices/equipment with security vendor/consultant. • Refer to Division 28 for additional information.	
GPS WIRELESS - CLOCK SYSTEM PRIMEX WIRELESS	• Provide 120VAC, 50/60 Hz , 0.4 Amps to master transmitter with GPS receiver power supply. Coordinate quantity and location of transmitters with manufacturer. • Clock system must be Primex.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
RETROFIT PROJECTS	In general retrofit projects follow the same specification requirements listed above with the following exceptions. • Retrofit panels shall be provided as "interiors only" whenever possible to utilize existing LCP mounted enclosures and conduit feeds. • Where remote satellite relay panels are to be replaced see above for replacement instructions. • Minimize the transition time between the operations of the old control system and the new control system such that it is desired to have no interruption of service during normal operating hours • Graphic screens are required for all retrofit applications	
REPLACING REMOTE RELAY CABINETS	Some existing (legacy) panels include satellite remote relays connected via CAT5 wiring which cannot utilize this existing structure and those cables will be abandoned and the remote locations will connect with a single JACE located at the head end to act as the master to all of the remote locations. This will insure I/O availability to the GUI and offers a myriad of additional control options not currently available to the system, such as occupancy control, dimming controls (using different LMRC model), daylight harvesting.	
CONTROL OF EMERGENCY LIGHTING	Lighting control panels designated for control of emergency lighting shall be provided with factory installed provision for automatic by pass of relays controlling emergency circuits upon loss of normal power. Panels shall be properly listed and labeled for use on emergency lighting circuits and shall meet the requirements of UL924 and NFPA 70 - Article 700. Under normal power conditions the N.C. contacts in the contactor are open allowing the HDR5P relay to control the load. Under emergency power conditions the N.C. contacts in the by-pass contactor are closed and energizing the EM load to full output. Upon return of normal power the system reverts to LCP control of the load. The number of EM contactors is indicated in the LCP part number as "n"EM where "n" represents the number of EM circuits. As noted earlier a standard configuration of 8 EM loads are provided for large 48 relay cabinets, 4EM loads provided in the medium scale panel. EM by-pass relays are NOT available for small 8 relay panels, if EM loads are required a minimum of 24 relay capacity cabinet must be used.	

ELECTRICAL IDENTIFICATION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PRODUCTS SWITCHGEAR LABELS	• Panel schedule directories to be laminated front and back. • Switchgear labels will be stainless steel engraved. • Switchgear labels FOR classrooms will be black with white engraved letters. Minimum 3" wide and 1" tall with 1/2" letters. • Provide permanently adhered "Bakelite" labels indicating the name of each device on the switchboard, adjacent to the device and visible on the enclosure exterior.	
PRODUCTS JUNCTION BOXES, HOMERUNS LABELS	•Junction Boxes shall be label with the room number they are servicing. •Homeruns shall be labeled at the junction box.	
PANEL & BOXES EXECUTION	• Panel schedule directories should be typed, not handwritten. • Switchgear will be labeled per specific format, equipment identified, floor number and equipment letter. • Light poles to have numbers or other approved denominations to identify light poles from different parking lots. • Install all labels plumb and square to the switchgear, frame at the top edge of the front face of the equipment. • Labels to be permanently attached to switchgear via screws or rivets. • Junction box labels are to be place outside the enclosure, not the inside. "Sharpies" are not acceptable for labeling. • Utilize a label maker for all identification	
WIRE & CABLE EXECUTION	• All items shall be listed by underwriters laboratories and shall bear the U.L label. • Wire and cable labels will be manufactured from nylon tape or equal material. • Wire and cable labels will be white with black letters. • Wire and cable labels will indicate panel and branch circuit information. • Wire and cable labels will be a minimum of 1/2" wide and permanently adhere to the cable by using permanent adhesive.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CONDUIT EXECUTION	• Conduit paint is not acceptable, use tape. • Emergency power conduit: Purple • Security conduit: Blue • Fire Alarm conduit: Red • Tele/data conduit: Yellow • BMS conduit: Light blue • UPS conduit: Orange • In addition to taped conduit to identify system; Provide minimum (1) 6" wide tape on each conduit at all terminations, pull boxes and above panelboards with listing of circuits present.	

WIRE AND CABLES

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
NEW CONSTRUCT-ION CONDUCTORS	• Provide dedicated neutral for each circuit. • Not acceptable to derate conductors. All homeruns should be installed per electrical drawings. • Mechanical systems minimum feeder should be a minimum of #10 AWG. • The use of split bolt connectors and "push-in" type connectors is strictly prohibited. • All splices #8 and larger should be circumferential compression type, size pull boxes accordingly. • Aluminum conductors are prohibited.	
MINOR REMODEL CONSTRUCT-ION CONDUCTORS	• If not installing new panelboards, breaker ties will be sufficient in lieu of e-pulling circuits to provide dedicated neutrals. • If using a new panel for new branch circuits, see new construction.	

WIRING DEVICES AND CONNECTIONS

	• Receptacle shall have the ground up. • Plug-ins are not acceptable. • Private and open offices, reception areas, lobbies, kitchens conference rooms, and copy rooms are required to have a control receptacle within 6' of each uncontrolled receptacle. The color should be green for both campuses. • Provide commercial duty devices with circuit label space on device.	

EXTERIOR INFRASTRUCTURE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
MEDIUM VOLTAGE CABLE - WIRE + CABLE OVER 600 VOLTS	• Cables for use on 12,000 volts system shall be single conductor 15kv,90c rated and conforming to ICEA S-93-693/NEMA WC74 and UL 1072 • Conductors shall be copper 15kv class B stranded per ASTM B8. Strand screen or shield shall be semi-conducting tape or extruded compound. Insulation shall be cross-linked polyethylene (XLP), minimum mil, 133% insulation, grounded. Insulation screen, or stress control layer, shall be semi-conducting tape or extruded compound. Shielding shall be copper wires or tape served helically over the insulation screen. Jacket shall be Polyethylene. • Manufacture shall be Anaconda, Cyprus/Rome, Essex, Okonite or Pirelli, or equal approved by the District. • High voltage terminations shall comply with the requirements of IEEE Standards 48, hand wrapped stress cones, tapes or pennant type or "slip-on" stress cones rated for use with cable provided. The termination material shall be the product of one manufacture who shall furnish all components in the form of a kit which includes complete instructions which shall be followed for fabrication and installation. Termination shall include stress relief cones and shield grounding.. • High voltage cable splices shall be made using a modular elbow type kit and shall be the product of one manufacture and shall have the approval in writing of the manufacturer of the cable which is to be spliced. Splices shall be made only in manholes. • The contractor installing power cables shall have a minimum of 15 years' experience in the installation and termination of high voltage cables and shall be familiar with this campus. The contractor installing power cables shall be approved by the District for high voltage work on this campus.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
MEDIUM VOLT CABLE - WIRE + CABLE OVER 600 VOLTS	• High voltage splices shall be made using a "kit" of all materials necessary for making the complete splice. • Where cable is exposed in manholes, pull boxes, trenches, cabinets and pull sections strips of fireproofing tape shall be wrapped tightly around each cable spirally in one half-lapped wrapping, or in two butt-joint wrappings with the with the second wrapping covering the joints in the first. The tape shall be applied with the coated side toward the cable and shall extend 1" into the ducts.	
MEDIUM VOLT CABLE - INSTALLATION OF UNDER-GROUND PULL BOXES + HANDHOLES	• Pull boxes, and handhole ducts shall be assembled and installed in strict conformance with the manufacturer's instructions • Pull boxes with open bottoms shall be set on a minimum of 12" deep sand base to allow for drainage. • A preformed joint sealing compound of non-hardening mastic furnished by the hand hole manufacture shall be placed in the grooves of the base and body sections to seal the sections together watertight. • Concrete encased duct lines connecting to handholes shall be constructed to have a tapered section adjacent to the manhole to provide shear strength. • Provide end bells for all duct terminations in handholes.	

EXTERIOR INTRASTRUCTURE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
MEDIUM VOLTAGE CABLE - GROUNDING + BONDING	• Ground and bond the electrical system and equipment in accordance with the most stringent of applicable codes but with the requirements herein. • For system grounding electrode provide a “UFER” made electrode. The electrode shall be comprised of a 50 foot #3/0 bare copper cable imbedded in the concrete foundation footing. Locate the cable three inches up from the bottom and a three-inch clearance for the sides of the concrete footing and supported by a reinforcing bar #4 or larger completely encased in concrete. • Where available on the premises and in accordance with Code Requirements, the water piping system and metal building frame shall be bonded together form a grounding system as described in CEC 250-80 and 250-81. • Grounding electrode conductors shall be provided for service equipment and transformers by the contractor.	

MEDIUM VLOTAGE PAD-MOUNTED TRANSFORMERS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL	• The assembly shall comprise a pad mount compartmental type transformer conforming to ANSI C57.12.26	
PRODUCTS - GENERAL	• Construction of the transformer shall be a tamper and exterior weather proof design. Assembly shall be primary loop feed design front conforming to ANSI C57.12.26 except as modified herein. • The assembly shall comprise the transformer, primary (high voltage) compartment, and secondary (low voltage) compartment. Primary and secondary compartment shall be isolated from each other and access to the primary compartment shall require a separate unlatching or unbolting action from with the secondary compartment. There shall be no exposed screws, bolts, or other fastening devices which are externally removable. There shall be no openings through which foreign objects such as sticks, rods, or wires might contact live parts. There shall be means for padlocking the compartment doors. • Undercoat the underside of the transformer's enclosure with a 4 mil thickness of corrosion inhibiting coating. • Color shall be manufacturer's standard light grey. • Provide a nameplate with 1" high letters for the transformer assembly.	
PRODUCTS - PRIMARY COMPARTMENT	• Insulated high-voltage load break connectors: IEEE 386, rated 15kv, 95kv BIL. Current rating: 200 amperes rms continuous. Short time rating: 10,000 amperes rms symmetrical for a time duration of 0.14 seconds. Connector shall have a steel reinforced hook-stick eye, grounding eye, test pint and arc-quenching contact material. • Bushing well inserts: IEEE 386,200 amperes, 15kv Class. Provide a bushing well insert for each bushing well. • Load-break Switch • Provide bayonet oil-immersed, expulsion fuses in series with oil-immersed, partial-range, current-limiting fuses. Bayonet fuse assembly should: 150kv BIL • Oil-immersed current-limiting fuses: ANSI C37.47,50,00 rms amperes symmetrical interruption rating at the system voltage specified.	

MEDIUM VOLTATE PAD-MOUNTED TRANSFORMERS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PRODUCTS - PRIMARY COMPARTMENTS	• Surge arresters: ANSI/IEEE C62.11, rated 9KV, fully shielded, dead-front, metal oxide varister, elbow type with resistance-graded gap, suitable for plugging into bushing well inserts. Provide three arresters. • Parking stands: Provide a parking stand near each bushing wall. Provide insulated standoff bushings for parking of energized load-break connectors on parking stands. • Primary tap changer has 2-1/2 full capacity taps above and below rated primary voltage. The changer shall be inside the primary compartment and there shall be a position indicator and a method for securing the control handle against unintentional operation.	
TRANSFORMERS	• Transformers shall be three phase, two winding, 60 hertz, 55®/65®C rise, liquid immersed, self-cooled unit. High voltage shall be nominal 12.47kv delta primary. High fire point transformer liquid per NEC for non-propogating liquids having a fi e point not less the 300®C tested per ASTM D92 and a dielectric strength not less than 33kv tested per ASTM D877. Basic insulating level shall be 95kv. Secondary voltage shall be 480/277 volts grounded wye. Impedance shall be manufacturer's standard. • Provide load break elbows and apparatus bushing on primary.	
PRODUCTS - SECONDARY COMPARTMENT	• Secondary compartment shall provide adequate space and support for forming and terminating cables and for ANSI Standard Accessories including drain valve and sampler, dual type thermometer, and oil level gage.	
TRANSFORMER PAD	• Provide concrete slab foundation 8" thick, reinforced by 6"x 6" number 6 mesh placed uniformly located 4" below the top of the slab.	

LIGHTING APPROACH

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
LIGHT SOURCE/LAMP PERFORMANCE	• Lamp types in used in the District are to be minimized. Review all proposed fixtures and lamps with District and college for approval. • Refer to Interior and Exterior Lighting Matrix Guide in the Appendix of this document for specific levels and lighting approach for each area of the campus. • LED technology shall be utilized as the primary lighting source. Energy efficient sources such as Linear Fluorescent and Ceramic Metal Halide lamps are acceptable for specific applications when LED sources are not adequate in terms of performance, but as LED technology improves over time, the LED sources are to be utilized. Sources such as Incandescent, Halogen, Compact Fluorescent, and Low and High Pressure Sodium are not to be specified • T8 linear fluorescent T8 lamps to be utilized whenever possible unless fixtures that are required for a specific applications are only available for use with T5 lamps. • All sources shall have a Color Rendering Index (CRI) of 80 or higher and Correlated Color Temperature (CCT) between 3000° and 4000° Kelvin based on application. To maintain consistency along common Campus areas, color temperature of new fixtures introduced to previously developed areas shall match or relate to the color temperature of the existing fixtures. • Dimming ballasts are not to be utilized for linear fluorescent sources. • All linear fluorescent lamps shall be low mercury content; LED sources and attendant components such as heat sinks shall be mercury and lead free. • Linear Fluorescent sources shall have a minimum rated source life of 35,000 hours. • LED arrays/modules shall be field replaceable whenever possible. If fixtures with integral LED boards (such as linear tape light) are specified, project shall identify such fixtures to the campus along with rated life of the fixture and anticipated replacement cost. • All LED sources shall be of proven quality from established and reputable LED manufacturers and shall have been fabricated after 2007.	

LIGHTING APPROACH

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
LIGHT SOURCE/LAMP PERFORMANCE	• LED manufacturer shall keep record of original bin for each LED module and have replacement modules from the same bin available for 3 years after date of installation. Manufacturer shall provide exact replacement parts, or provide upgraded parts that are designed to fit into the original luminaire and provide equivalent distribution and lumen output to the original. • LEDs shall comply with current ANSI/NEMA/ANSLG – Specifications for the Chromaticity of Solid State Lighting Products. Color shall remain stable throughout the life of the lamp. • The use of LED retrofit lamps is strongly discouraged unless no other option is available. If LED retrofit lamps a e to be utilized, documentation and sample of proposed lamp is to be provided to the campus and District for review and approval prior to procurement. • LEDs shall have a rated source life of 50,000 hours under normal operating conditions. Rated source life is defined as the time when a min. of 70% of initial lumen output remains.	

EXTERIOR LIGHTING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL FIXTURE PERFORMANCE	• All fixtures and assembled components shall be new, of good quality, and be approved by and bear the label of UL or other approved testing agencies, such as CSA and ETL for the applicable location and conditions (wet, damp, dry, etc). • Fixtures shall have a minimum IP rating depending on installation conditions as noted: - Fixtures installed under a canopy (fixture distance greater than 12" from edge of canopy): IP55 - Fixtures directly exposed to exterior or closer than 12" from edge of canopy: IP65 - Submersible/Underwater Fixtures: IP68 • All fixtures shall be provided with permanent factory installed wattage restriction label. • Lampholders shall hold lamps securely against normal vibrations and maintenance handling.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL FIXTURE PERFORMANCE	• Fixture Manufacturer shall have a minimum of 5 years of experience in the manufacture and design of products and systems. • All fixtures installed in exterior or unheated interior spaces shall be supplied with ballasts/transformers/drivers/power supplies rated for a minimum start temperature of 0°F unless otherwise directed by the District. • Fixture documentation shall include in writing a range of permissible operating temperatures and humidity ranges in which system/fixture will perform optimally. • All LED fixtures are to be provided with manufacturer's warranty of no less than 5 years on LED components, including light engine, driver, and power supply. • Design shall be sensitive to light intrusion into adjacent biological habitats, and adjacent residential properties, and great care must be taken to mitigate lighting trespass and glare. • Fixtures shall be full cut-off, unless specifically driven by design intent of project (such as the use of decorative light poles or pendants). • All uplight fixtures (surface or in-grade), or fixtures that directly illuminate pedestrian or vehicle areas shall include glare control options such as glare shields, louvers, and lenses. • All exterior area lights shall comply with Backlight, Uplight, and Glare (BUG) ratings as required by current state and local energy Codes. • When local, internal control technologies integral to fixtures (such as dimming, motion sensors, photocells) are available, such options shall be reviewed with the District to determine which options (if any) should be included. • LED fixtures and light engines shall comply with current Standards for Lumen Maintenance of LED Lighting Products. • Color changing LED luminaires shall utilize an equal combination of individually colored or tri or quad chip technology and shall be capable of at least 8-bit control. • Fixtures for use as security lighting will be on campus emergency generator. • All external openings in fixture assemblies and fixture	

EXTERIOR LIGHTING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL FIXTURE PERFORMANCE	lenses shall be gasketed to prevent moisture intrusion. • Remote components such as drivers, power supplies, and/ or transformers shall be installed in NEMA 4X enclosures. NEMA enclosures may be surface mounted if installed out of public view, or flush grade within vie. Ventilation/ Airflow within NEMA enclosure must be provided per manufacturer's specifications to ensure proper functioning of system. • Fixtures and component enclosures shall have wire mesh corrosion resistant screens over any vent holes. Mesh to be properly sized to prevent incursion of insects, small animals, and/or debris such as leaves or lawn clippings. • Project shall achieve light levels consistent with the recommended target light levels indicated in the current edition of the IES Lighting Handbook. In instances where the campus light level requirements exceed current IES Lighting Handbook recommendations, the campus light level requirements take precedence. • Light levels at areas of special concerns such as for sports facilities, security, and biological habitats shall be reviewed and approved by the District during the Design process. • Fixtures must be abuse resistant and reasonable to access, maintain, and clean. • Fixtures should be cost effective within a reasonable price range so as not to create difficulty in purchasing replacement fixtures in the future. Fixture costs to be reviewed by the District during the design process. • All fixtures are to be compatible with District's lighting control and dimming system Wattstopper. • Proposed fixture mounting height and mounting locations shall be reviewed with the District and college to confirm accessibility for maintenance and cleaning. Fixtures in stair areas are to be wall mounted no higher than 10'-0" above stairs. Ceiling mounted fixtures in stairwells should be avoided. • Recessed downlights shall be serviceable from below and have the appropriate housing (New Construction, IC) based on installation conditions.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL FIXTURE PERFORMANCE	• Proposed fixtures must be reviewed by the District and college during design to address any concerns prior to procurement and installation. In specific instances, especially with decorative fixtures, sample fixtures should be provided for review. • Fixtures mounted lower than 10'-0" AFG shall be vandal resistant (including lens), and fixtures and components must be firmly secured with tamper-proof, captive hardware. • All fixtures shall comply with wind load criteria and overhead safety requirements. Fixtures and proposed mounting to be reviewed and approved by a licensed Structural Engineer prior to installation. • Foundations are required for all fixtures mounted on or in grade. In the case of poles, foundation details are to be developed by Structural Engineer; footings/ pads for bollards and surface mounted accent fixtures may be developed by Architect or Structural Engineer. • Design team shall verify design and structural integrity of complete foundation (including concrete dimensions, rebar requirements, grounding and conduit requirements, drainage and ground compaction requirements) during the project documentation process. • Adjustable fixtures shall include positive aiming and locking devices to secure fixture focus. Final aiming angle of fixture shall be indicated with small tick marks or similar marking to allow fixture focus to be restored by campus staff after maintenance or lamp replacement. • Identification tags are to be mounted to fixtures at poles, bollards, surface accent fixtures, and NEMA enclosures with remote components for ease of maintenance. Tags shall include information such as fixture type number, lamping, and circuiting information for ease of maintenance. Tags are to be installed out of public view whenever possible and installed prior to project completion.	

EXTERIOR LIGHTING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
FINISHES & MATERIAL PERFORMANCE	• Stainless steel hardware is to be used unless otherwise discussed and approved. Ferrous/ aluminum mounting hardware and accessories shall be finished appropriately to prevent corrosion and discoloration of adjacent materials. • Painted finishes of fixtures and all exposed accessories and components shall be a powder coat, weatherproof enamel using proper primers, or hot dipped galvanized and bonderized epoxy. All finishes are to be factory applied- in field finishing (with the exception of touch u painting) is not acceptable. • Manufacturer to provide touch up paint to campus for all painted fixtures. • All powder coated/ painted surfaces shall have a warranty of twenty years. • Glass lenses shall be heat tempered glass to mitigate breakage and thermal shock. • Acrylic/ Polycarbonate lenses shall be UV stabilized and of the appropriate thickness to prevent damage from vandalism.	
SPECIFIC FIXTURES: LIGHT POLES	• Light poles shall provide illumination not only on grade surface, but also illuminate approaching pedestrians and/or vehicles to enhance safety, visual acuity, and wayfinding. • Poles shall be aluminum rather than steel or iron. • Poles shall be provided with tilting bases when less than 18' tall for ease of maintenance. • Pull boxes shall be installed adjacent to poles and mounted towards the back side of pole out of public view whenever possible. • Wind Load calculations for pole with light fixtures and all other attendant elements (such as security cameras and banners) to be performed by the Pole Manufacturer/ Structural Engineering to ensure that pole assembly meets wind load criteria. Refer to General Exterior Fixture Performance for additional information. • Concrete foundation to be provided to ensure that fixture remains level and secure. In Landscape areas, foundation is to elevate the fixture base at best 6" above grade to prevent damage from landscape maintenance and	

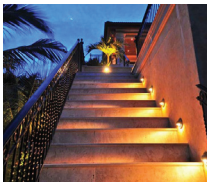
SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SPECIFIC FIXTURES: LIGHT POLES	corrosion. • Minimum 3' tall concrete plinths shall be utilized in open parking lots and roof decks; Plinth detail to be reviewed and approved by Structural Engineer based on wind load calculations of pole with fixtures and all other components fixed to pole included • Adjustable fixtures mounted to poles shall include positive aiming and locking devices to secure fixture focus. Final aiming angle of fixture shall be indicated with small tick marks to allow fixture focus to be restored by campus after maintenance or lamp replacement. • Label with installed fixture information (such as Type number, lamping, circuit number) shall be prominent on top of remote devices' NEMA box lids. • House side shields are to be utilized for all fixtures adjacent to biological habitats and adjacent residential community areas.	
SPECIFIC FIXTURES: BOLLARDS	• Bollards shall provide illumination not only on grade surface, but also illuminate approaching pedestrians and/or vehicles to enhance safety, visual acuity, and wayfinding. • Light source to be regressed or shielded from direct view by glare control options such as lens, louvers, and glare shields. • Concrete foundation to be provided to ensure that fixture remains level and secure and to prevent removal or settling of fixture in softscape. Foundation is to elevate the fixture base 6" above landscaped grade to prevent damage from landscape maintenance and corrosion. • In instances where vehicle-impact rated bollards are required (in traffic areas), bollards shall be a minimum K4 rating, and bollards footing shall be detailed, furnished, and installed based on manufacturers recommendations. • Pull boxes shall be installed adjacent to bollards and mounted towards the back side of pole out of public view whenever possible.	

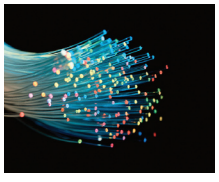
EXTERIOR LIGHTING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SPECIFIC FIXTURES: IN-GRADE ACCENT, WALL WASH, & MARKER LIGHTS	• In-grade fixtures are discouraged and only used in special cases with approval of District and college. Installations must be executed in accordance with manufacturer's installation requirements. • There should be drainage provided in accordance with manufacturer's installation requirements. • Internal glare control and/or frosted lenses shall be provided in all fixtures when direct view into fixtures is possible. • Fixtures shall include anti-slip and heat reduction lenses in pedestrian areas. • Rock guards to be provided for fixtures in non-pedestrian areas. • Fixtures, if used, shall be drive-over rated for vehicular traffic areas. • If fixture is integrated in a tree grate, fixture trim shall be secured to grate and flush with the top of grate.	
SPECIFIC FIXTURES: SURFACE-GRADE ACCENT LIGHTS	• Surface fixtures may be installed in non-pedestrian, non-vehicular areas only. • Fixtures shall be mounted on concrete base/pad to ensure that fixture remains level and secure and to prevent removal or settling of fixture in softscape. The pad is should elevate the fixture base 6" above grade to prevent damage from landscape maintenance and corrosion. • Fixtures shall be specified with glare control options such as lens, louvers, and glare shields. • Surface fixtures within reach must be LED and cool to the touch. • Pull boxes shall be installed proximal to fixtures and mounted out of public view whenever possible.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SPECIFIC FIXTURES: UNDERWATER/ SUBMERSIBLE FIXTURES	• Fixture cables shall be of sufficient length to allow fixtures to be removed from water for maintenance. • Fixtures shall be low voltage, and have temperature sensing low water cut-off standard for safety. • Fixtures shall be made of non-corroding materials, such as cast bronze, nickel plated brass, nickel plated copper, stainless steel, or polycarbonate. • Fixture lens shall be heat-resistant tempered glass lens and gasketing to prevent water intrusion. • Adjustable fixtures to include lockable mounting hardware to secure fixture aiming. • All junction boxes used in water are to be submersible grade and potted as required to prevent water intrusion. • All cabling used in water to be submersible grade. • All underwater fixture circuits to be protected by GFIs. • Remote drivers/transformers shall be installed in in-grade NEMA boxes in landscape areas or surface mounted out of public view.	
SPECIFIC FIXTURES: TREE MOUNTED FIXTURES	• Use of tree mounted fixtures shall only be used when approved by District and college for specific installations • Rigid conduit shall stub up at base of the tree and continue circuiting up the tree with neutral color liquid-tight flexible conduit supported to tree by non-invasive methods such as straps or cable ties. Opening in rigid conduit should be sealed/ gasketed to prevent water intrusion. • Fixtures shall be mounted to tree with soft, preferably self-expanding straps, or with adjustable tree rings. In no circumstances shall fixtures be bolted or clamped to trees. The District must approve mounting methods and devices prior to installation. • Tree mounted fixtures shall be provided with 6 ft of excess cable to allow for fixture adjustment as tree grows. • Pull boxes shall be installed proximal to fixtures and mounted out of public view.	

EXTERIOR LIGHTING

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SPECIFIC FIXTURES: STEPLIGHTS	• Blocking shall be provided as required to adequately support fixture. Housings shall be secured in structure to prevent sagging or displacement. • Fixture faceplate shall be made of non-corroding materials, such as powder coated aluminum, stainless steel, or polycarbonate to prevent rust streaking/ staining on vertical wall surfaces. • Lenses should be impact resistant and fixture trims and frames should include vandal-proof hardware. • In the case of surface mounted steplights, concrete pad or foundation should be provided to ensure that fixture remains level and secure and to prevent removal or settling of fixture in softscape. Pad should elevate the fixture base slightly above grade to prevent damage from landscape maintenance and corrosion.	
SPECIFIC FIXTURES: SURFACE WALL MOUNTED FIXTURES	• Fixture shall be provided with glare control accessories to mitigate glare in the case of direct view into fixture. • Blocking to be provided as required to adequately support fixture and fixtures are be mounted with a minimum of 2 points of connection to ensure that fixtures remain level. Fixtures in excess of 5 lbs. are not to be mounted directly to junction boxes for support. • Larger fixtures or fixtures that project beyond 12" from face of wall are to include cantilevered mounting brackets and/or safety cable mounted to independent support. Safety cable should be installed within fixture arms or mounting brackets out of public view. Mounting and installation of all such fixtures to be reviewed and approved by licensed Structural Engineer and also approved by District and college for acceptance.	
SPECIFIC FIXTURES: PENDANTS/ CEILING MOUNTED FIXTURES	• All Fixtures must be easily accessed for maintenance and must be accessed without using a lift. • Fixture shall include aircraft-grade safety cable; cable to be mounted within fixture stem out of view whenever possible. Safety cable specification and cable mounting details to be determined/approved by Structural Engineering. • Only use fixture on specific project basis when approved	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SPECIFIC FIXTURES: PENDANTS/ CEILING MOUNTED FIXTURES	by District and college. • To mitigate fixture maintenance issues in high ceiling or difficult to access areas, lowering system approved by Structural/Electrical Engineering may be considered. District and college to review and approve any lowering systems prior to installation. • In the case of festoon fixtures, fixtures are to be suspended/supported from aircraft grade catenary cable rather than electrical cable. Catenary cable specification and cable mounting details to be reviewed and approved by licensed Structural Engineer.	
SPECIFIC FIXTURES: LINEAR ACCENT/COVE FIXTURES	• All fixtures must be safely accessible either from façade with a ladder. • If coves are exposed, weep holes and/or other water evacuation devices to be provided so fixtures do not become submersed in cove. • Fixtures to be secured against normal vibrations and maintenance handling.	
SPECIFIC FIXTURES: INTERNALLY ILLUMINATED LIGHT BOXES	• Light boxes shall be fully gasketed to prevent water, moisture, and dust intrusion. • Translucent lenses shall be UV stabilized and the appropriate thickness to prevent damage from vandalism when the light box is within reach. • Light box shall be easily accessible with a ladder for proper maintenance. • Ventilation to be provided as required to ensure proper fixture performance and lamp life.	
SPECIFIC FIXTURES: FIBER OPTIC LIGHTING	• Fiber Optic Illuminators shall be mounted in an accessible location. • If illuminators are installed in NEMA 4X enclosures, proper Ventilation/Airflow must be provided as per manufacturer's specifications to ensure proper functioning of system. • Fiber to be installed in such a way as to prevent damage to cables under normal conditions over time. • Fiber fixtures to be sealed against water intrusion.	

Division 27

COMMUNICATIONS/TECHNOLOGY

COMMUNICATIONS GENERAL PROVISIONS

The intent of the Communications and AV Technology Standards is to provide design guidelines for a robust technical infrastructure that facilitates the use of the multimedia, data and communications systems that today's educational environments demand but remain prudent in cost. The standards have been developed to yield facilities and spaces that have the flexibility to utilize both current and future technologies but final project design must be balanced with the project budget. Refer to the Appendix for additional District information on the Communications/Technology, and cabling requirements.

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
APPLICABLE INDUSTRY STANDARDS TO REFERENCE	• ANSI/TIA-569-C Telecommunications Pathways and Spaces • ANSI/TIA-1005-A Telecommunications Infrastructure Standard for Industrial Premises • ANSI/TIA-942 Telecommunications Infrastructure Standard for Data Centers • ANSI/TIA-607-B-1 Generic Telecommunications Grounding (Earthing) and Bonding for Customer Premises	
APPLICABLE DISTRICT STANDARDS TO REFERENCE	• Grossmont Cuyamaca Community College District Network Cable and Fiber Specifications and Installation Procedures. (Appendix) • Space Standards Sections 3 • Information in the Appendix	

COMMUNICATIONS OUTLET INFRASTRUCTURE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
WALL & CEILING MOUNTED OUTLET CONDUIT	• Outlet conduit shall serve no more than one communications outlet. Daisy chaining of outlets is never allowed. • Conduit shall be 1" or 1-1/4" EMT per horizontal communications cable selection of Cat-6 or Cat-6A. The category type of the cable will vary per building and per campus latest cabling standards. • Conduits shall run level, straight and parallel to building walls. • Conduit shall be Schedule 40 PVC when underground or in an inside/outside scenario.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
WALL & CEILING MOUNTED OUTLET CONDUIT	• Conduit shall be supported every 10 feet minimum and within 3 feet of each communications outlet box. Refer to the latest NEC codes for requirements on conduit support. • Conduit shall extend to cable tray or wire basket where not accessible at any point within the run. • Run shall contain no continuous sections longer than 100 feet. If runs total more than 100 feet, a properly sized pull box shall be provided. • Run shall contain no more than two 90 degrees of bends at any point or more than 180 degrees of cumulative bends between pull boxes. • Reamed at the end Provide Bushing • A nylon 1/8" Minimum pull cord shall be installed within all conduits to allow the ability to pull future cabling. • Maintain minimum bend radius of 6 times the internal diameter for conduits sizes up to 2". • Maintain minimum bend radius of 10 times the internal diameter for conduits sizes greater than 2". • Do not use a pullbox in lieu of a bend radius for any conduit. Bend radius must always be produced within the conduit. • All conduit ends shall be reamed and fitted with bushings to reduce the amount of damage of cables due to any sharp edges.	
WALL & CEILING MOUNTED OUTLET BACKBOX	• All mounting heights are to the center line of the device backbox unless noted otherwise in the construction documents. • All boxes shall be flush mounted and concealed. • Electrical outlets shall be provided within 12" of communication outlets at equal height. • For outlets utilizing Category 6 communications cabling provide a 4S deep square box at minimum with a single gang mudring. • For outlets utilizing Category 6A communications cabling provide, as a basis of design to support the larger bend radius requirements provide a Siemon 5 square box (or equivalent) complete with radius & slack management posts, with a single gang mudring.	

COMMUNICATIONS OUTLET INFRASTRUCTURE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
WALL MOUNTED BOX FOR FLAT PANELS	• The purpose of the back box is to contain and organize associated power outlets, data, signal connections, and electronics. • See box requirements under Audiovisual Infrastructure Design Criteria.	
FLOORBOX WITH AUDIOVISUAL & POWER	• Floor boxes with data, AV and power shall contain and provide easy access to data, communication and AV connections, as well as power outlets for equipment to be used in their vicinity. • See box requirements under Audiovisual Infrastructure Design	
POKE-THRU WITH AUDIOVISUAL & POWER	• Conduit for the communications outlet shall integrate into the communications plate provision of the assembly.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
FLOORBOX WITH DATA & POWER	• Floor boxes shall contain and provide easy access to data, as well as power outlets for equipment to be used in their vicinity. The construction of the Floor Box with data and power should permit installation in on-grade, above-grade and shallow floors • The floor box with data and power shall maintain segregation of low voltage signals from power with dedicated compartments for data and power. • The floor box with data and power shall be equipped with adjustable feet, mount flush with the floor and permit unimpeded travel and meet Accessibility Guidelines. • The floor box with data and power shall utilize moveable barriers and brackets to form partitions, mount connectors and duplex receptacles as required. • Floor boxes with data and power shall have covers in a variety of finishes that are "scrub proof", preventing liquids from entering the box when floors a e mopped or cleaned. • On and above grade floor boxes with data and power shall be of steel construction and have minimum dimensions of 13"L x 6"W x 3"D. • Shallow floor boxes with data and power shall be of steel construction and have minimum dimensions of 13"L x 6"W, with a depth not greater than 2-5/8". • Must be capable of accommodating a minimum two 20 amp 120VAC electrical circuits and 12 CAT-6 data circuits. • Box should have at a minimum, three (3) 1" concentric knockouts, one (1) 1.25" Knockout, and one (1) 2" knockout. • Floor box covers should be manufactured to meet requirements for cast in concrete environment. The covers should have the capability to accept tile or carpet inserts or solid covers. • Conduits feeding floor box need to accommodate the fil ratio for power and data cables being installed at the specific location. Coordinate final configuration with IT P	

COMMUNICATIONS OUTLET INFRASTRUCTURE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
FLOORBOX WITHIN RAISED FLOOR	• Must be capable of accommodating a minimum two 20 amp 120VAC electrical circuits and 12 CAT-6 data circuits • Box should have at a minimum, three (3) 1" concentric knockouts, one (1) 1.25" Knockout, and one (1) 2" knockout. • Floor box covers should be manufactured from die-cast aluminum with powder coat finish. The covers should have the capability to accept tile or carpet inserts or solid covers. • Conduits feeding floor box need to accommodate the fil ratio for power and data cables being installed at the specific location. Coordinate final configuration with IT P	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
POKE-THRU WITH FURNITURE FEED, DATA & POWER	• Poke Through Floor Boxes for furniture feed shall contain and route data, as well as power through separate compartments to one 3/4" conduit opening and one 1-1/4" – 2" concentric conduit opening in the cover plate. • Poke Through Floor Boxes with Data and Power for Furniture Feed • Poke Through Floor Boxes for furniture feed shall contain and route data, as well as power through separate compartments to one 3/4" conduit opening and one 1-1/4" – 2" concentric conduit opening in the cover plate. • Poke Through floor boxes for Furniture Feed shall have a service head diameter of less than 8" and mount in a 6" cored hole. • Poke Through floor boxes for Furniture Feed for use with furniture shall contain fi e stop material and be capable of maintaining the fire rating for 2-hour rated floors • Poke Through floor boxes shall accept conduit up to 2" in diameter for communications wiring.	

GENERAL COMMUNICATIONS CONDUITS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
POINT TO POINT COMMUN. CONDUITS	• Conduits shall be supported every 10' at minimum. Refer to the latest NEC codes for requirements on conduit support. • Conduits shall run level, straight and parallel to building walls. • Where conduit needs to run within a non-accessible ceiling space to reach the cable tray or wire basket, individual smaller communications outlet conduits shall congregate into a properly sized junction box within a nearby access panel. A properly sized larger conduit, 2" minimum, shall then extend into the cable tray or wire basket. • Where cable tray runs within vaulted or open ceilings, individual smaller conduits serving areas including but not limited to offices, conference rooms etc. shall extend into the nearest accessible ceiling space. A properly sized larger	

GENERAL COMMUNICATIONS CONDUITS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
POINT TO POINT COMMUN. CONDUITS	conduit, 2" minimum, shall then extend from the smaller conduits and into the cable tray within the vaulted or open ceiling. • Conduits shall run level, straight and parallel to building walls. • Conduit shall be Schedule 40 PVC when underground or in an inside/outside scenario. • Conduit shall be supported every 10' minimum and within 3 feet of each communications outlet box. Refer to the latest NEC codes for requirements on conduit support. • Conduit shall extend to cable tray or wire basket where not accessible at any point within the run. • Run shall contain no continuous sections longer than 100'. If runs total more than 100', a properly sized pull box shall be provided. • Run shall contain no more than two 90° of bends at any point or more than 180° of cumulative bends between pull boxes. • Reamed at the end Provide Bushing • A nylon 1/8" minimum pull cord shall be installed within all conduits to allow the ability to pull future cabling. • Maintain minimum bend radius of 6 times the internal diameter for conduits sizes up to 2". • Maintain minimum bend radius of 10 times the internal diameter for conduits sizes greater than 2". • Do not use a pullbox in lieu of a bend radius for any conduit. Bend radius must always be produced within the conduit. • All conduit ends shall be reamed and fitted with bushings to reduce the amount of damage of cables due to any sharp edges. • All conduits shall have a blue/green banding & labeled "TEL/DATA USE ONLY" on both ends.	
COMMUN. CONDUITS SLEEVES	• Contractor shall provide 2" sleeves into each room to access communications outlets wherever a point to point conduit or cable tray or wire basket is not provided.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL COMMUN. CONDUIT FILLS	• 28%: Recommended fill ratio for the cable capacity of horizontal pathway conduits that have no more than two 90 degree bends (180 degrees total) and are no longer than 100 ft. (Per BICSI TDMM) • 40%: Recommended fill ratio for initial installation of cable in furniture and horizontal pathway. (Per BICSI TDMM) • 60%: Recommended fill ratio allowed to accommodate unplanned additions after initial installation. This fill ratio range may be used as an estimate and does not account for corners and other factors. (Per BICSI TDMM) • 100%: BICSI standards specify that a 100% fill capacity is permissible for a straight sleeve not exceeding 10 feet in length.	

GENERAL COMMUNICATIONS CONDUITS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SURFACE MOUNT RACEWAY	• Raceway will be a minimum dual channel raceway for branch circuit wiring and data network, voice, audio video low voltage wiring. • Raceway should be manufactured from aluminum alloy and be UL Listed. • Should feature a two piece design with a base and a snap-on cover. • Minimum size should be a minimum of 8 sq. inches of internal volume space of which 4.5 sq. inches for the data compartment and 3.5 sq. inches for the electrical compartment.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
COMMUN. WIRE BASKET WITHIN ACCESSIBLE DROPPED CEILING	• Wire basket shall be mesh type webbing. • Construction shall be made of steel with a galvanized finish. • Minimum 12" wide by 4" deep. Refer to cabling design which varies per project for proper sizing of wire basket. • All attachments shall be of the same manufacturer of the wire basket. • Wire basket extending through a wall or partition shall utilize suitable fi e stopping materials. • Wire basket shall be cut in accordance with manufacturer's instructions. • Allow access to wire basket 12" clearance measured from the top surface of the basket. Access from sides shall be 6" to 12". • Support wire basket minimum every 5'.	
COMMUN. SOLID BOTTOM CABLE TRAY WITHIN VAULTED OR OPEN CEILING	• Construction shall be made of steel with a hot dip galvanized finish. • Finish shall allow final field powder coating of same color of neighboring Mechanical, Electrical and Plumbing entities. • Cable tray shall be a minimum 12" wide by 4" deep but may need to be larger. Refer to cabling design which varies per project for proper sizing of cable tray. • All attachments shall be of the same manufacturer of the cable tray. • Cable tray extending through a wall or partition shall utilize suitable fi e stopping materials. • Cable tray shall be cut in accordance with manufacturer's instructions. • Allow access to cable tray 12 inches clearance measured from the top most surface of the tray. Access from sides shall be 6" to 12". • Support cable tray minimum every 5'.	

AUDIOVISUAL SYSTEMS AND INFRASTRUCTURE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TECHNICAL POWER SYSTEM DISTRUB. REQUIREMTS	• The audio and video systems shall require a power system dedicated for sensitive technical equipment loads. This Technical Power Distribution System (TPDS) shall be designed as a separately derived system with the addition of an isolated ground. This system is to be used only for AV technology. The requirements for this system are as follows: • This separately derived system shall originate at a dedicated isolation transformer with a 208/120 volt, three-phase, four-wire, WYE wound secondary. This transformer shall be equipped with a Faraday shield between the primary and secondary windings. This transformer shall be sized to meet TPDS electrical loads. • This transformer shall not be located in a room with AV equipment racks. • All TPDS panels shall be kept free from any non-technical loads. These panels shall not be used for any convenience outlets, utility outlets, lighting, emergency lighting, or other such branch circuits or loads. Panels for the TPDS shall be fed with neutrals rated for 200 percent service and furnished with neutral buss bars rated for 200 percent service. All panels for the TPDS shall be provided with a bonded equipment ground buss bar per NEC and an isolated ground buss bar. • The isolated ground buss in the TPDS main distribution panel shall be tied to the nearest facility grounding electrode by a minimum #1/0 AWG stranded copper insulated wire. Aluminum wire is not acceptable in this location. • The conductors from isolated ground buss bars located in the TPDS subpanels to the TPDS main distribution panel isolated ground buss bar shall be the same AWG stranded copper insulated wire as the equipment ground conductor or #1/0 AWG stranded copper insulated wire whichever is larger. Aluminum is not acceptable in this location. • Each isolated ground duplex or quad, and each isolated ground circuit to j-boxes of the TPDS, shall be supplied from a separate 20A/120VAC branch circuit. • Each individual branch circuit of the TPDS will require four wires hot/phase, neutral, equipment ground, and isolated ground. Neutral conductors and isolated ground conductors shall not be shared between branch circuits. • Unless otherwise noted, locate all TPDS receptacles and	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TECHNICAL POWER SYSTEM DISTRUB. REQUIREMTS	power j-boxes adjacent to AV system wall plates and technical panels. • Provide a transient voltage surge suppressor sized to protect the TPDS.	
CONDUITS & WIREWAYS	• Conduits for AV and data signals shall be not less than 2" in diameter and sized so as not exceed 40% fill • All conduit shall be Electrical Metal Tubing (EMT) or Intermediate Metallic Conduit (IMC).PVC conduit is unacceptable for interior use. • Exterior conduit should be Schedule 40 PVC and transition from PVC to galvanized rigid steel (GRC) or must be contained within a galvanized metal sleeve from a distance of 24" from the foundation to 6" within the building. • All conduit connectors shall be furnished with nylon bushings and chase nipples to prevent damage to cables from burred or unevenly cut conduit. • Bends shall not kink or destroy interior cross-section of conduit. • Keep 90 degree bends to a minimum. The conduit system shall not have more than three 90 degree bends or their equivalent (270 degrees) between pull boxes. • Bend radius shall be 6 times internal diameter for conduit sizes up to 2". Conduit greater than 2" shall have a bend radius at least 10 times diameter of conduit. Do not use a pull box in lieu of a bend radius. • Do not install conduit over or adjacent to boilers, incinerators, hot water pipes or steam lines. • All pull boxes and AV boxes shall be at least 3.5" deep. • Install nylon pull strings in all conduits. • All AV-related junction boxes and stub-outs shall remain accessible at all times. • All exposed conduit shall be routed parallel or perpendicular to structure above. • Wire pathway length should be minimized and conduit should stub up into the ceiling of the space that it serves, except in special conditions. • Conduits stubbed-up to accessible ceiling must extend 6" above ceiling.	

AUDIOVISUAL SYSTEMS AND INFRASTRUCTURE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	• Signal cable paths should be kept as far away as possible from sources of electrical noise; fluorescent lights, transformers, motors, elevator relays, radio transmitters for burglar alarms, and similar sources of noise. • Signal and electrical power wire paths shall be a minimum of 36" apart if running in parallel for a distance of more than 60".	
BOXES	• Boxes shall be made of rigid steel or galvanized zinc. • Boxes shall be made of rigid steel or galvanized zinc. • AV Boxes shall be min. 4" x 4" x 6" deep recessed behind the finished wall. • Larger boxes shall be sized to accommodate conduit design and cable fill • Boxes shall have plaster rings sized appropriately to accommodate AV panel fill or V device. • Try to avoid use of floor boxes if possible.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
FLOOR BOXES	• AV floor boxes shall contain and provide easy access to data, communication and AV connections, and power for equipment to be used in their vicinity. Two types of boxes shall be used: those that mount in on grade floors conditions and those that mount above grade floors conditions. Floor boxes shall be installed to prevent any water infiltration • All floor boxes shall maintain segregation of low voltage signals from power with dedicated compartments for AV, data and power. • All floor boxes shall have covers that meet UL scrub water requirements, preventing liquids from entering the box when floors are mopped or cleaned. • On grade floor boxes shall be capable of height adjustment before and after concrete pour and shall mount flush with the finished floor. • On grade floor boxes shall be rectangular and manufactured from stamped steel approved for use in above grade and on-grade floor applications. Box shall have minimum dimensions of 15”L x 11”W x 6”D with a min. of 11 gangs. Floor box covers shall have provision for attaching carpet or tile and low profile edging for flooring protection. The covers shall open a full 180 degrees. • Above grade poke-thru boxes shall mount in an 8” cored hole and have a 2 hour fi e rating. • Floor boxes shall accept conduit up to 2” in diameter for communications wiring. • Must be capable of accommodating a minimum two 20 amp 120VAC electrical circuits and 12 CAT-6 data circuits • Box should have at a minimum, three (3) 1” concentric knockouts, one (1) 1.25” Knockout, and one (1) 2” knockout. • Floor box covers should be manufactured to meet requirements for cast in concrete environment. The covers should have the capability to accept tile or carpet inserts or solid covers. • Conduits feeding floor box need to accommodate the fil ratio for power and data cables being installed at the specific location. Coordinate final configuration with IT P	

AUDIOVISUAL SYSTEMS AND INFRASTRUCTURE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CEILING MOUNTED SPEAKERS	• The enclosure shall have provision for the connection of conduit and signal wire terminals capable of "loop through" connections with strain relief. • Speaker housing shall have provision for the attachment of safety wire or straps to secure the assembly to the structure. • The speaker shall be a full range (6 ohm (nominal)transducer, with min. size 5", attached to a vented, paintable baffle • The speaker shall be equipped with a transformer for use in 70.7 and 100 volt distributed audio systems. • The transformer and impedance settings shall be selected by switch settings on the front baffle • The speaker shall be equipped with a weather resistant steel grille. - Speaker frequency response shall be 85Hz – 22kHz (-3dB) with a range of 68Hz – 18kHz (-10dB). - The speaker will provide 170° dispersion and 105° coverage in the 1kHz – 6kHz range.	
SMART CART - AV LECTERN	• The Smart Cart /AV lectern shall function as a caster-mounted, mobile desk/work surface combined with an instructional lectern that is capable of organizing and securely storing AV and data equipment typically required in support of classroom instruction and presentations. Casters shall be locking. • The cart shall house and provide power outlets and adequate ventilation for a tower-type PC, up to 14 RU of standard 19" rack-mounted equipment and ancillary electronics. • Back of lectern will include a lockable hinged door behind equipment rack keyed differently than presenter's side door. • The cabinet doors (presenter's side), shall be secured by means of a key lock and swing a full 270 degrees. • The Smart Cart/AV lectern shall have an option for pull-out, or flip-up side support for a document camera and secure storage. • Enclosed equip. areas shall have provision for fan ventilation. • Near its base, the cart shall have holes with grommets for the entry of signal and power cabling. • The top surfaces may be equipped with AV/Data connectivity centers as well as cutouts to accommodate third party AV controls. • There shall be pull-out shelves for a computer keyboard. • Equipment in the Smart Cart/AV lectern shall be connected to the AV systems via a floor box at the lectern location	

AUDIOVISUAL SYSTEMS AND INFRASTRUCTURE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
WALL MOUNTED FLAT SCREEN DISPLAYS	• The wall to which the display will be mounted shall be re-enforced sufficiently to support a designed load of 200 pounds for most displays (46 - 65 inches). Larger displays will exceed this criteria and require additional coordination. • Structural backing shall cover an area not less than 36" wide by 26" high and shall be centered horizontally and vertically on the center point of the display. • The design of a flat panel niche is highly recommended to reduce the possibility of the flat panel display protruding beyond the ADA requirements. A minimum clearance of 2" on all side of the display is required. • The purpose of the back box is to contain and organize display-associated power outlets, data, signal connections and electronics, such as signal processors and power supplies, behind a wall-mounted flat screen display. • The back box shall mount flush with the finished wall surface and fit between either metal or wood wall studs • The box shall have a cover with cable pass-through holes and ventilation. • The box shall be constructed of 16 gauge steel and have internal dimensions not less than 14"w x 10"h x 6"d. • The back box shall accept conduit up to 2" in diameter for communications wiring and at least (2) knockouts for single gang electrical boxes for power and data as needed. • All of the infrastructure must be hidden by the flat-panel display.	
CEILING MOUNTED PROJECTORS	• The facility surface to which the projector mount will be attached shall be prepared to support the weight of the specified projector and mount, provide suitable attachment points for the projector mount. • The projector mount shall consist of two components: the suspended ceiling kit and the actual mounting hardware. The entire assembly shall provide a secure, lockable attachment point for projectors to be mounted overhead. • The suspended ceiling kit shall provide a stable and rigid platform designed for installation on top of a standard 2' x 2' grid suspended ceiling and have a minimum weight bearing capacity of 125 pounds, depending on load attachment point.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CEILING MOUNTED PROJECTORS	• This platform shall be attached to structure above with cables and hardware permitting height adjustment and secure, load-bearing support. • The platform shall have provision for the attachment of signal connections as well as power outlets for the projector. • The platform shall have a minimum of 2 knockouts for single gang electrical boxes to accommodate signal connections as well as power outlets for the projector. • The platform shall have multiple mounting hole positions with 1-1/2" NPT threads to accept a projector mounting pipe.	
CEILING MOUNTED MOTORIzED PROJECTION SCREEN	• The facility surface to which the screen will be attached shall be prepared to support the weight of the specified screen assembly, provide suitable attachment points for mounting. • The projection screen shall be an electric roll-down unit capable of low voltage control by means of a three-button raise/lower/stop wall switch and an interface to permit control by means of a third party control system. • The non-technical power is to be derived from a system separate from the AV technical power. • The projection screen switch shall be mounted on wall with other switches with an additional controller mounted on the smart cart. • The projection screen shall have a 16:10 aspect ratio. • Screen fabric shall be flame retardant and mildew resistant fiber glass with black masking borders. Viewing surface shall be matte white with viewing angle of 60° and gain of 1.0. Lights in front of the screen shall be on separate switch. • Case shall be a white powder coated aluminum extrusion, and to shall be self-trimming with a built-in flange around the bottom. • Though configurations, exact specifications and capacities may vary, the spaces requiring projection will typically fall into the following groups and should be equipped with the projection screens of the approximate indicated sizes.	
AV TIE LINES	• AV tie lines are off-network. They are straight through cables, and may consist of CAT6, shielded twisted pair or fiber between locations	

Division 28
ELECTRONIC SAFETY + SECURITY

General Approach - The District takes a proactive approach to the security and safety of both campuses. The design of all new projects should incorporate CEPTD (Crime Prevention through Environmental Design) design principles and best practices for creating safe and secure environments for the users. The District augments the CEPTD design approach with electronic security systems including security cameras and monitoring, intrusion systems, and electronic card access to different spaces. Performance criteria for those systems are outlined in this Division. Also refer the Division 26 for additional information. The District is using Bosch Security Systems, Inc. to provide security camera monitoring system and intrusion alarm systems and Millennium Group, Inc. These manufacturers should be specified for these systems.

The intent of the Emergency Notification System (ENS) standard is to provide design guidelines for an extension of existing ENS technology to support new structure construction; the design of such systems to be in compliance with structure configuration and budget constraints. An ENS provides broad-based notification to pertinent on-campus spaces in the event of a crisis or emergency, including natural disasters and acts of terrorism. Emergency communications management is concerned with policies, procedures, and operations that function in concert with an ENS and are established and not included in this standard. The tools involved in an ENS can be as simple as external sirens or as complex as solutions that combine elements such as a campus website, telephony, e-mail, text messaging, digital signage, network pop-ups, and RSS feeds. This standard criteria addresses two of the elements; paging systems and fire alarm panels with voice enunciation.

FIRE ALARM SYSTEM

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL	• The Fire Alarm system shall be provided by SimplexGrinnell and interface with the system on both campuses via the existing Simplex fi e alarm network. • The Fire Alarm system will also be an emergency voice alarm communication system and shall incorporate addressable notification appliances. • The system shall be digital addressable type. • A new intelligent reporting, Class 'A' networked, fully peer-to-peer, microprocessor-controlled fi e detection and emergency voice alarm communication system shall be installed in new projects and updated in renovated projects.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
FUNCTIONAL OPERATION	• Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded on NFPA Style 4 (Class B) Signaling Line Circuits (SLC). • Initiation Device Circuits (IDC) shall be wired Class B (NFPA Style B) as part of an addressable device connected by the SLC Circuit. • When fi e alarm condition is detected and reported by one of the system alarm initiating devices, the following functions shall immediately occur: - System Alarm LEDs shall flash - Local Piezoelectric Signal in Control Panel shall sound at a pulse rate. - 80-Character LCD Display shall indicated all information associated with fi e alarm condition, including type of alarm point and its location within protected premises. - Historical Log: Record information associated with fi e alarm control panel condition, along with time and date of occurrence. - System output programs assigned via control-by-event equations to be activated by particular point in alarm shall be executed, and the associated system outputs (alarm notification appliances and/or relays) shall be activated. - Audio Portion of System shall have sound tone (California Temporal Pattern) until system is reset.	

FIRE ALARM SYSTEM

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
FUNCTION-ALITY	• Provide complete, electrically supervised distributed, Class 'A' networked analog/addressable fi e alarm and control system, with analog initiating devices, and integral multiple-channel voice evacuation. • The system shall consist of multiple-voice channels with no additional hardware required for total of 4 channels. • The system shall incorporate multiprocessor-based control panels, including Simplex TrueSite Work Station, Intelligent Loop Interface (IDNET), Intelligent Network Transponders (Mini-Plex), communicating over peer-to-peer token ring network with capacity of up to 150 nodes. • Each 4100 Node: Incorporate Signaling Line Circuits (SLC), with capacity to support up to 250 analog addressable devices per SLC. • Transmit voice data over single pair of wires or fiber optic cable. • Each Network Node: Incorporate Boolean control-by-event programming, including as a minimum AND, OR, NOT, and Timer functions. • Control Panels shall have the capability to accept firmware upgrades via connection with laptop computer, without requirement of replacing microchips. • The Network shall be based on peer-to-peer token ring technology operating at 57.6 K baud, using Class 'A' configuration (if applicable) and have the capability of using twisted-pair wiring, pair of fiber optic cable strands up to 200 microns, or both, to maximize flexibility in system configuration • Each Network Node shall have: - Capability of being programmed off-line using Windows-based software supplied by fi e alarm system manufacturer and the capability of being downloaded by connecting laptop computer into any other node in system. Systems that require system software to be downloaded to each transponder at each transponder location are not acceptable. - Capability of being grouped with any number of additional nodes to produce a "Region", allowing	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	that group of nodes to act as 1, while retaining peer-to-peer functionality. Systems utilizing "Master/ Slave" configurations are not acceptable. - Capability of annunciating all events within its "Region" or annunciating all events from entire network, on front panel LCD without additional equipment. • Each Control Panel shall have the capability of storing its entire program, and allow installer to activate only devices that are installed during construction, without further downloading of system. • Each system shall be provided with 4 levels of password protection with up to 16 passwords.	
AUTOMATIC LOCKDOWN/ EVACUATION	• Provide 10 second continuous tone, followed by repeating prerecorded message, announcing either facility lockdown or evacuation as determined by activation of appropriate manual pull station in Administration area or MDE room.	

FIRE ALARM SYSTEM

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
LCD DISPLAY MODULE	• LCD Display: 80-character RS-485 based textual annunciator with capability of being mounted locally or remotely. Provides audible and visual annunciation of all alarms and trouble signals. Provide dedicated LEDs for: - AC Power On: Green - Alarm: Red - Supervisory: Yellow - System Trouble: Yellow - Power Fault: Yellow - Ground Fault: Yellow - System Silenced: Yellow • 80-Character Alphanumeric Display: Provide status of all analog/addressable sensors, monitor and control modules. Display shall be backlit liquid crystal type (LCD), clearly visible in dark and under all light conditions. • Panel shall contain the following 4 functional keys: - Alarm Acknowledge - Trouble Acknowledge - Signal Silence - System Reset/Lamp Test • Panel shall contain 3 configuration buttons - Menu/Back. - Back Space/Edit. - OK/Enter. • Panel shall have 12-key telephone-style keypad to permit selection of functions.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
INTELLIGENT LOOP INTERFACE	• The system shall be capable of being programmed by Field Configuration Program (FCP), allowing programming to be downloaded via portable computer from any node on network. • The supervised serial port shall be provided to operate remote printers and/or video terminals, accept downloaded program from portable computer, or provide 80-column readout of all alarms, troubles, location descriptions, time, and date. Communication shall be standard ASCII code operating from 1,200 to 115,200 baud rate. • All Loop Interface Modules shall incorporate own programming, log functions, central processor unit, and control-by-event (CBE) programming. If any loop becomes disabled, each remaining loop driver shall continue to communicate with remainder of network and maintain normal operation. "Degrade" configurations under these conditions shall not be acceptable. • Smoke detector alarm verification shall be standard option while allowing other devices such as manual stations and sprinkler flow to create immediate alarm. This feature shall be selectable for smoke sensors that are installed in environments prone to nuisance or unwanted alarms. • All alarm signals shall be automatically latched or "locked in" at control panel until operated device is returned to normal and control panel is manually reset. When used for sprinkler flow, "SIGNAL SILENCE" switch may be bypassed, if required by Authority Having Jurisdiction. • Each SLC and NAC circuit shall be electrically supervised for opens, shorts, and ground faults. Occurrence of fault shall activate system trouble circuitry, but shall not interfere with proper operation of other circuits. • Yellow "SYSTEM TROUBLE" LEDs shall light and system audible sounder shall steadily sound when trouble is detected in system. Failure of power, open or short circuits on SLC or NAC circuits, disarrangement in system wiring, failure of microprocessor or any identification module, or system ground faults shall activate this trouble circuit. Trouble signal shall be acknowledge by operating "TROUBLE ACKNOWLEDGE" switch. This shall silence	

FIRE ALARM SYSTEM

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	sounder. If subsequent trouble conditions occur, trouble circuitry shall resound. During alarm, all trouble signals shall be suppressed with exception of lighting yellow "SYSTEM TROUBLE" LEDs. • Analog Smoke Sensors: System software shall automatically adjust each analog smoke sensor approximately once each week for changes in sensitivity due to effects of component aging or environment, including dust. Each sensor shall maintain its actual sensitivity under adverse conditions to respond to alarm conditions while ignoring factors which generally contribute to nuisance alarms. System trouble circuitry shall activate, display "DIRTY DETECTOR" and "VERY DIRTY DETECTOR" indications and identify individual unit that requires maintenance. • System software shall automatically test each analog smoke sensor a minimum of 3 times daily. The test shall be recognized functional test of each photocell (analog photoelectric sensors) and ionization chamber (analog ionization sensors) as required annually by NFPA. The failure of sensor shall activate system trouble circuitry, display "Test Failed" indication, and identify individual device that failed. • The fi e alarm system shall transmit alarm, supervisory, and trouble signals with alarm having priority over supervisory and trouble signals. • System shall provide for all SLC devices on any SLC loop to be pre-programmed into system. Upon activation of auto programming, only devices that are present shall activate. This allows for system to be commissioned in phases without need of additional downloads. • System shall provide for setting Environmental Drift Compensation by device. When detector accumulates dust in chamber and reaches unacceptable level buy yet still below allowed limit, control panel shall indicate maintenance alert warning. When detector accumulates dust in chamber above allowed limit, control panel shall indicate maintenance urgent warning. • Non-reporting type ID shall be available for use for energy management or other non-fi e situations. NON-FIRE point	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	operation shall not affect control panel operation nor shall it display message at panel LDC. Activation of NON-FIRE point shall activate control by event logic, but shall not cause indication on control panel. • 1-Man Walk Test: - System shall provide both basic and advanced walk test for testing entire fi e alarm system. Basic walk test shall allow a single operator to run audible tests on panel. All logic equation automation shall be suspended during test and while annunciators can be enabled for test, all shall default to disabled state. During the advanced walk test, field-supplied output point programming shall react to input stimuli, such as CBE and logic equations. When points are activated in advanced test mode, each initiating event shall latch input. Advanced test shall be audible and shall be used for pull station verification, magnet activated tests on input devices, input and output device, and wiring operation/ verification .	

FIRE ALARM SYSTEM

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SYSTEM PERIPHERALS	• Detectors: Analog and addressable. Connect to fi e alarm control panel's Signaling Line Circuits. • Addressable Thermal and Smoke Detectors: Fire alarm control panel shall permit detector sensitivity adjustment through field programming of system. Sensitivity can be automatically adjusted by panel on time-of-day basis. • Using software in each 4100, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. Detectors shall be listed by UL as meeting calibrated sensitivity test requirements of NFPA. • Following bases and auxiliary functions shall be available: - Standard base with remote LED output - Sounder base rated at 85 dBA minimum - Form-C relay base rated 30 VDC, 2.0 A - Isolator base • Detectors shall provide test means whereby they will simulate alarm condition and report that condition to control panel. Such test shall be initiated at detector itself by activating magnetic switch or initiated remotely on command from control panel. • Detectors shall store internal identifying type code that control panel shall use to identify type of device. • Manual fi e alarm stations shall be non-code, non-break glass type, equipped with key lock so they may be tested without operating handle. • The operated station shall be visually apparent, as operated, at a minimum distance of 100 feet from front or side. • Stations shall be designed so after actual activation, they cannot be restored to normal except by key reset. • Manual stations shall be construction of Lexan with clearly visible operating instructions provided on cover. The word FIRE shall appear on front of stations in raised letter, 1.75 inches or larger. • Addressable manual stations shall, on command from control panel, send data to panel representing state of manual switch and addressable communication module status.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	• Intelligent addressable devices shall be rated at 135 degrees F and have rate-of-rise element rated at 15 degrees F per minute. Connect via 2 wires to fi e alarm control panel signaling line circuit. • Intelligent Photoelectric Smoke Detectors: Use photoelectric (light-scattering) principal to measure smoke density and shall, on command from control panel, send data to panel representing analog level of smoke density. • Intelligent Duct Smoke Detectors - In-Duct Smoke Detector Housing: Use on-board intelligent photoelectric detector, which provides continuous analog monitoring and alarm verification from panel. - When sufficient smoke is sensed, alarm signal is initiated and appropriate action taken to shut down or change over air handling systems to help prevent rapid distribution of toxic smoke and fi e gases throughout areas served by duct system. - Duct Smoke Detectors Mounted above Ceiling or Otherwise Obstructed from Normal View: Provide with remote alarm indicator. - Each Detector: Install in either supply side or return side duct in accordance with local mechanical code. • Addressable Dry Contact Monitor Modules - Provide to connect 1 supervised IDC zone of conventional alarm initiating devices (any N>O> dry contact device) to 1 of the fi e alarm control panel SLCs. - Mount in standard deep electrical box. - IDC z one: Suitable for Style B operation. • Provide addressable control modules to supervise and control operation of 1 conventional NAC of compatible, 24-VDC powered, polarized audio/visual notification appliances or UL-listed polarized relays for fan shutdown and other auxiliary control functions. - Wire control module NAC for Style z or Style Y (Class B/B) with up to 1 amp of inductive signal or 2 amps of resistive signal operation. Relay coil shall be magnetically latched to reduce wiring connection	

FIRE ALARM SYSTEM

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	requirements and to ensure 100 percent of all auxiliary relay or NACs shall be energized at same time on same pair of wires - Provide Audio/visual power by separate supervised power circuit from main fi e alarm control panel or from supervised, UL-listed remote power supply. - Provide audio/visual power by separate supervised power circuit from main fi e alarm control panel or from supervised, UL-listed remote power supply. • Addressable Relay Modules: - Available for HVAC control and other building functions. Relay shall have 2 Form C sets of contacts that operate in tandem and are rated for a minimum of 2.0 amps resistive or 1.0 amps inductive. Relay coil shall be magnetically latched to reduce wiring connection requirements and to ensure 100 percent of all auxiliary relay or NACs shall be energized at same time on same pair of wires. - Mount in standard 4-inch square, 2-1/8-inch deep electrical box or to surface-mounted back box. • Speakers for the system shall have the following criteria: - Compliance with UL 1480. - Operate on 25 or 70 VRMS or with field-selectable output taps from 0.25 to 2.0 watts. - Speakers in Corridors and Public Spaces shall produce nominal sound output of 84 dBA at 10 feet, at one watt tap setting. - Frequency Response: Minimum of 400 Hz to 4,000 Hz. - Back of Each Speaker shall be sealed to protect speaker cone from damage and dust. - Audibility: NFPA 72. • Strobes for the system shall have the following criteria: - Compliance: ADA and UL 1971. - Maximum Pulse Duration: 0.2 second. - Strobe Intensity: UL 1971. - Flash Rate: UL 1971. - Strobe Candela Rating: Determine by positioning selector switch on back of device.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	• Speaker/Strobes shall have the following criteria: - Compliance: Speaker – UL 1480. - Operate on 25 or 70 VRMS with field-selectable output taps from 0.25 to 2.0 watt. - Speakers in Corridors and Public Spaces shall produce nominal sound output of 84 dBA at 10 feet at one watt tap setting. - Frequency Response: Minimum of 400 Hz to 4,000 Hz. - Back of Each Speaker: Sealed to protect speaker cone from damage and dust. - Audibility: NFPA 72. - Maximum pulse duration shall be 0.2 second. - Strobe Intensity: UL 1971. - Flash Rate: UL 1971. - Strobe Candela Rating: Determine by positioning selector switch on back of device.	
SPARE PARTS CABINET	• NEMA 1 cabinet with hinged lockable door and painted red to match FACP, sized to accommodate the extra materials specified. Provide an engraved nameplate to read "FIRE ALARM SYSTEM SPARE PARTS CABINET".	

EMERGENCY NOTIFICATION SYSTEM

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ENS INFRA-STRUCTURE GENERAL EQUIPMENT PROVISIONS	• Applicable Industry Standards to Reference - All state, local Prevailing Building Codes and regulatory agencies - Underwriter's Laboratories (UL) 2572, Control Equipment for Mass Notification System - BICSI Standards - Occupational Safety and Health Association (OSHA) Requirements - ANSI/TIA-569-C Telecommunications Pathways and Spaces - NFPA 72, 2010 edition, National Fire Alarm and Signaling Code - NFPA 70, 2010 edition, Articles 250, 725, 760, 770, and 800 - National Electrical Manufacturer's Association (NEMA) • Applicable Campus Standards to Reference - Grossmont Cuyamaca Community College District Network Cable and Fiber Specifications and Installation Procedures. - Division 27, Applicable Communication/ Technology elements - Division 26, Fire Alarm – Digital, Addressable Fire Alarm and Voice Evacuation System - All equipment - under Fire Alarm Specification	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ENS PAGING EQUIPMENT	• Existing Paging Network System Expansion – Provide an expansion of the network into a structure for the purpose of broadcasting emergency information through automatic and manual audible instructions. The expansion of the network shall include, but not be limited to amplifiers, speakers, support material and infrastructure. • Provide speakers for indoor and outdoor use. Insure equipment is listed for the purpose designed, with appropriate mounting appliances to support the units. - Indoor and outdoor speakers shall be ceiling or wall supported with appropriate ceiling or wall support elements including guy wires for seismic considerations. - Indoor and outdoor speakers shall be listed for 70 volt capacity, and be compatible with the amplifier to which it is connected. - Indoor and outdoor speakers shall be listed by UL2572 for use as emergency notification devices - Indoor and outdoor speakers shall be either omnidirectional or directional depending on the desired broadcast parameters. - Indoor and outdoor speakers shall be fully encased in appropriate raceway for protection and circuit integrity. - Where mounted indoors, speaker location shall be predicated upon acoustic consideration to include room function, room configuration, acoustical material within a space, and be capable of complete sound annunciation in throughout the structure without audible loss due to attenuation. - Where mounted outdoors, speakers shall be mounted upon structures for broadcasting surrounding areas. - Outdoor speakers, where possible, shall be housed in appropriate containers to withstand/ mitigate bird habitat or perching. - Outdoor speaker wire penetrations into a structure shall be made to insure no water shall enter	

EMERGENCY NOTIFICATION SYSTEM

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ENS PAGING EQUIPMENT	to include inclined punch-through elevation, penetration packing with water-resistant material, or appropriate raceway with packing material. - Outdoor speaker wiring shall be protected with appropriate raceway listed for outdoor use. • Audio Amplifier - Amplifiers shall be rated at 70/100 . - Amplifiers shall be listed by UL2572 for use as emergency notification devices - Amplification shall consist of multiple outputs with appropriate power to support the number of speakers attached. - The number of amplifiers shall be predicated upon the structure configuration and desired annunciation zones required. - Actual number of zones shall be determined during design phase in concert with the District. - Fire Alarm mounted amplifiers shall be wall mounted in the MDF room in a simplex cabinet. - Amplifiers shall be configured with telephone interface for network connectivity, or IP network capacity.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ENS FIRE ALARM CONTROL PANEL CONNECTION	• Building fi e alarm control panels (FACP) shall be provided in compliance with Division 26, Fire Alarm – Digital, Addressable Fire Alarm and Voice Evacuation System as outlined in the District Standards. NFPA 72 allows emergency broadcast for other than fire alarm purposes. - Voice evacuation shall consist of audio/visual appliances that may be, but not required, for emergency broadcast audio/visual annunciations. - Audio appliances shall be approved by the California State Fire Marshall (CSFM) for compliance as a unit and configured for a listed system when interconnected to become a part of the building fi e alarm system. - Audio appliances (speakers) shall also be listed by UL2572 for use as emergency notification devices - Paging Amplifiers may be inter connected to a building FACP utilizing low-level audio balanced-line signals for non-fi e alarm emergency broadcasts through the building audio appliances utilizing CSFM approved interface modules. • Fire Alarm Network Expansion - Provide extending connections from the network to a building fire alarm system via the campus infrastructure. - Building FACP and the Fire Alarm Network control must be listed by the same manufacturer and approved by the CSFM - According to design, provide necessary appurtenances such as broadcast stations, consisting of microphones, switching appliances, or other required devices.	

ELECTRONIC ACCESS CONTROL

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GENERAL QUALITY ASSURANCE	• Manufacturer must have manufactured and supported electronic access control systems for 15 years with over 20 southern California references for successful projects. • Manufacturer must be responsible for all system components. • Manufacturer must be capable of providing manufacturer-employed field service personnel for installation assistance and continued District support. • Installers of the system must be trained by the manufacturer. • Capabilities of manufacturer and system must include: - Access control. - Alarm monitoring. - Identification badging - Programmable relay control. - View events in real time. - Print selected events in real time. - Elevator control.(floor by floor) - Controlled by a computer(Server) - Support Microsoft SQL Server 2005 through 2012 - Control several segregated databases	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SOFTWARE DESIGN	• Native 32-bit, multi-tasking and multi-threaded, running under Windows 7/8, Windows 2008/2012 servers. • Use a GUI (Graphical User Interface) based upon Windows standards, including Windows theme support, have extensive context sensitive on-line help, and provide familiar icon-driven, tabbed dialog menu options. • Perform network communications tasks via a separate integrated application running in background. • Alarm monitoring, alarm editing, and setup applications shall require operator logon to function. • Must be able to include totally integrated identification badging, utilizing same database as access control system. No import or export shall be necessary. Can be added at any time with no database conversion necessary.	
DATABASE: GUARD FOR SOFTWARE	• Support the ODBC standard • Supplied with a full support of Microsoft SQL 2005/2008/2012 database server application to allow archiving of history, database repair functions, and import/ export. • Support near-real-time import and export of data. • Support automatic update of user access rights as a result of import process. • Allow for a unique industry standard ISO card number to be generated on demand as part of import process. • Provide a user partition feature; allows specific system entities in the database to be seen and manipulated only by certain "user Groups". Such entities can be users, sites, doors, and elevator floors. When the database is divided into spheres of control in this way, operators in a given group will control data such as sites, doors, users, and access groups for their own group(s) only. The database itself is complete, but views are generated such that what the operator can view, add, modify, delete or print reports, is limited by the Tenant Group(s) to which they have rights to as well as by Operator level. • Provide "Tenant Wizard" to allow easy operator manipulation of tenant Group elements- users, doors, sites, and access groups.	

ELECTRONIC ACCESS CONTROL

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
GUARD ALARM MONITORING SOFTWARE	• Support a minimum of 7 supervised alarm inputs per door control Unit with time zone disable feature, and a programmable shunt delay timer from 0 to 255 seconds. • Supervision of alarm points can be either two (Alarm, Reset) or four state (Trigger, Reset, Open and Short) determined at software configuration • Provide a forced-door entry with an ajar alarm. Forced-door alarm shall have a shunt delay timer of 0 to 255 seconds. Ajar alarm shall have a programmable delay timer of 1 to 255 minutes. • Support adding name of alarm in a field minimum of 19 characters and additional information about each alarm in a “notes” field • Support prioritizing of alarms to 100 levels. • Support linking specific alarms to relay control devices. • Include a graphical alarm editing application that shall allow a user to define alarms including graphical maps. Animated icons shall be placed on maps to indicate standard alarm types such as fi e and break-in. Four levels of zoom shall be provided for each alarm. • Require acknowledgment text so personnel monitoring alarms shall provide response information. • Include an alarm monitor application separate from main software which shall display alarms graphically in priority with which they were programmed. Application shall be able to be run from any workstation. Allow Alarm acknowledgment from any workstation with synchronization between workstations. • Provide alarm monitor with capability to display a user portrait in response to valid or invalid access attempts. • Provide alarm monitor with support for standard sound cards and wav files so user defined sounds can be played for alarms. • Log-off with password shall be required to quit alarm monitor. • Programmable requests for incident reports. • Support up to 4 floor maps per alarm input, available within one double click directly on the alarm reported on the alarm monitor	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CLIENT GUARD TOUR SOFTWARE	• Include a guard tour or client tour application which can be run from any workstation on network. • Provide client tour application for up to 100 tours, with a maximum of 96 intervals each. • Types of Tours Available: • Global: Assigned to any individual card holder at time tour is selected. • Individual: Assigned to a card holder at time of creation. • Allow for selective filtering at device level, so as to allow multiple workstations to run different tours.	
SCHEDULER; INTEGRATED SOFTWARE	• Fully configurable integrated module allowing scheduled actions for any access points of the system, overriding the normal door unlock/lock set up • Unlimited number of schedules supported by each tenant group • Configurable actions - Unlock – Lock - Shunt alarms - Adjustable time granularity down to the minute - Yearly, monthly weekly, daily or fixed recurrence pattern - Auto delete schedule after it expires • Exportable schedule reports	
ANALOG CCTV INTEGRATED SOFTWARE MODULE OPTION - DVR	• The CCTV module integrated into the system allowing the viewing of video recorded based upon alarm events. • Automatically display the appropriate CCTV camera and record video instantly in response to an alarm. • Allow search of recorded video by system alarm event or by alarm time. • From the CCTV screens it is possible to play back a recorded alarm or record from any camera. • System allows linking of its alarm events with a group of cameras. • The CCTV interface is operable from any workstation or multiple workstations.	

ELECTRONIC ACCESS CONTROL

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SOFTWARE FUNCTIONS	• Capability of automatic Daylight Savings Time. • Does not allow duplication of user names or user ID. • 18 predefined user identification fields, 30 configurations user ID field, and 1 "Note" page per use. Searchable fields a e: last name, first name, Social Security number , ID number, department, title, card number, card type, and any of the 30 configurable user field • Support multiple access reader technologies and protocol on same system simultaneously. • Should provide multiple "lost card" entries so a lost access credential can be easily identified if used • Support "disable card" function for each access credential, with option to control activation and expiration dates in each tenant group if required • Support a door control unit address and text description name in a field minimum of 19 characters • Support door control units that total an even or odd number on system. • Support 2 relays included with each door control unit. • Support unlocking a strike/magnetic lock automatically in accordance with a programmable time zone. • Support unlocking a strike/magnetic lock device at a defined time, but only after first valid user accesses access reader. • Capability of programming relay operating time for use with such items as a strike or magnetic lock, electric latch retraction devices, as well as gates of all types. • Provide an audit trail programmable by date and time range, user(s), and access reader(s). • Notify when status of a door or relay controller changes because of a communication or device problem. • Support programmable reports viewed on monitor or printed. • Support programmable reports on printer in real time. • Provide capability of sorting history events by time, dates, users, access readers, and operators. Up to 8 Advanced reports with configurable field • Have ability to print a "dossier" report, which includes a person's portrait along with user selected database fields	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SOFTWARE FUNCTIONS	and notes. • Support simultaneously 2 custom ABA formats and 2 Wiegand formats for access readers. • Support combination access readers with one Wiegand output. Support custom Wiegand outputs from 0 to 50bits, including 32 bits, 37 bits, HID Corporate 1000 program, and Motorola 27 bits. • Support user pin number along with a card that is enabled by a time zone. • Support a door pin number that is enabled by a time zone. • Support anti-Passback modes (global or paired or timed). • Support card start and stop times for each Tenant Group assigned to a user. • Support relays that can be programmed to operate by a time zone, alarms, or by events linked to access points. • Have the Owner's name encrypted and displayed on monitor. • Able to accept any facility code of card or chip provided. (0 to 31bit facility code) • Capability to automatically archive transaction data and be able to select dates of data being archived. • Capability of routing system history to workstations on network such that if desired, multiple alarm monitoring stations can be maintained, each with separate alarm displays. • Provide an option to run on a Windows supported TCP/ IP network with the number of workstations controlled by license. • Provide option of communication to sites using TCP/IP and Millennium Site Ethernet Interface. • Advise and display on computer monitor status of door and relay controller(s) if communication or power is lost on system. • Unlimited users • Support system lockdown on programmable "Hot key" icon. • Both conditional and unconditional lock down options	

ELECTRONIC ACCESS CONTROL

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SYSTEM HARDWARE	• System shall be able to be configured from 1 to 100 access readers for each site control unit. • Controllers shall have capacity of memory support, including real-time clock for a minimum of 24 hours, in case of AC loss of power and battery backup is exhausted. • System shall use a 100% fully-distributed architecture in which system alarms, access, relays, and elevator control shall continue to function in a normal mode without computer communications, or communication to any other system panel. • Site controller shall be able to communicate to computer via EIA standard RS-232, RS-485, leased line, fiber optics, wireless Spread Spectrum modem, or with use of a Lantronix Ethernet Interface, via TCP/IP protocol. • Site controller shall have a local relay to monitor status of communications with door control units. In case of device failure relay will open, providing a means of triggering an external monitoring device. • Site, door, relay, and elevator controller features shall have capability to be field upgraded by a firmware change. Such firmware upgrades shall be offered as needed to registered users on an exchange basis, labor not included. • Door controller shall support any Wiegand standard based readers in any bit format up to 50 total; bit patterns fully programmable within software. • Door controller shall read Dallas touch chip format directly without use of accessory devices. • Door control Unit shall have ability to read Marlok™ metal keys using Keylok™ and key readers without use of interface devices. • Example supported reader types include but are not limited to: Wiegand 13 bit to 50 Bit, Mag stripe, Bar Code, Proximity, Dallas Touchkey, Keypad, Biometrics, combination keypad with Wiegand/Proximity/Magnetic stripe. • Door control Unit shall be able to be programmed for custom ABA formats from PC software, including ability to ignore user specified characters in format • Door control Unit shall be programmable to accept either normal or inverted strobe signals from ABA format readers. • Same door control Unit shall be programmed for all access	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SYSTEM HARDWARE	reader technologies as specified by means of PC software. • Site control Unit shall buffer last 2,000 events from door controllers when computer communications has been lost or terminated. • Each door control Unit shall buffer an additional 2,000 events when site controller buffer has filled • All system control Units shall have a built-in tamper alarm to detect when a cover to controller is removed. • Door Control Unit: • Request to Exit input. • Single reader input configuration • Located within 10 feet (3 m) of access reader (Marlok) or as specified by other reader manufacturer. • Function at full capacity without communications to computer, and buffer events up to a maximum of 2,000 during this period. • Continue to function on battery backup at a minimum of 9 V DC. • Door and relay control Unit shall have Form C dry contact configuration • Door and relay control Unit shall have relays with a minimum current rating of 30 V DC at 2 A with solid-state automatically re-settable overcurrent protection for contacts. • Door control Unit shall have a relay that can be programmed by software for: Valid User, Auto Activate, First User Auto Activate, Any User, Rejected User, Dual Custody (2 valid token to be presented within 5 sec), or Alarm Options. • Relay control Unit shall have relays that can be configured by software for Time z one Activation, Timed Activation, Timed Released, First Event Activation, and First Event Released and Last Person Out. • Relay on door controller shall have a programmable timer and settings in software for strike and magnetic lock operation. • Door and relay controller shall provide a dedicated tamper alarm to monitor opening of controller mounting boxes. • Site to door control Unit communication conform to EIA RS-485 for a recommended total cable length of 4,000 feet (1,524 m).	

ELECTRONIC ACCESS CONTROL

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
DOOR CONTROL DEVICE (DCD)	• Designed to control a single access point. • Contains a real-time clock and sufficient memory to provide access control independent of main PC. • Transaction history shall be automatically buffered when not on line with PC. • Priority event buffer assures alarms are annunciated in a timely manner even if history buffer is full. • Power: 9 to 14 V DC, supplied by central power supply; 80 to 110 mA, depending upon reader technology. 225 mA additional required during unlock of Marlok rotating cylinder (7 seconds maximum). Accessory relays require additional 20 mA each. • Power Protection: Reverse polarity, over voltage, transient. • Reader Technologies Supported: Marlok key, Wiegand card (any bit format up to 50), ABA/ISO Track 2, proximity, keypad, combination reader/keypad, Dallas TouchKey, biometrics. • Reader Interfaces Supported: Marlok, clock/data, clock/data inverted, Dallas touch, Wiegand. • History Buffer: 2,000 transactions. • Priority Event Buffer: 100 transactions. • On-Board Memory and Clock Backup: 24 hours minimum. • Maximum Users Stored in Memory: 10,000. • Alarm Input Points: 7 total, 2-wire supervised, 2 or four state selectable (EOL resistor) including built-in door contact monitoring. • Alarm Input Monitoring Circuit: Analog to digital conversion. • Tamper Alarm: On-board switch. • Output Relays: 2 each with Form C contacts rated 2 A, 30 V. • Output Relay Contact Protection: Solid-state polymeric re-settable. • Connectors: 5 mm plug-on screw terminal. • Address Switches: Rotary, direct-reading 00 to 99. • Communications: Multi-drop RS-485, proprietary protocol, including T-tap, and Star	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SITE CONTROL UNIT	• System shall be able to be configured from 1 to 100 access readers for each site control unit. • Designed to control a maximum of 100 door control devices (100 Card Readers) and a maximum of 10 relay control devices (80 relay/outputs). • Normally used for a single site or building, contains a real-time clock and sufficient memory to supervise site • Maximum of 1,000 site controllers can be addressed in a system. • Transaction history is automatically buffered when not on line with PC. • Priority event buffer assures alarms are annunciated in a timely manner even if history buffer is full. • On-board switches select operational modes. • Power: 9 to 14 V DC, supplied by central power supply; 50 mA standby, 90 mA maximum. • Power Protection: Reverse polarity, over voltage, transient. • PC to SCU Communications Interface: RS-232, RS-485 4-wire, or TCP/IP. • SCU to DCD Communications Interface: RS-485 multi-drop 2-wire. • Modem Support: Hayes AT command set, 9,600 baud or greater. • Supervisory Relay: Rated 2 A, 30 V Form C. Opens on-site fault. • History Buffer: 2,000 transactions. • Priority Event Buffer: 100 transactions. • On-Board Memory and Clock Backup: 24 hours minimum. • Alarms: Lost AC input. • Tamper Alarm: On-board switch. • Connectors: 5 mm screw terminal. • Address Switches: Rotary, direct-reading 000 to 999. • Operating Environment: Between 14 degrees F and 104 degrees F (-10 degrees C and 40 degrees C) with less than 90 percent noncondensing humidity. • Support T-TAP, Daisy Chained or in a Star Topology connectivity	

ELECTRONIC ACCESS CONTROL

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
RELAY CONTROL DEVICE	• Power: 9 to 14 V DC, supplied by central power supply; 35 mA standby current, 20 mA additional for each relay activated. • Memory and Clock Backup: 24 hours minimum. • Relay Outputs: 7 Form C contacts, rated 30 V DC maximum at 2 A. • Supervisory Function: Relay 0 on first boa d installed. Opens on system fault. • Communications: Multi-drop RS-485, proprietary protocol. Auxiliary programming jack for use with Marlok AP-1 and cable for stand-alone operation. • Tamper Alarm: On-board switch. • Configuration Jumpers: J3, relay polarity select all 16 relays; J5, relay override select. • Address Switch: Rotary, direct-reading 0 to 9. • Operating Environment: Between 14 degrees F and 104 degrees F (-10 degrees C and 40 degrees C) with less than 90 percent noncondensing humidity. • Power Supply: Power: [120 V AC, 60 Hz, 2 A, unswitched] [240 V AC, 50 Hz, 1 A, unswitched (export)]. • Fuses: 2 A AC input slow-blow, 1 A AC input (export), 8 A (battery output protection). • Output: 13.8 V DC nominal, 5 A maximum. • Battery Backup: 2 gelled lead acid cell, 6 V DC, 8.0 Ah, supplied with power supply. • Alarm Outputs: Cover tamper switch and AC or power supply failure (dry contacts).	
TRUNK INTERFACE	• Description: Trunk interface unit provides interface between RS-232 PC serial port and site controller(s). • Power: 120 V AC to 9 V DC power cube, 200 mA. • Serial Input: RS-232-C, DB-9 connector. • Output: RS-485, 2 or 4-wire in 5-pin screw terminal connector. • Indicators: LED type, power, transmit, receive. • Protection: Reverse DC polarity, communications surges.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SITE ETHERNET INTERFACE (SEI)	• The system should be designed to provide communications between Windows PC and site control unit(s) by means of Ethernet networks utilizing TCP/IP protocol. • Power: 12 to 15 V DC, supplied by either central power supply or auxiliary power supply; 800 mA maximum. • IP Address Setting: Software through RS-232 port. • Data Backup: Nonvolatile memory. • Network Interface: 10 base T, AUI. • SCU Interface: RS-232-C, 9,600 baud. • Communications Protocol (Network): TCP/IP. • Communications Protocol (SCU Interface): Proprietary.	

INTRUSION ALARM SYSTEM

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SYSTEM FEATURES	• The system should be designed to provide communications between Windows PC and site control unit(s) by means of • Must have remote security control over both wireless + cellular connection and interface with wireless components • Area re-arm function allowing automatic re-arm after programmable time • Monitor delay/delay response • Programmable keypad shortcuts allowing to program 32 shortcuts per pad • System must allow for custom functions • The system should be updatable • Universal plug and play (UPnP) • Should include a Domain Name Service(DNS) to central station allowing system to obtain central station IP address • The system must support up to 1000 users • The system must have dual authentication to unlock doors • Allows for reporting to up to 4 central station destinations • Must have up to 32 programmable areas • System requires 2 passcodes to disarm the system • Provides 256 bit encryption for IP/cellular communications • Provides integrated access control for up to 8 doors • District intrusion alarm standard is Bosch 9412GV	

VIDEO SURVEILLANCE SYSTEM

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CAMERA SPECIFICA-TIONS AND INSTALLATION	• All fixed cameras shall always be a minidome type form factor. • Fixed Camera heights shall be 12 – 14 feet off the ground for exterior locations. • Cameras are never be installed where a lift is required to service. Consider maintenance when locating cameras. • Cameras shall always be mounted to a solid structural support. • Fixed dome cameras should be flush mounted where possible. • Dome cameras should have a triple gimbal lens mount. • Cameras shall have an auto focus wizard. • Cameras shall have auto back focus capability. • Fixed dome cameras should always be mounted directly to the surface of the mounting area (building). Do not use pendant arms for building mounted cameras. These are only cosmetic and they make the cameras more venerable to vandalism. • All cameras should always have clear bubbles. Never use tinted or smoked dome bubbles. This only reduces the cameras performance. • Cameras should not be aimed directly into the rising or setting sun if possible. • Cameras shall have edge recording capabilities. • Cameras shall all be PoE capable. • Cameras shall all be outdoor specific at a minimum of IP66 rating . • Cameras shall be designed specifically to be vandal resistant with a rating no less than IK10 rating. • Cameras shall have the ability to support IVA at the camera. • Cameras shall have target and max bit rate control capability. • Cameras shall have user configurable encoders to maximize bandwidth management. • All cameras shall produce H.264 or better compression. • Cameras shall all be programmed to record appropriately upon motion. • Cameras shall produce a minimum of four streams. • Cameras shall have configurable user modes	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CAMERA SPECIFICATIONS AND INSTALLATION	• Outdoor cameras shall have user modes default set to "Outdoor". • Indoor cameras shall have user modes default set to "Indoor". • Cameras installed in locations with poor or inadequate lighting shall have user modes default set to "Low Light". • Cameras installed in parking lots or other traffic areas shall have user modes default set to "Motion". • Cameras shall have wide dynamic range capability. • Cameras shall cover all entrances of the campus perimeter. • Cameras shall cover all general areas of congregation. • An indoor camera shall be installed at all IDF or MDF locations where equipment is installed. • There shall be a camera capturing recognizable video of all persons entering the main administrative office • Cameras shall never be installed such that they can see inside any restroom facilities, locker rooms, or other private areas. Cameras can be installed to capture profile shots of persons entering or leaving such areas as long as they cannot see inside at anytime. • All PTz cameras shall have all private and/or sensitive areas electronically masked and access protected at the administrator level. • All PTz cameras shall have a "home" location programmed with a return dwell time of no more than 10 minutes.	
HEAD END SPECIFICATION AND INSTALLATION (VIDEO MGNT SYSTEM AND STORAGE SOLUTION)	• All head end equipment shall be installed in a secure, temperature controlled space. • All head end equipment shall be installed in equipment racks or otherwise per recommendations of manufacturer. • All Head End security equipment shall have UPS power source. • All Video Management Systems (VMS) shall have programming capabilities managed by appropriate security log in controls. • There shall be no acceptable Software Support Agreements (SSA) unless it is considered to be perpetual through the life of the VMS. • Only NVR / Server based IP Head End Designs are acceptable.	

VIDEO SURVEILLANCE SYSTEM

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
HEAD END SPECIFIC-ATION AND INSTALLATION (VIDEO MGNT SYSTEM AND STORAGE SOLUTION)	• Storage requirements shall be calculated with a min of 15fps recording. • Storage shall be RAID5 configuration • Storage shall be self managed via software to control allotted storage LUNDS to cameras. • Storage shall be streamed via the LAN at each campus. No recording streams shall be pushed via the WAN to centralized storage. • System must have the capability to restore lost/missing video from the edge storage to the primary storage automatically. • System must be programmed to produce alarm conditions in the event of a drive failure. • Spare drives of appropriate size must be provided for back up in the event of drive failures. • Storage drives must not be proprietary design. • Storage drives must be “hot swappable”, and not require any disassembly of the NVR. • VMS solution must have full enterprise capabilities, to include but not limited to camera pop ups and interactive mapping capabilities. • NVR solution shall have Web interface capability. • NVR solution shall have advanced transcoding capabilities. • NVR solution shall have wireless “Smart Device” access to both live and recorded video. • NVR solution must have associated Smart Device applications that are free of charge to end users. • NVR must support no less than 128 channels of video per machine. • All NVR licensing must be non recurring. • NVR must have a min of 200mb throughput at the backplane.	
SWITCH GEAR FOR VIDEO SYSTEMS	• All video switch gear shall be layer 3, managed Gb. • All video must be separated from primary network, either by stand alone network infrastructure or by virtualization of the network switches.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SPECIFICA-TION DOCUMENT CREATION	• All specification documents shall have a complete and clear scope of work. • All specifications shall include specific programming requirements in the scope of work. • Specifications should call out acceptable manufacturers. • Specifications shall call out acceptable products by manufacturers. • Specification shall not call out specific lens configuration • Specifications shall not call out specific storage amount • Specification shall call out min recording requirements and specific amount of retention in number of days. • Specification shall use the Johnson Criteria to communicate specific resolution expectations. • Specification shall call out specific inspection and punch out requirements for project completion. • Specification shall require manufacturer involvement for programming punch out inspection.	
PROJECT PLAN SET	• All security projects shall have a floor plan set and documentation. • Plans shall include a complete riser diagram of system and infrastructure design. • Plans shall clearly indicate locations of all cameras, IDF, MDF, client stations. • Plans shall indicate locations of all network connectivity points. • Plans shall indicate primary focal point and horizontal field of view desired for each camera. • Camera types shall all be clearly indicated on plan set with separate icons. • Plans shall have a complete camera matrix indicating type and model.	

Division 32
EXTERIOR IMPROVEMENTS

General Approach - Specific projects need to consider the project in the context of the entire campus facilities master plan and coordinate the project exterior improvements with a holistic approach, considering future project needs and infrastructure and the impact the current project will have on the campus plan until future projects are complete. All exterior improvements should consider initial costs as well as life cycle costs, ease of maintenance and sustainable initiatives. Soil conditions and hydraulic pressure are different on each campus as well as plant palette. Exterior improvements design approach should be applicable to the specific campus and reviewed with and approved by both District and College representatives. All plant material will be inspected by the landscape architect and College landscape representative for acceptance of size and condition prior to planting.

Exterior Improvements covers a wide range of items, of which some are covered in other Divisions. Items relating to wet utilities (water, sewer, storm drain & gas) are covered in Division 22 – "Plumbing". Electrical utility lines are in Division 26 – "Electrical". Division 27 – "Communications" has the Telephone and cables lines covered. The following are items covered in this Division about building or structure placement, Fire Department access and Utility access to the building or structure, point of connections for utilities, separation of sewer and water connections, parking lots, circulation, emergency access, parking, plant palette, and site furnishings.

UNDERGROUND INFRASTRUCTURE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
POC FOR UTILITIES	• The POC for the Utility shall be on the side closest to the utility. • Electrical, telephone and any other communication or alarm conduit shall be 5 feet from any water or sewer lines in parallel and shall pass one foot above or below any water or sewer line. • Minimum cover for Water lines to a POC from a main is 30 inches from finished surface • Minimum cover for Sewer laterals is 42 inches from finished surface. • Minimum cover for electrical, communication and alarm conduits is 18" from finished surface • Minimum cover for gas lateral lines is 30 inches. • Soils on the campus sites are generally impermeable and some care shall be given to subsurface water travel along trench paths. Isolating cutoff walls in trenches may be required if a detention or retention basin is planned over existing trenches or a trench is planned.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
BUILDING POC VALVES	• All water and gas POC's shall have a shut off ball valve in an access box where the depth of handle to finished surface is 6 to 8 inches. • Sewer laterals should have a backwater check valve for finished floor elevations below the downs ream manhole rim.	
LANDSCAPE/ BIOSWALE FOR ROOF DRAIN	• Roof drains and overflow should be directed into a Bioswale for treatment. • Roof drain should not be directed onto or crossed walking surfaces or near utility vault lids.	

PAVING SYSTEMS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ASPHALT PAVEMENT	• Design of Pavement Sections for a 20 year replacement: -Bus Route, Truck Index or TI=9, 6" Minimum Thickness -Trash and delivery routes TI=7, 5" Min. Thickness -Parking lot Aisle TI=6, 4" Min. Thickness -Parking Stall Ti=4, 3" Min. Thickness -Soils R-value testing Required for Design -R-value =50 maximum allowed in Design • Below R-value =10, Soil improvements required in sub-base. Designer should consider the use of Geotextile fabrics to improve sub-base and reduce overall pavement section. • Asphalt Concrete Pavement Uses: -Access Roads -Parking lot Aisle -Parking lot stall – not preferred, but allowed -Parking lot maximum slope is 4.8 % -Minimum slope anywhere 1.0%	
CONCRETE PAVEMENT-USES	• Access Roads or Driveways over 11.99% longitudinal slope • Bus Stop pad locations • Trash Truck lifting area • Trash container enclosure • Fork lift or truck unloading area or dock • Heavy truck maneuvering areas • Min. slope is 0.5% in any direction • Normal cross slope for walking surface 1.75% • ADA path of Travel from Parking Stall to Building Areas • Drainage path in Lot or Road area	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CONCRETE PAVEMENT-COLOR	• Concrete color shall be integral in the mixture. • Stained concrete and topping coats are not acceptable. • Cast-In-Place Concrete Paving in natural grey color shall be used as the primary pedestrian paving type for the campus for its heat reflective properties. • Cast-In-Place Concrete Paving in natural grey color with small particle exposed aggregate shall be used as an accent to sand finish concrete throughout campus. • Integral color should be in the ranges of warm grey, beige to light brown and mocha. • Colors should respond to the natural surroundings of the campus.	
CONCRETE PAVEMENT-FINISH	• Heavy sandblast or heavy exposed aggregate concrete finish should be avoided • Stamped concrete is discouraged but may be evaluated on a project by project basis • Integral color Cast-In-Place Concrete Paving in either sand finish or exposed aggregate finish may be considered be used at campus entry points, building entries and courtyards. • Concrete shall be sealed with a non-enhancing, penetrating sealer and joints shall caulked with color matched sealant. • A light to medium 'Sand Finish' shall be achieved by use of a concrete finish retarder. • A medium to heavy 'Exposed Aggregate' finish concrete shall be achieved by use of a concrete finish retarder revealing 1/8" – 3/8". • Utilize locally sourced aggregates to enhance color and areas of interest. • Cast-In-Place Broom Finish Concrete is generally preferred. • Light broom finish shall be used for pedestrian concrete, medium heavy shall be used in vehicular areas, and heavy may be used on steeper sloping drives.	
CONCRETE - MOCK-UP	• Mock-ups of proposed paving shall be provided in (2) 2'x2' panels at required thickness using the exact contemplated materials and construction techniques including concrete mix, sealers, joint fillers, finishing techniques, etc. • Samples shall be cast at a location designated by the District representative	

PAVING SYSTEMS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CONCRETE - MOCK-UP	• Mock-ups of proposed paving shall be provided in (2) 2'x2' panels at required thickness using the exact contemplated materials and construction techniques including concrete mix, sealers, joint fillers, finishing techniques, etc • Approved samples shall be left in place if approved by the District representative. Contractor shall protect samples from damage or loss. • Approved final samples will be the standards for concrete.	
DECOMPOSED GRANITE (DG) PAVING	• Decomposed granite (DG) may be used for natural pathways, cut-through, trails, informal seating/dining areas or plazas. • Stabilizer for DG shall be integrated and premixed at the manufacturer plant. • DG paving areas shall be contained with a 6" wide mow curb or concrete paving buffer between landscaping/ turf. • Natural, light earth tones shall be used, such as tan, gold, beige or light grey. All DG shall be locally sourced. Colors shall match the architectural palette. • DG pathways require some yearly maintenance and drainage must be considered for a successful installation. • Max. Slope 8% along the trail and 1.75% cross-slope. • Potential use includes trails and pathways.	
PERMEABLE CONCRETE PAVEMENT	• Permeable Concrete Pavement could be considered for parking stall areas but area soil permeability should be verified. • Maximum cross-slope on parking stall is 4 % • Sub-drain is required to drain to planter or to storm drain system. • Not allowed on ADA Parking Stalls or paths of travel. • Generally, campus site soils are not permeable, large areas of porous concrete are not recommended as other LID solutions may be more beneficial and cost effective. • Cast-in-place porous concrete may be strategy for areas where a combination of storm water management techniques are necessitated by the particular project.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CONCRETE PAVERS	• Sub-drain is required to drain to planter or to storm drain system. • Geotextiles should be used to prevent base migration. • Base and paver shall withstand H20 loading as areas may be used for maintenance and fi e trucks. • Edges of paver areas must provide adequate lateral containment of pavers. • Use in parking areas as permeable surface. • Pedestrian walk areas • Not allowed in bus route drives • Limited use in other access roads. • All pavers shall be sand set • Paver style, shape and color shall be coordinated with the adjacent architecture. • Pavers, permeable or water-storing pavers may be used in lieu of landscape concrete paving were feasible. • Lighter and natural colored paver high SRI colors are preferred to reduce heat island effect. • Darker colors may be used as accents or in cooler or shaded courtyards. • All pavers shall be ADA compliant and must be traffic rated for vehicular applications. • Pavers that contain recycled materials or are locally produced are preferred. • Ponding is not acceptable; ensure proper drainage.	
PERMEABLE PAVER UNITS	• Sub-base profile shall comply with geotechnical reports for appropriate drainage • Paving shall have slots for drainage and be channeled to a storm drain • Pavers shall be ADA compliant	
SUB-SURFACE PAVING	• Installation standards shall meet all local Fire Department requirements where applicable • Paving can be a plastic ring system or a reinforced concrete system • Cast-In-Place or Pre-Cast permeable and plantable concrete pavement system may be used at access drives, fire lanes, parking lots, swales or any area where natural infiltration is desired and non-permeable pavement may be eliminated. • All plantable paving systems shall integrate irrigation.	

PARKING LOTS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
LAYOUT	• 90 degree stalls and two-way aisles are the most efficient layout and are the preferred layout method. • Angled spaces are allowed with one way drive aisles. Not Preferred • Drive aisles minimum widths are as follows: - 90 degree – 24 feet, two way - 60 degree – 19 Feet, one way - 45 degree – 17 Feet, one way - 30 degree – 15 Feet, one way	
PARKING SPACE	• Parking space is 9 feet wide and 20 feet long. • Paved area of parking space may be 18 feet long with 2 feet of over hang over a planter only. • Parking spaces are not preferred to overhang walkways. If required then the walkway must be increased by two feet to account for overhang. • ADA spaces must be paved for the entire 20 feet in length and must have a parking stop • Spaces next to walls or obstructions shall be 10 feet in width.	
LANDSCAPE IN PARKING LOTS	• Areas between multiple parking aisles shall be planted. It is preferred that the ratio of planted area to paved area be 25% - 30% • Provide pedestrians walkable paths between parking aisles through planted areas so landscaping is not trampled. • Parking areas should be directed to flow into planted areas to be treated in a bioswale type planting.	
TRASH ENCLOSURES	• Storm runoff is not allowed to run into or through a trash collection container enclosure. • Trash container enclosures must be covered and gated. Container must not be visible from the outside surrounding area. • There should be a concrete area designed for impact load equal to full trash container dropped two feet vertically, Trash weight will be 40 lbs. per cubic foot. The trash container pad should be 1.5 times the size footprint of the container being stored.	

PEDESTRIAN CIRCULATION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
WALKWAY WIDTHS	• Must accommodate infrequent light truck traffic • Must be 12′ adjacent to buildings • Must be 8′ for high use walkways between buildings • Must be 5′ for low use walkways • Must be 10′ minimum where used for some vehicular traffic • Door swings from adjacent space should encroach in path. • Pedestrian path along the roadways for vehicles should not be against the curb of the roadway -provide 3′ separation.	
JOINTING	• Expansion or control joints shall be used throughout the project and located a maximum of 20′ o.c. • Joint widths should be kept to a minimum (1/8″ preferred) for ease of cleaning • Expansion or control joint sealants shall match the adjacent concrete surface • Doweled construction joints are required where concrete shifting may occur, including at stairs and ramps, where paving operations are stopped and started or at different paving types • Score joints shall be saw-cut to ¼ depth of concrete for pedestrian paving and expansion joints shall be 3/8″.	
CONCRETE MOW CURB	• Concrete mow curbs shall be used between turf and planting areas. • Concrete mow curbs shall be a minimum of 6″ wide • Concrete mow curbs shall be used between turf areas and decomposed granite (DG) areas. • Concrete mow curbs shall include jointing. • Concrete mow curbs shall be board formed. • Finish for concrete mow curb shall match adjacent paving.	
SEPARATION OF SEWER AND WATER POC	• Sewer connect should always be below water connections. • Sewer and water POC shall be separated by 10 feet edge to edge. Preference is 12 feet center to center of water and sewer connections.	
COVERED ACCESS & HARDSCAPE MINIMIzATION	• Minimize use of impervious surfaces for pedestrian travel. If imperious surface required for ADA access then consider using an impermeable surface for the required width and a permeable surface for the rest of the pedestrian path. • Impervious portion could be located under a building awning or other covered structure.	

EMERGENCY ACCESS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
COORDIN-ATION WITH LOCAL FIRE MARSHALL	• Coordinate with Local Fire Marshall; must approve access. • Covered parking adjacent to building shall not obstruct fi e truck ladders access from drive aisle. • Fire Marshall may require drivable access to all sides of building.	
FIRE DEPARTMENT	• Front entrance must be visible to first responders during an emergency response in the normal access to the Campus. • Building Identification must also be visible and readable to the responders from the typical drivable access.	
FIRE PROTECTION EQUIPMENT	• For building with fi e sprinkler systems the Post indicator valve and fi e department connection must be 50 feet away from the building serviced. • Post indicator and Fire Department connection shall be marked and visible to first responders position on the drive access to the Front door (see Front Door to Campus relationship above).	

LANDSCAPE IRRIGATION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
IRRIGATION SYSTEMS	• Irrigation systems shall be designed and maintained to promote water conservation and avoid runoff and overspray onto adjacent properties, non-irrigated areas, walks, roadways or structures. • Irrigation systems shall provide total and uniform coverage of landscape and planting areas. When designing irrigation systems, ensure allowances for future systems that may extend beyond the limits of work and sized using sch 40 PVC pipe not to exceed 5' per second rule for hydrology. • Calsense compatible systems shall be utilized to ensure compatibility with the existing irrigation system. • Quick coupling valves shall have a dedicated isolation valve placed at a maximum of every 100 ft. along the main line. • All flow sensors and master valves to be in conduit and wires are to be Calsense recommended for application. • Irrigation systems shall be labeled and mapped with college. An accurate as-built laminated drawing shall be provided.	
SYSTEM VALVE MANIFOLDS	• Mainline isolation valves shall be incorporated into all new projects throughout campus. • Quick coupling valves shall have a dedicated isolation valve. • System valve manifolds shall have isolation valves. • System valve manifolds to include up to a maximum of 3 remote control valves in the manifold. • System valve manifolds shall be separated by plants or other improvements to allow for a more aesthetic appeal in the landscape and be easy in easy to access locations. • All flow sensors & master valve wires should be in conduits. Pull extra wires to each manifold. • Controller Wires to be taped to bottom of mainlines. • All irrigation valves and equipment (backflow p eventer, master valve, flow sensor , remote control valve, isolation valve, quick coupling valve, boxes, etc.) should not be located adjacent to driveways, parking lot approaches, heads of parking lot stalls, planter corners where most prone to accessibility safety issues, vehicular damage and lack of access with vehicular overhang. Equipment must be sufficiently protected, should equipment be required in these locations. • PVC SCH 80 ball valves (glue in) for buried ball valves shall be utilized to isolate sections of the system while allowing the remainder of the system to function normally.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
	• Check valves shall be utilized to prevent drainage of excess irrigation water due to changes in elevation. • Slope conditions may require use of master valves and separate remote control valves, when sprinklers operate from the top of the slope. • Provide one extra wire to each manifold, wire color for the extra to be black. • Refer to the individual zone wire color chart in the Appendix.	
PRODUCTS	• All lateral line shall be PVC SCH 40 with PVC SCH 40 fittings. In limited occasions and only with prior campus approval, on grade lateral piping and fittings to be UVR PVC SCH 40. No ½" pipe. • Pressure mainline shall be Cl 315 PVC for pipe sizes 2"-4"; PVC SCH 40 for 1-1/2" and smaller. • PVC SCH 40 sleeves shall be used for all under pavement crossings, sized a minimum of two (2) diameters larger than items to be sleeved. Lateral line sleeves shall be separate from mainline sleeves. Provide 10" diameter round pull box at each end of sleeve crossing, 12"-24" from pavement edge. • Use high-efficiency products combined with proven campus standards in design. • All new irrigation projects shall be installed using Schedule 40 Purple PVC pipe for Reclaimed Water. • In slope conditions, on-grade PVC shall not be utilized without approval from District and college. • Temporary irrigation systems may be above grade, pipe shall be brown line or UV resistant pipe material.	
OFFSET	• Irrigation shall be given an offset from non-pervious surfaces. Provide a 2' sprinkler offset adjacent to non-pervious surfaces for overhead irrigation systems where drainage is to occur away from planting area. Where drainage off non-pervious surfaces into drainable planting areas is to occur, sprinklers allowed 3" from, and adjacent to non-pervious surfaces. Where plantings are required within the 2' wise strip adjacent to non-pervious surfaces or down sloping edges, a below grade type drip system may be considered. If considered, any drip system shall be approved by the District and college during design.	

LANDSCAPE IRRIGATION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
NEW AREAS	• New irrigation areas shall be integrated into the Calsense weather-based control system, which includes existing on site weather station and remote control of systems throughout campus. Communication mode for new systems shall be evaluated and integrated into project with coordination with the entire design team. Any radio surveys and communication options shall be completed prior to completion of design • New irrigation areas shall include a dedicated irrigation system water meter. • New irrigation areas shall include a flow sensor and a master valve for each controller, to provide individual system management and high flow shut-o f protection. • New installations shall use purple pipe and boxes for future reclaimed water capabilities.	
DRIP IRRIGATION	• In-line or Point-Source Drip irrigation systems shall be used to promote water conservation when possible. • Drip irrigation tubing shall not be exposed when installed (to be placed under landscape mulch and min. 2” of soil). • All new irrigation equipment shall be of one of the major irrigation manufacturer’s to ensure functionally when combined with existing equipment and for ease of replacement with stock product.	
CONTROLLERS	• Controllers shall be located outdoors in protected area from vehicular use. Locate controller outside of spray zone of sprinklers where possible. Enclosures shall be vandal resistant stainless steel, padlock lockable. • All components of the irrigation systems shall be compatible with the CalSense system. • Irrigation controllers shall be automatic and secured in weather and vandal resistant locking enclosures where applicable. • Install controller enclosures within irrigation spray patterns. • Avoid installing controllers in highly visible locations or in areas where they may be damaged by vehicles.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
DESIGN zONES	• Design zones according to sun exposure, shade, building reflection, topography, special soil conditions, and any known future development. Limit zone size so that separated planters on a zone are no further than 75' apart, where possible. • Locate sprinklers, wherever possible, so as to avoid overspray and obstructions to spray pattern (i.e., place a sprinkler on each side of a light pole). • Design with irrigation system components to match the plant water requirements, applies water efficiently at or below the soil infiltration rate, and minimizes overspray.	
ROTORS/ SPRINKLER HEADS	• Pop-up sprinkler heads and rotors shall be of uniform size, type, and function. • Pressure regulated sprinkler heads shall be utilized. • All new irrigation equipment shall match existing equipment to ensure compatibility, availability, and ease of replacement. • All proposed irrigation equipment to be approved by college for confirmation on preferred manufacturer. • Pop-up sprinklers and rotors shall be used in such a way to minimize safety hazards and vandalism.	
PRESSURE REGULATION/ BACKFLOW DEVICES	• All potable irrigation systems shall include pressure regulation and backflow devices. • Test regularly per local codes.	

PLANT PALETTE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
PLANT SELECTION	• Plant palettes shall include regionally appropriate, durable, low-maintenance, and long-lived plant species and varieties. • Plant selection shall be limited to species which are considered relatively disease/pest-free and require minimal trimming to be maintained in a safe and attractive condition. • Ornamental grasses shall be used in limited areas and in educational feature areas. • Plantings shall be grouped into hydrozones and contain only plants that are appropriate for the zone. • Planting at vehicular intersections and parking lot entrance and exits should not exceed 30" in height to maintain site distances for traffic safety. Tree limbs shall be maintained at a minimum of 8' above grade. • Invasive plant species are not acceptable. Refer to the California Invasive Species List, San Diego County Invasive Ornamental Plant Guide and other related documents.	
EXISTING PLANT MATERIAL	• Existing plant material that is to remain as part of or adjacent to a new project shall be protected and replaced in kind if damaged or destroyed. • During construction, avoid excessive root removal and damage with backhoes and tractors. Selectively remove roots by hand cutting whenever possible. Root cuts are to be made clean and flush with no ragged tears or ends to promote new root growth and prevent disease. If roots have jagged or rough cut ends, flush cut these roots. Apply potassium to affected root area and backfill with topsoil around affected roots immediately after damage occurs. Consult with a certified arborist on key specimen trees.	
PLANTING INSTALLATION	• An agricultural suitability soils test shall be completed for every project. All soils and plant pits shall be amended per the report prior to planting. Testing shall be by a certified agronomic laboratory. • Percolation tests shall be conducted at least 48 hours prior to installation of plants and irrigation systems. A pre-emergent herbicide shall be applied to a site after planting is installed, but prior to the installation of mulch. • Finish grade in planter areas shall be low enough to accept mulch and sloped to drain away from the buildings and sidewalks and into a storm drain system • Plants shall be warranted for a one year time period.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TREES - GROSSMONT	• Tree selections shall be appropriate for the proposed area. Characteristics such as root systems, mature size, water requirements, and organic litter should be considered during placement to minimize safety hazards and maintenance issues. • Trees shall not be planted in an area less than 5' wide in any direction. • Proposed trees shall be a minimum of 24" box. • 24" box trees shall be double staked. • 36" box trees and larger shall be triple staked. • Root barriers shall be installed where trees are within 10' of hardscape . • Trees shall be planted no closer than 5' from edge of paving, 15' from building overhangs, and 10' from underground utilities. • All trees shall receive an observation tube/tree drain standpipe to monitor drainage and moisture levels in the soil. • Trees planted in turf areas are to have a mulch zone comparable to the drip line of the tree. Use only shredded bark mulch material in turf areas. • Trees in parking lots: -Shall be a minimum of 24"box. -Shall be canopy trees to provide shade and reduce heat island affect. -Shall not drop sap or excessive leaf/flower litter. -Shall be incorporated into islands at the ends of rows and the middle of parking aisles. -Shall be coordinated with parking lot lighting to avoid blocking light fixtures. • Trees at Gateway: -- Platanus racemosa – California Sycamore -- Quercus ilex – Holly Oak -- Tipuana tipu – Tipu Tree -- Ulmus parvifolia 'True Green' – Evergreen Elm • Trees at Parking Lot: -- Geijera parvifolia – Australian Willow -- Rhus lancea – African Sumac -- Quercus ilex – Holly Oak -- Ulmus parvifolia 'True Green' – Evergreen Elm	

PLANT PALETTE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TREES - GROSSMONT	• Trees at Portals: -- Geijera parvifolia – Australian Willow -- Rhus lancea – African Sumac -- Quercus ilex – Holly Oak -- Ulmus parvifolia 'True Green' – Evergreen Elm • Trees at Quads: -- Fraxinus uhdei – Shamel Ash -- Lagerstroemia indica – Crape Myrtle -- Tipuana tipu – tipu Tree • Trees at Courtyard: -- Arbutus 'Marina' – Strawberry Tree -- Cassia leptophylla – Gold Medallion Tree -- Cercis occidentalis – Western Redbud -- Tabebuia impetiginosa – Pink Trumpet Tree	
TREES - CUYAMACA	• Tree selections shall be appropriate for the proposed area. Characteristics such as root systems, mature size, water requirements, and organic litter should be considered during placement to minimize safety hazards and maintenance issues. • Trees shall not be planted in an area less than 5' wide in any direction. • Proposed trees shall be a minimum of 24" box. • 24" box trees shall be double staked. • 36" box trees and larger shall be triple staked. • Root barriers shall be installed where trees are within 10' of hardscape • Trees shall be planted no closer than 5' from edge of paving, 15' from building overhangs, and 10' from underground utilities. • All trees shall receive an observation tube/tree drain standpipe to monitor drainage and moisture levels in the soil. • Trees planted in turf areas are to have a mulch zone comparable to the drip line of the tree. Use only shredded bark mulch material in turf areas.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TREES - CUYAMACA	• Trees at Bioswales: - Shall be tolerant of long periods of drought (once established) - Shall be tolerant of periods of water inundation of the root-zone - Shall be non-invasive species listed in Southern California - Shall provide habitat value for local flora & faun -- Salix exigua - Coyote Willow -- Salix gooddingii - Goodings Willow -- Salix lasieoepis - Arroyo Willow -- Quercus chrysoleps - Canyon Live Oak -- Quercus engelmanii - Engelmann Oak -- Quercus kellogii - Black Oak • Trees at Courtyards: - Shall provide shade in Summer and Fall months - Shall be small to medium size - Shall not have invasive root systems - Shall be of a disease resistant variety - Shall not drop excessive fruit nor flower - Trees located adjacent to doorways shall not drop excessive leaf litter - Shall be low-water use and/or drought tolerant species. -- Cercidium 'Desert Museum' - Desert Museum Palo Verde -- Cercis Canadensis - Eastern Redbud -- Lagerstroemia indica hybrids - Crape Myrtle -- Olea europea hybrids- Fruitless Olive Tree -- Pistachia chinensis - Chinese Pistasche -- Ulmus p. 'True Green' - Chinese Evergreen Elm • Trees at Entry & Roads: - Shall provide shade in Summer and Fall months - Shall be heat (reflective) tolerant - Shall be drought tolerant - Shall not be invasive species in Southern California - Shall be low-maintenance species - Shall provide seasonal color and/or habitat value	

PLANT PALETTE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TREES - CUYAMACA	-- Jacaranda mimisifolia - Jacaranda -- Lagerstoemia indica hybrids - Crape Myrtle -- Quercus engelmanii - Engelmann Oak -- Tipu tipuana - Tipu Tree • Trees at Parking Areas - Shall provide shade - Shall be heat (reflected heat) toleran - Shall not have surface or invasive root systems - Shall be low-water use & drought tolerant - Shall be low maintenance and disease resistant varieties - Shall not produce fruit - Shall be coordinated with light poles -- Geijera parviflora- Australian illow -- Olea europea - Fruitless Olive	 

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SHRUBS & GROUND COVER - GROSSMONT	• Proposed spacing shall accommodate mature height and spread of plant material. • When planting shrub masses, the spacing shall provide 90 percent coverage within two years. • Shrubs adjacent to buildings must be able to be kept to a height of 3 feet or less for security. • Landscape in all areas shall be located to permit the proper installation of irrigation systems and use of maintenance equipment. • Acceptable Shrubs: -Abelia grandiflora- Glossy Abeli -Arctostaphylos species ('John Dourley', 'Howard McMinn') – Manzanita -Calliandra eriophylla – Fairy Duster -Ceanothus species('Concha', 'Dark Star', 'Joyce Coulter') – California Lilac -Cistus purpureus – Rockrose -Dendromecon rigida – Bush Poppy -Dietes species (bicolor, iridioides) – Fortnight Lily -Fremontodendron 'Ken Taylor' – Flannel Bush -Grevillea species – Grevillea -Heteromeles arbutifolia – Toyon -Lavandula species (angustifolia, dentata) – Lavender -Ligustrum japonica 'Texanum' – Texas Privet -Myrtus communis- Myrtle -Phormium species – Flax -Pittosporum species - Pittosporum -Rhamnus califonica – Coffeeberry -Rhamnus 'Eve Case' – Dwarf Coffeeberry -Rhaphiolepis species – Indian Hawthorne -Rhus integrifolia – Lemonadeberry -Rosa californica – California Rose -Rosmarinus 'Tuscan Blue' – Upright Rosemary -Salvia species (clevelandii, leucantha) – Sage -Viburnum species – Viburnum -Westringia fruticosa – Coast Rosemary -Xylosma congestum – Shiny Xylosma	

PLANT PALETTE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SHRUBS & GROUND COVER - GROSSMONT	• Acceptable Grasses & Grass-like Plants(use sparingly): -Carex tumulicola – Berkley Sedge -Festuca californica – California Fescue -Festuca glauca 'Elijah Blue' – Blue Fescue -Helictotrichon sempervirens – Blue Oat Grass -Leymus condensatus 'Canyon Prince' – Canyon Price Wild Rye -Muhlenbergia capillaries 'Regal Mist' – Pink Muhly Grass -Muhlenbergia rigens – Deer Grass -Sisyrinchium bellum – Blue-eyed Grass • Acceptable Groundcover: -Arctostaphylos species (uva-ursi, 'Emerald Carpet') – Manzanita -Baccharis pilularis 'Pigeon Point' – Coyote Brush -Carex species – Sedge -Ceanothus griseus horizontalis 'Yankee Point' – California Lilac -Cotoneaster dammeri 'Lowfast' – Bearberry Cotoneaster -Festuca californica – California Fescue -Festuca ovina 'Glauca' – Blue Fescue -Lantana species – Lantana -Myoporum parvifolium 'Putah Creek' - Myoporum -Rosmarinus officinalis p ostratus – Trailing Rosemary -Senecio mandraliscae - Kleinia	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SHRUBS & GROUND COVER - CUYAMACA	• Planting shall be primarily Mediterranean type planting and hardy, garden tolerant varieties of Southern California Native plant species. • Size and spacing of plant material is critical for maintenance, hardscape setbacks and on-center spacing should be carefully considered during design. • Larger shrub material is discouraged due to safety and visibility concerns. • In lieu of groundcovers, mulch is often preferred for its longevity and reduces overall water consumption. • All planting areas should be mulched in either bark mulch or locally sourced rock mulch. • Rock mulch shall be ½" or larger and 2" depth min. • Xeriscaping with boulders is encouraged. • All planting areas shall require irrigation, including green roofs. • Final plant selection shall be reviewed and approved by campus Facilities & Maintenance. • Acceptable Shrubs & Perennials: - Artemesia californica - Sagebrush - Ceanothus spp. – California Lilac - Cistus spp. - Rockrose - Encelia farinosa - Brittlebrush - Eriogonum fasciculatum – California Buckwheat - Heteromeles arbutifolia – Toyon - Malosma laurina – Laurel Sumac - Myrica californica – Pacific ax Myrtle - Rhamnus californica - Coffeeberry - Rhaphiolepis umbellata minor – Dwarf Yeddo Hawthorne - Rhus integrifolia – Lemonade Berry - Rhus ovata – Sugar Bush - Rosemarinus spp. - Rosemary - Salvia apiana – White Sage - Salvia clevelandii – Cleveland Sage - Salvia gregii – Autumn Sage - Salvia mellifera – Black Sage - Spharalacea ambigua – Desert Mallow - Viguiera laciniata – San Diego Sunflower	

PLANT PALETTE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SHRUBS & GROUND COVER - CUYAMACA	• Limit ground cover on the campus and coordinate any use with college facilities staff.	
SUCCULENTS - GROSSMONT	• Acceptable Succulents: Aeonium species - Aeonium Agave species - Agave Aloe species - Aloe Dasylirion wheeleri – Spoon Yucca Dudleya species – Live-Forever Echeveria species - Echeveria Hesperaloe parviflora – Red ucca	
SUCCULENTS - CUYAMACA	• Acceptable Succulents: - Agave spp. – Cold Hardy Agaves - Dasylirion wheeleri – Spoon Yucca - Echinocactus grusonii - Golden Barrel Cactus - Ferocactus viridescens – Coast Barrel Cactus - Hesperaloe parvifolia – Red Yucca - Nolina spp. - Beargrass - Opuntia spp. – Prickly Pear Cactus - Senecio mandraliscae - Kleinia	
BIOSWALES & RAIN GARDEN - GROSSMONT	• Acceptable Bioswales & Rain Garden: -Carex spissa – San Diego Sedge -Festuca californica – California Fescue -Juncus acutus leopoldii – Leopold Rush -Juncus mexicanus – Mexican Rush -Juncus patens – Rush -Leymus condensatus 'Canyon Prince' – Canyon Prince Wild Rye -Muhlenbergia rigens – Deer Grass	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
BIOSWALES & RAIN GARDEN - CUYAMACA	• Acceptable Bioswales & Rain Garden: - Carex spissa – San Diego Sedge - Juncus spp. – Rush - Leymus 'Canyon Prince' – Wild Rye - Muhlenbergia rigens – Deer Grass - Mimulus spp. – Monkeyflowe - Sambucus Mexicana - Elderberry	
TURF - GROSSMONT	• Turf shall limited to areas of active use and will be evaluated on a project by project basis • Turf shall be installed as sod rolls, seed is not acceptable • Turf type shall be approved by campus maintenance representative • Concrete mow curbs shall be used between turf areas and planting areas; redwood, plastic and metal headers are not acceptable	
TURF - CUYAMACA	• Use of turf is discouraged except for at high use and multi-use recreational and sports areas. • Use of ornamental or native grasses are discouraged due to higher maintenance needs • Low-water use turf varieties shall be required. • Use of synthetic turf is discouraged at the Cuyamaca campus. - Paspalum vaginatum – Seashore Paspalum - Cynodon dactylon – Bermuda Grass	
VINES - CUYAMACA	• Vines are encouraged for passive cooling of buildings and pavement such as on trash enclosures, mesh-screen panels, trellises and fencing. • Low-water use, hardy and frost and heat tolerant vine varieties: - Calliandra haematocephala – Pink Powderpuff - Clytostoma callistegoides – Lavender Trumpet Vine - Distictis buccinatoria – Red Trumpet Vine - Mascagnia macroptera – Butterfly vine	

PLANT PALETTE

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
HYDROSEED	• Use of Hydroseed shall be evaluated on a project by project basis. • Hydroseed shall be applied mechanically in a slurry mix containing the seed, amendments, and a bonded fiber matrix with tackifer.	
SYNTHETIC TURF	• Synthetic turf may be used in athletic programmed areas and will be evaluated on a project by project basis. • Manufacturers must have produced a minimum of 10 successful turf installations within the last 3 years . • Synthetic turf system shall include sub-surface drainage. • Synthetic turf shall include a grass zone and thatch zone. • Synthetic turf shall come with a 10 year warranty. • A nearby potable water source for wash down and cooling shall be provided.	
SLOPES	• All 2:1 slopes shall receive erosion control matting and fiber polls. • Appropriate trees, shrubs, and groundcovers shall be planted on the entire slope . • Select low flammable fuel volume plant material, especially where campus edges abut open space and naturalized areas.	
MULCH	• All planting areas with slopes less than 2:1 shall receive a 3" layer of shredded bark or inorganic mulch • Inorganic mulch, crushed rock, or cobble, is acceptable where appropriate. Weed barrier shall be installed under inorganic mulch. Rocks used as mulch or in a landscape design should be 2" or larger.	

SITE FURNISHINGS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SEATING & TABLES	• Tables/chairs shall have four legs with adjustable glides. Tables with a single center pedestal support are not acceptable. • Metal furnishings are only allowed is shaded areas and shall have a matte finish • Large boulders are encouraged to function as natural seating areas within the landscape. • Seating areas shall be integrated into the landscape where possible, in the form of concrete landscape walls • Skateboard deterrents shall be an integral part of the furnishing design. Hardware applied to furnishings after is not acceptable. • Boulders and signage require a concrete or decomposed granite pad and shall not be placed directly into turf areas. • Landscape seating fixtures, such as benches, shall be constructed of either metal mesh (unpainted aluminum, painted vinyl , or powder-coated finish) or reinforced concrete and be able to be fastened to a concrete base. • Furnishings shall match the existing campus aesthetic. • Furnishings shall be consistent with other common campus areas. • Landscape seating shall be located in a gathering space such as a building courtyard or outdoor classroom or along walkways or landscaped corridors. • Considerations shall be given for benches that are dedicated as memorials or given as gifts to the campus. Text for memorial benches shall be sandblasted into concrete bench. Verbiage shall be approved by the District. • In groupings of two or more tables, one table shall be wheelchair accessible. • Benches shall be reinforced concrete, style to match existing on campus. Benches with backs and armrests shall be located per ADA compliance with Title 24 regulations. Bench color shall be Davis Colors 'San Diego Buff' at Grossmont and Standard Grey at Cuyamaca, with light sandblast finish. • Suggested Manufacturers: - Quickcrete - Dura Art Stone - Wausau Tile - Outdoor Creations Inc.	 

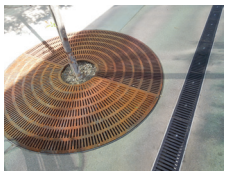
SITE FURNISHINGS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
OUTDOOR CLASSROOM	• Outdoor classrooms should be of a thematic nature, focusing specifically on environmental studies and sustainability. • Outdoor classrooms should utilize California Native Plant Communities and specified in the planting section. • Interpretive signage shall be integrated into outdoor classrooms areas. • Avoid the use of wood or recycled wood surfaces or structures. • Shade shall be provided by planting or overhead structures. See shade structures section.	
INTERPRETIVE SIGNAGE	• Interpretive signage shall be constructed of a durable vinyl or plastic material that will last 20-30 years in the proposed condition. • Signage shall be noticeable but visually unobtrusive. • Interpretive signage shall include information on planting species and natural systems, as applicable.	
LANDSCAPE LIGHTING	• Refer to Division 26.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
TRASH & RECYCLE RECEPTACLES	• All receptacles shall be placed on a concrete or decomposed granite pad. • All receptacles shall include a dome type locking lid, grey for trash and blue for recycling, and plastic liner that is easily removable for collection. • Receptacles shall be reinforced concrete, round, and of a size to match existing on campus. • Suggested Manufacturers: - Quickcrete - Wausau Tile - Dura Art Stone - Outdoor Creations Inc. • Receptacles color shall be Davis Colors 'San Diego Buff' at Grossmont and Standard Grey at Cuyamaca, with light sandblast finish • Receptacles shall be placed in areas with high pedestrian circulation and directly adjacent to pedestrian pathways. • Receptacles shall be commercially available. • Recycling receptacles shall be placed adjacent to all trash receptacles.	
BIKE RACKS	• Bike racks shall be 'Wave' style racks with a galvanized at Cuyamaca and Hunter Green powder coat finish at Grossmont. • Bike racks shall be located adjacent to pedestrian pathways. All racks shall be mounted or embedded in concrete. Racks may be located in DG areas. • Bike racks shall be located throughout campus in locations that are convenient to building entries, away from falling debris, and visually unobtrusive while maintaining good visibility for security purposes. • Suggested Manufacturers: - Madrax - Belson - Dero	

SITE FURNISHINGS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SHADE STRUCTURES	• Shade structures shall be incorporated into gathering areas and shall be integrated with the architectural style of the site. • Materials shall be selected for longevity and low maintenance. • Structures shall be metal and have a powder coated finish or high performance coating that requires little maintenance. • Metal structure manufacturers shall have 5 years of experience in the fabrication of tubular steel shade structures. • Tensile fabric shelters are acceptable upon approval of District and college. • Wood and wood composite materials are not acceptable. • Shade structures can incorporate photovoltaic roof panels where appropriate. • Acceptable structures: • Greenscreen - Vertical cable or wire 'green' screens shall be of metal (stainless steel, painted vinyl or powder coated) finish. - Green screens shall be located in landscape mulch areas, accessible for maintenance, and be irrigated appropriately. - Locate green screens along southwestern edges of buildings and courtyard spaces to promote passive cooling techniques. - Metal mesh shall be included for vines growth. - Green screens shall compliment architectural style. • Trellis Structures - Trellis structures shall be primarily comprised of metal, raw steel, painted vinyl or powder coated finishes that require little maintenance. - Metal mesh, cable or armatures are encouraged for vines growth. - Trellis shall match architectural style of adjacent buildings when included as part of new construction projects. - Trellis structures may be free standing or attached to structures.	  

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
SHADE STRUCTURES	• Sail Canvas or shade structures shall be of high quality and durable material with a min. 10 year warranty. • Sail Canvas and shade structures shall meet local wind test calculations. • Shade structure support, post or cable shall be constructed of non-corrosive metal (painted vinyl or powder coated finish) and require little to no maintenance.	
FENCING & GATES	• Materials shall be powder coated metal fencing and colors shall be black or match the adjacent architecture. • Black vinyl coated chainlink material is acceptable on a project by project basis in certain locations but must be approved by District and college. • Vinyl fencing with galvanized supports may also be acceptable in some locations. Review with District for use.	
BOLLARDS	• Removable bollards shall be manufactured of medium weight concrete and include a lockable feature • Permanent bollards shall be concrete with color and finish to match surrounding site furnishings and shall be epoxied to concrete paving	
TREE GRATES	• Tree Grates shall be incorporated into the design where trees are installed within concrete paving areas. • Tree grates shall also be small and light enough to lift easily for repairs/ maintenance but durable withstand the weight of golf carts and mowers. • Pavers shall not be used in tree wells.	
ART	• Art shall be incorporated on a project by project basis and be integrated into the project during the design process	

LANDSCAPE WALLS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
CAST-IN-PLACE SAND FINISH CONCRETE WALLS	• Cast-In-Place Sand Finish Concrete walls may be used as retaining wall, low seat walls or planter walls. • 'Light Sand Finish' shall be achieved by use of a concrete retarder. • For low walls, utilize a notched design to deter skateboarding and other un-authorized grinding. Integrally colored walls shall utilize a color palette that adheres to the regional landscape. • All walls shall require steel reinforcement.	
CAST-IN-PLACE SMOOTH TROWEL FINISH CONCRETE WALLS	• Cast-In-Place Smooth Trowel or Sack Finish walls may be used as retaining walls, low seat walls or planter walls. • Integrally colored walls shall utilize a color palette that adheres to the regional landscape. • For low walls, utilize a notched design to deter skateboarding. • Walls shall utilize a color palette that adheres to the landscape. • All walls shall require steel reinforcement.	
GABION BASKET WALLS	• Gabion basket walls may be used at natural areas for soil retention, stream bank stabilization or for decorative site walls. • Baskets must resist corrosion, and be of a low gauge (9 is recommended for decorative walls) to retain form structure. • Baskets shall be filled with either locally sourced rock, site rock or clean, recycled material such as concrete or rubble.	
STONE WALLS	• Rustic concrete stone veneer walls shall be utilized for special accent, signage or entry monument walls. • Stone veneer on CIP or CMU Core wall with CIP foundation. • Stones should be hand fit and g out joints should be clean and consistent and shall meet stone masonry stds. • Mortar shall be raked min. 1/2". • Natural or dry-stacked stone retaining walls may be used in the Central Park as natural amphitheater or retaining condition at mature existing trees.	
RAMMED EARTH WALLS	• Rammed earth walls may be utilized for special accent, signage or entry monument walls. • Rammed earth shall use native or locally sourced material in its construction.	

General Approach - Providing good acoustic environments within classrooms, labs, meeting rooms and other sound sensitive spaces at the Grossmont and Cuyamaca Colleges is extremely important to the District. Good acoustics enables more effective communication which will foster student learning, relieve listener fatigue and improve interaction between faculty and students. The acoustic design standard below provides guidelines for good acoustical design practices that, when incorporated early in a project, can reduce noise control cost and redesign efforts. The standard addresses exterior noise intrusion, interior sound isolation, room acoustics and building systems noise and vibration control. Good acoustic environments can be achieved in new construction and renovation projects when all aspects of the acoustic design standard are addressed.

SOUND ISOLATION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
EXTERIOR SOUND ISOLATION	• Avoid placing roof mounted mechanical equipment (air-cooled chillers, cooling towers, package roof top units, air-handling units) directly above Noise Criteria (NC) 35 or lower spaces. NC is a single number rating that consists of a family of criterion curves and a tangency rating procedure. The criterion curves define the limits of octave band spectra that must not be exceeded to meet occupant acceptance. If this condition cannot be avoided, the design team's acoustical consultant should carry out an acoustical analysis to determine the roof/ceiling construction needed to achieve an NC rating at least five (5) points below the design goal background noise levels for the impacted space(s). • Avoid placing outdoor mechanical equipment immediately adjacent to NC 35 or lower spaces. If this condition cannot be avoided, the design team's acoustical consultant should carry out an acoustical analysis to determine the facade construction needed to achieve an NC rating at least five (5) points below the design goal background noise levels for the impacted space(s). • The total sound levels inside the impacted space(s), due to indoor and outdoor mechanical equipment noise, should not exceed the design goal background noise levels listed for the space(s). Design goal background noise levels for the various spaces are provided below.	

SOUND ISOLATION

<table>
<tr><th>SYSTEM/
MATERIAL</th><th>PERFORMANCE CRITERIA</th><th>IMAGE</th></tr>
<tr><td>EXTERIOR SOUND ISOLATION</td><td>• When new or renovated buildings are located 300-ft or less from major roadways, the design team's acoustical consultant should carry out an acoustical analysis to determine the façade and roof/ceiling construction needed so that the maximum hourly sound levels in perimeter rooms do not exceed the values listed below.

<table><tr><th>ROOM TYPE</th><th>MAXIMUM HOURLY LEQ DUE TO MAJOR TRANSPORTATION NOISE SOURCES</th></tr><tr><td>CLASSROOMS</td><td>35 DBA</td></tr><tr><td>CLASSROOM LAB</td><td>35 DBA</td></tr><tr><td>CONFERENCE/MEETING ROOMS</td><td>35 DBA</td></tr><tr><td>GROUP/TUTOR ROOMS</td><td>40 DBA</td></tr><tr><td>COLLABORATIVE SUPPORT SPACES</td><td>40 DBA</td></tr><tr><td>PRIVATE OFFICES</td><td>40 DBA</td></tr><tr><td>STUDY ROOMS (INDIVIDUAL AND GROUP)</td><td>40 DBA</td></tr><tr><td>OPEN OFFICE WORK AREAS</td><td>45 DBA</td></tr><tr><td>PUBLIC AREAS/LOBBIES/HALLWAYS</td><td>50 DBA</td></tr></table></td><td></td></tr>
<tr><td>INTERIOR SOUND ISOLATION</td><td>Sound isolation performance for airborne noise is expressed in terms of Sound Transmission Class (STC) rating. The STC rating expresses the sound isolation performance of an assembly under ideal laboratory conditions in accordance to ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
• Demising partitions (excluding doors) and floor/ceiling constructions separating spaces (as outlined below) should be designed to achieve the minimum STC rating listed below. Partitions with ratings of STC 45 or higher should be full height partitions – gypsum board and studs extending slab to slab. Penetrations (duct, pipe, conduit, outlet boxes, etc.), recessed elements and other elements such as HVAC return openings in acoustic partitions should not compromise the STC rating of the partition or floor/ceiling assembly
• Typical partitions that can be expected to achieve the specified STC performance ratings listed in the matrix above, when properly constructed and sealed, are provided below.
• The STC ratings listed exclude the influence of doors.</td><td></td></tr>
</table>

SOUND ISOLATION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
INTERIOR SOUND ISOLATION	• Doors located in demising partitions off of corridors should provide STC 30 min. sound isolation performance, except in cases where confidential speech privacy is required. When confidential speech privacy is required, STC rated sound control doors equal to the STC rating listed in the matrix above will be required to maintain confidential speech privacy. STC 30 sound isolation performance at doors should be achieved through the use of solid core wood or damped hollow metal doors with full perimeter gaskets at the head, jamb and door bottom. The door bottom gasket should seal to a solid metal plate, stone or concrete, not carpet. • Vision windows in doors or next to doors of NC 35 or lower spaces should be limited to 5'-2" and have a min. STC rating of 35. • Doors and windows between adjacent sound sensitive spaces (such as classroom to classroom) should be avoided, otherwise STC rated sound control doors and windows equal to the STC ratings listed in the matrix will be required to maintain sound isolation. • Monolithic glass wall, large vision lite or door construction should not be used where confidential speech privacy is required. • Mechanical and electrical room (equipped with transformers) doors should provide STC 30 min. sound isolation performance when they are within 30' of a room with an NC 35 or lower background noise level criterion. The door leaf should either be 1-3/4" solid core wood or damped hollow metal. STC 30 sound isolation performance should be achieved with adjustable door gaskets at the head, jamb and door bottom. A gasketed threshold should also be used at the door bottom. • Partitions with STC 45 or higher sound isolation performance should be full height and wall heads should be sealed airtight in accordance with the recommended details below. • Duct, pipe and conduit penetrations through STC 45 or higher partitions should be sealed airtight in accordance with the recommended details below.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
INTERIOR SOUND ISOLATION	• Duct, pipe and conduit penetrations through floor assemblies should be sealed airtight in the same manner as shown in the partition penetrations details. • Return air ceiling plenums should not be used for spaces with STC 50 or higher demising partitions. Use ducted return air systems. Utilize lined "U-shaped" return air transfer ducts in STC 45 or lower partitions only. • Electrical junction boxes on opposite sides of the same demising partition should be separated by a minimum of 24-inches and one stud row. When this condition cannot be satisfied, the junction boxes serving each side of the wall should be covered on their back and sides with fi e stop putty pads or 1/8-inch thick sheet caulk. The perimeter of the boxes should also be caulked airtight with acoustical sealant. • Keep plumbing chases and toilets off of partitions demising occupied spaces, such as classrooms, labs, offices, etc, in o der to avoid having to use the STC-62 wall construction.	

	Classroom (1)	Classroom Lab	Small & Medium Group/Tutor Room	Large Conference / Meeting Rooms	Standard Office (2)	Executive Office (3)	Open Office Areas	Public Corridors	Faculty Office Suite Corridors	Collaborative Spaces	Toilet Rooms	Custodial Closets	Elevator Machine Rooms	BDF/MDF/IDF Rooms	Mechanical & Electrical Rooms
Classroom (1)	50														
Classroom Lab	50	50													
Small & Medium Group/Tutor Rooms	50	50	45												
Large Conference / Meeting Rooms	50	50	50	50											
Standard Office (2)	50	50	45	45	45										
Executive Office (3)	50	50	50	50	50	50									
Open Office Areas	50	50	45	50	45	50	NA								
Public Corridors	45	45	45	45	45	45	40	NA							
Faculty Office Corridors	45	45	45	45	45	45	NA	NA	NA						
Collaborative Spaces	50	50	45	50	45	50	45	45	45	45					
Toilet Rooms	62[4]	62[4]	50	60[4]	50	60[4]	50	45	45	50	40				
Custodial Closets	40	40	40	40	40	40	40	40	40	40	40	40			
Elevator Machine Rooms	60	60	60	60	60	60	55	45	45	60	45	40	40		
BDF/MDF/IDF Rooms	45	45	45	45	45	45	40	40	40	45	40	40	40	40	
Mechanical & Electrical Rooms	60	60	55	60	55	55	50	50	50	55	45	40	40	40	40
NOTES	1. Classrooms with and without amplified sound. 2. Normal speech privacy. 3. Confidential speech privacy. 4. Double wall construction.														

ROOM ACOUSTICS

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
ACOUSTICAL ROOM FINISHES	• Reverberation is the persistence of sound within an enclosed space and is related to the room volume, geometry and the quantity of sound absorptive surfaces within a room. Reverberation time (RT60) is expressed in seconds. It is important to have a reverberation time below 1.0-second in spaces where speech communication is the primary function. • Unoccupied spaces should be designed so that the maximum reverberation time (RT60) values in the 500, 1,000 and 2,000 hertz octave bands do not exceed the values listed below. The table also provides guidelines for achieving the RT60 values.	

		Sound Absorptive Surface Finishes		
Room Type	**RT60 (seconds)**	**Ceiling**	**Floor**	**Walls**
Classrooms, Room Volume 10,000 cubic feet or less	0.60	1	2	N/A
Classrooms, Room Volume 10,000 to 22,000 cubic feet	0.70	1	2	3
Classroom Labs	0.70	1	2	N/A
Group/Tutor Rooms	0.70	1	2	N/A
Conference/Meeting Rooms	1.0	1	2	3
Private Offices	1.0	1	2	N/A
Open Office Areas	1.0	1a	2	N/A
Public Areas, Lobby, and Corridors	1.5 or less	1	N/A	N/A
Collaborative Support Spaces	0.70	1	2	N/A
1. 1a.	Sound absorptive ceiling, NRC 0.70 minimum. Sound absorptive ceiling, NRC 0.90 minimum.			
2.	Carpet for sound absorption and impact noise reduction.			
3.	Sound absorptive wall panels (NRC 0.80 min.) will likely be required to achieve RT60 requirement. Panels should be placed on at least two adjacent walls. Coverage required should be determined by project team on a project by project basis.			
N/A	Sound absorptive finish not required.			

BUILDING SYSTEMS NOISE AND VIBRATION CONTROL

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
BACKGROUND NOISE LEVELS	• Background noise within an unoccupied space is comprised primarily of sound from outdoor noise sources and building systems (mechanical, electrical and plumbing systems) serving the building. Background noise levels are typically expressed in terms of Noise Criteria (NC). Noise Criteria is a single number rating that consists of a family of criterion curves and a tangency rating procedure. The criterion curves define the limits of octave band spectra that must not be exceeded to meet occupant acceptance.	

<table>
<tr><th>SYSTEM/
MATERIAL</th><th>PERFORMANCE CRITERIA</th><th>IMAGE</th></tr>
<tr><td>BACKGROUND NOISE LEVELS</td><td>
• Maximum background noise levels, due to indoor and outdoor mechanical equipment noise, should not exceed the design goal values listed below. Lower background noise level criteria may be warranted if distance learning or audiovisual systems are design requirements.
• Classrooms = NC 30
• Conference/Meeting Rms = NC 30
• Classroom Lab = NC 35
• Group/Tutor Rooms = NC 35
• Private Offices = NC 3
• Collaborative Support Spaces = NC 35
• Open Office Work Areas = NC 40
• Public Areas/Lobbies/Corridors = NC 45
</td><td></td></tr>
<tr><td>AIRFLOW VELOCITY GUIDELINES</td><td>
• Maximum recommended airflow velocities in ducts passing through, but not serving an occupied space based on NC criterion, ceiling type and duct shape:
<table>
<tr><th></th><th></th><th colspan="2">Maximum Recommended Airflow Velocity, FPM</th></tr>
<tr><th>Duct Main Location</th><th>Noise Criteria, NC</th><th>Rectangular Duct</th><th>Circular Duct</th></tr>
<tr><td>Inside occupied space (no ceiling)</td><td>45</td><td>2,000</td><td>3,900</td></tr>
<tr><td></td><td>35</td><td>1,450</td><td>2,600</td></tr>
<tr><td></td><td>25</td><td>950</td><td>1,700</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Above suspended acoustic ceiling</td><td>45</td><td>2,500</td><td>4,500</td></tr>
<tr><td></td><td>35</td><td>1,750</td><td>3,000</td></tr>
<tr><td></td><td>25</td><td>1,200</td><td>2,000</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Above gypsum board ceiling</td><td>45</td><td>3,500</td><td>5,000</td></tr>
<tr><td></td><td>35</td><td>2,500</td><td>3,500</td></tr>
<tr><td></td><td>25</td><td>1,700</td><td>2,500</td></tr>
</table>
• Maximum recommended airflow velocities in ducts serving occupied spaces:
<table>
<tr><th></th><th colspan="4">Supply Side, 5-ft lined branch duct or 3-ft of acoustic flex at diffusers</th></tr>
<tr><th>NC Criterion</th><th>Branch duct and at diffuser neck</th><th>Duct main with 2.5-ft branch duct</th><th>Duct main with 5-ft branch duct</th><th>Duct main with 10-ft branch duct</th></tr>
<tr><td>NC 30</td><td>500</td><td>720</td><td>880</td><td>1,170</td></tr>
<tr><td>NC 35</td><td>600</td><td>880</td><td>1,080</td><td>1,200</td></tr>
<tr><td>NC 40</td><td>700</td><td>1,020</td><td>1,200</td><td>1,200</td></tr>
<tr><td></td><td colspan="4">Return Side, 5-ft lined branch duct or 3-ft of acoustic flex at grilles</td></tr>
<tr><td>NC 30</td><td>600</td><td>860</td><td>1,050</td><td>1,200</td></tr>
<tr><td>NC 35</td><td>700</td><td>1,045</td><td>1,200</td><td>1,200</td></tr>
<tr><td>NC 40</td><td>800</td><td>1,200</td><td>1,200</td><td>1,200</td></tr>
</table>
</td><td></td></tr>
</table>

EQUIPMENT SOUND ISOLATION

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
HVAC ACOUSTIC DESIGN GUIDELINES	• Select the quietest feasible equipment when designing the mechanical systems. • Design duct systems for good aerodynamic flow conditions to minimize turbulence and regenerated noise. Utilize low pressure drop fittings, such as 45° taps, on all supply and return branch duct take offs from duct mains Use the lowest possible duct velocities consistent with the system parameters. • Rooftop package units containing compressors and/or condensing units should not be located directly above NC 35 or lower spaces. If package units must be located above these spaces because of the lack of rooftop space, an acoustical analysis should be performed to determine the noise control measures that may be required to achieve the background noise level criterion inside the occupied spaces. Potential noise control measures may include using concrete over metal deck, steel dunnage to raise the unit off of the roof or an acoustic package inside a vibration isolated roof curb. An acoustical package consists of two layers of exterior grade 1/2" thick gypsum board that cover the entire floor area inside the vibration isolated curb (except for duct penetrations). 3" thick sound batt insulation is also placed on top of the roof inside the roof curb. Specific noise control for each project should be provided by the design team's acoustic consultant. • Rooftop package units should not be equipped with bottom inlet and discharge ductwork, unless the unit is installed above a space with a background noise level criterion of NC 40 or higher. Where ever possible, rooftop package units and air-handling units should be configured for top, end or side inlet and discharge ductwork when serving or located above NC 35 or lower spaces. If these conditions cannot be avoided, the use of circular ductwork and other noise control measures will likely be required to control duct radiated noise in the spaces below. Specific noise control for each project should be provided by the design team's acoustic consultant.	

SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
HVAC ACOUSTIC DESIGN GUIDELINES	• VAV boxes, exhaust fans or fan coil units should not be located inside ceilings of NC 35 or lower rooms. This equipment should be located in non-noise sensitive spaces, such as corridors or storage closets, and should be located several feet from the wall of the occupied space. • Avoid crosstalk conditions by locating main ducts along corridors and branching into rooms from the corridor to maximize duct pathway length between spaces. Branch duct should be lined with 1" duct liner or equipped with 3' of acoustical flex duct to prevent cross talk between adjacent spaces. • Diffusers and grilles should not be equipped with integral volume dampers. Locate balancing dampers in supply and return ducts at least 5' from diffusers/grilles. Branch ducts should be lined with 1" duct liner or equipped with 3' of acoustical flex duct between the balancing dampers and diffusers/grilles. • Select diffusers and grilles with a published NC rating of at least 5 to 10 points below the background noise level criterion for the occupied space. • When ducted returns cannot be utilized, return air from occupied spaces should be ducted via lined return air transfer ducts. Return air transfer ducts should be "U" shaped with a 4' minimum centerline length and 6" long upturn lined elbows at each end. The transfer duct should be located above a ceiling on both sides of the wall. • Insert DTL-500 Image here. • A complete and thorough acoustical analysis should be carried out to determine the noise control measures (duct silencers, duct liner, roof construction, etc.) that will be required to achieve the maximum recommended background noise levels inside worst case occupied spaces. The analysis and recommendations should be provided for all indoor and outdoor mechanical equipment that may impact spaces inside new or renovated buildings.	

EQUIPMENT SOUND ISOLATION

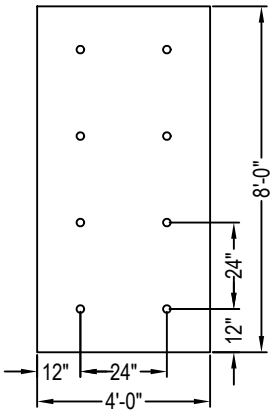
SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
VIBRATION ISOLATION DESIGN GUIDELINES	• Mechanical and electrical equipment should be vibration isolated in accordance with the table below.	

Equipment	Equipment Sizes	Slab on grade		Above grade	
		Base Type	Isolator Type (1)	Base Type	Isolator Type (1)
Chillers, reciprocating	All	A	2	A	4
Chillers, centrifugal	All	A	1	A	4
Chillers, screw	All	A	4	A	4
Package AC Units	All	N/A	N/A	D	4
Air-handling units (2)	All	B	4	B	4
Fan coil units	All	B	3	A	3
Axial and Inline Exhaust Fans, Suspended 3	<2.0 in SP	-	-	B	3
Axial and Inline Exhaust Fans, Suspended 3	>2.1 in SP	-	-	C	3
Centrifugal Exhaust Fans, Floor Mounted 3	<40 HP	B	4	B	4
Centrifugal Exhaust Fans, Floor Mounted 3	>40HP	C	4	C	4
Pumps, end suction/closed coupled	All	C	4	C	4
Pumps, inline	All	A	4	A	4
Cooling towers 3	All	N/A	N/A	A	4
Condensing units	All	A	1	A	1
Air compressors	All	C	4	C	4
Transformers	All	A	1	A	1
NOTES	1. Provide vibration isolation with appropriate seismic restraint devices. 2. Internally vibration isolate supply and return fans inside the fan cabinets. 3. For fan speeds of 500 RPM or higher. Seek the assistance of an acoustical consultant for vibration isolation requirements when fan speeds are 499 RPM or less.				
Base Types	A. No base, isolators attached directly to equipment unless equipment manufacturer takes exception. B. Structural steel rails or base. C. Concrete inertia base. D. Vibration isolated curb base.				
Isolator Types	1. Neoprene pad, 60 durometer max, 0.5-inch thick min, 0.1-inch static deflection. Utilize neoprene bushings/grommets at all bolt holes. 2. Neoprene mounts, 60 durometer max, 0.25-inch minimum static deflection. 3. Spring hangers, 2-inch minimum static deflection with appropriate seismic restraint. 4. Spring mounts, 2-inch minimum static deflection with appropriate seismic restraint.				

- Locate all major mechanical equipment on the stiffest parts of the floor or roof, such as at major column lines, above loaded bearing walls, etc. Avoid locating equipment in the middle of floor or roof spans.
- Locate suspended equipment so that it can be suspended from major structural elements and not from lightweight roof deck or floor diaphragms.
- HVAC ductwork, piping and electrical connections to vibrating equipment should be made via flexible connections. VAV boxes do not require vibration isolation or flexible duct connections.
- All floor mounted transformers should be vibration isolated either on seismically restrained neoprene mounts or neoprene pads. The isolators should be sized for a minimum 0.1" static deflection without overloading the isolator. Connections made to the transformers should be made via slack flexible conduit connections.

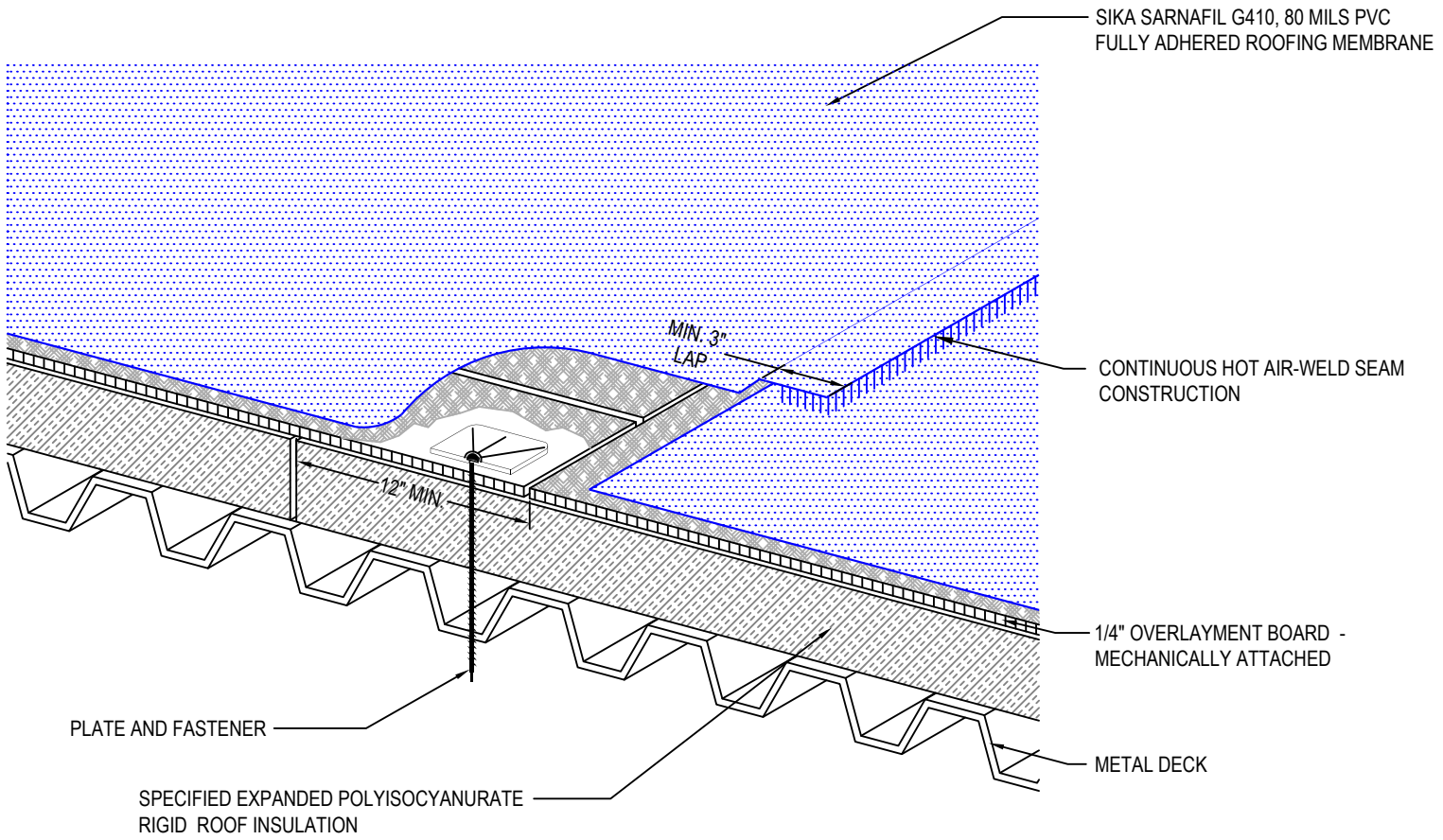
SYSTEM/ MATERIAL	PERFORMANCE CRITERIA	IMAGE
VIBRATION ISOLATION DESIGN GUIDELINES	• Housekeeping pads should be located below mechanical and electrical equipment, especially when the equipment is located above grade. Reinforced housekeeping pads should be at least 6" thick and be designed and sized to accommodate the seismic loads that may be imparted on the equipment. Coordinate with the various disciplines regarding documentation of the pads.	

Roofing Guideline Drawings



8 FASTENERS PER BOARD

NOTE: STAGGER ALL BOARD JOINTS 12" IN EACH DIRECTION AND BETWEEN LAYERS.



Independent Roofing Consultants

2901 PULLMAN STREET
SANTA ANA, CA 92705
(949) 476-8626
(949) 476-9810 FAX
(800) 666-7663
WWW.IRCTECH.COM

NOTES:

PROJECT NAME:

GCCCD

CALIFORNIA

DETAIL DESCRIPTION:

TYPICAL SINGLE-PLY CROSS SECTION @ METAL SUBSTRATE

IRC PROJECT NO:	00000.00
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CHECKED BY:	PP
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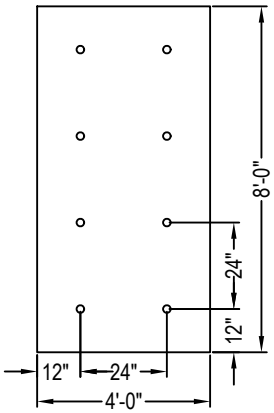
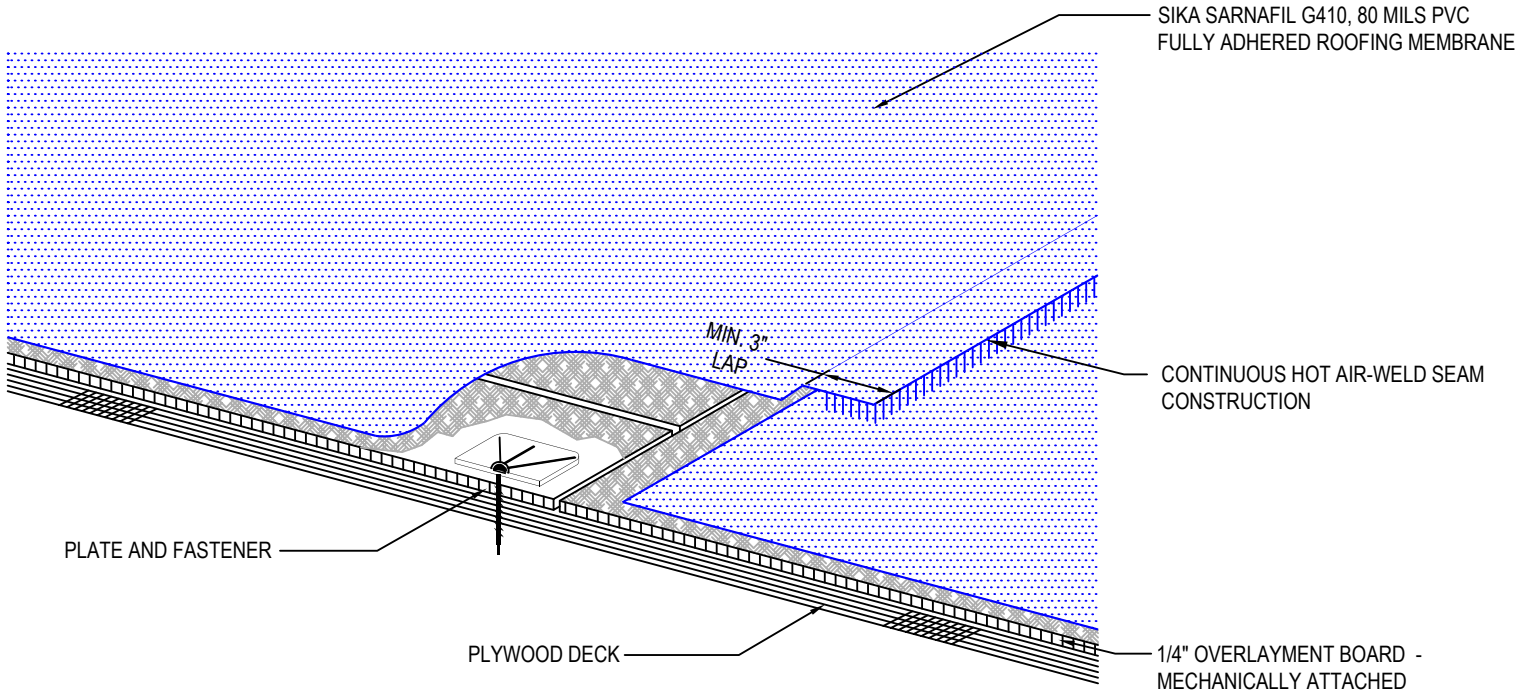


8 FASTENERS PER BOARD

NOTE: STAGGER ALL BOARD JOINTS 12" IN EACH DIRECTION AND BETWEEN LAYERS.



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(949) 476-9810 FAX
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DETAIL DESCRIPTION:

TYPICAL SINGLE-PLY CROSS SECTION @ PLYWOOD SUBSTRATE

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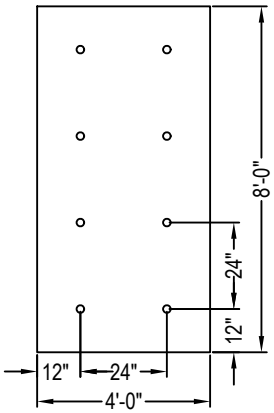

8 FASTENERS PER BOARD

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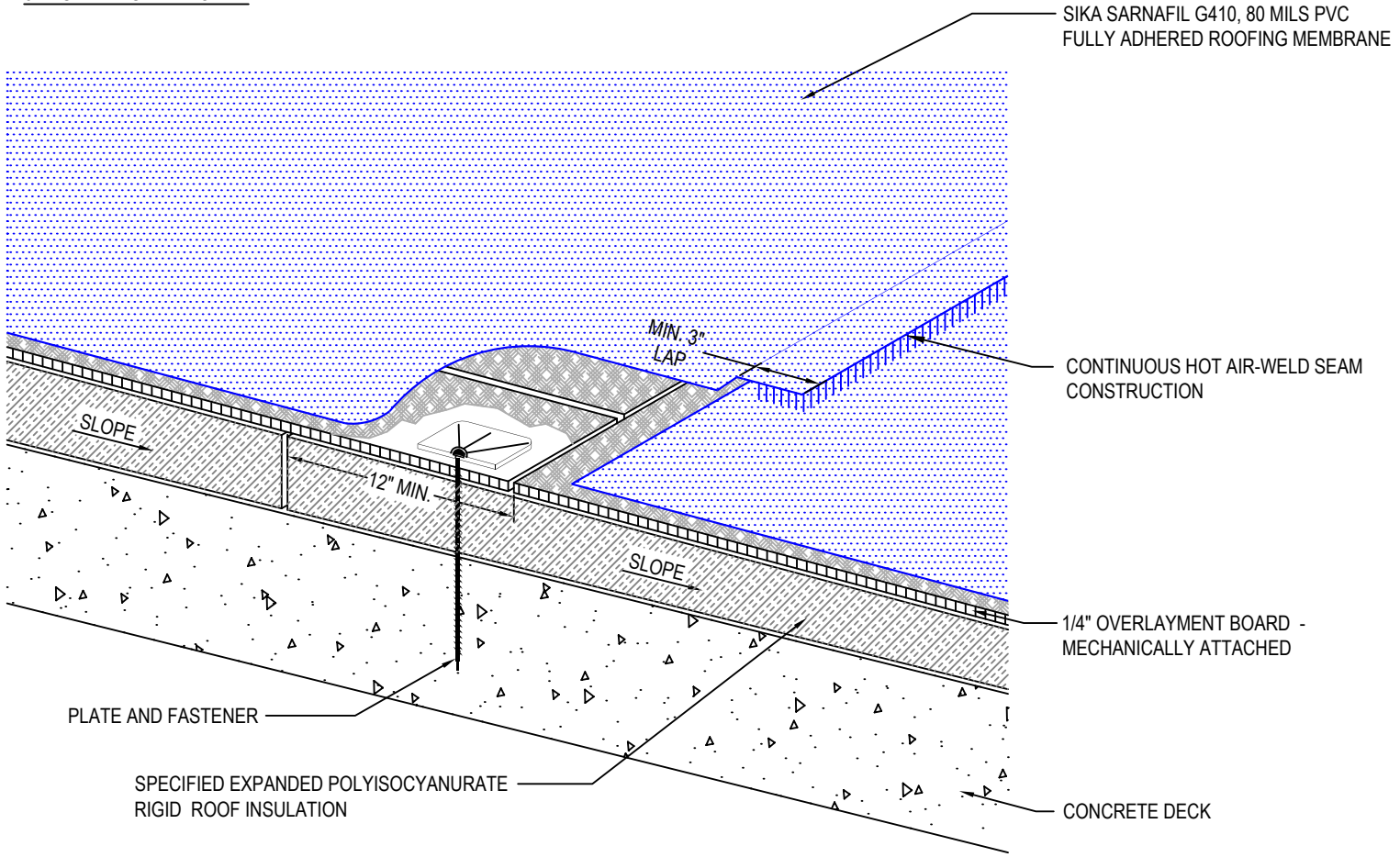

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(949) 476-9810 FAX
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DETAIL DESCRIPTION:

TYPICAL SINGLE-PLY CROSS SECTION @ CONCRETE SUBSTRATE

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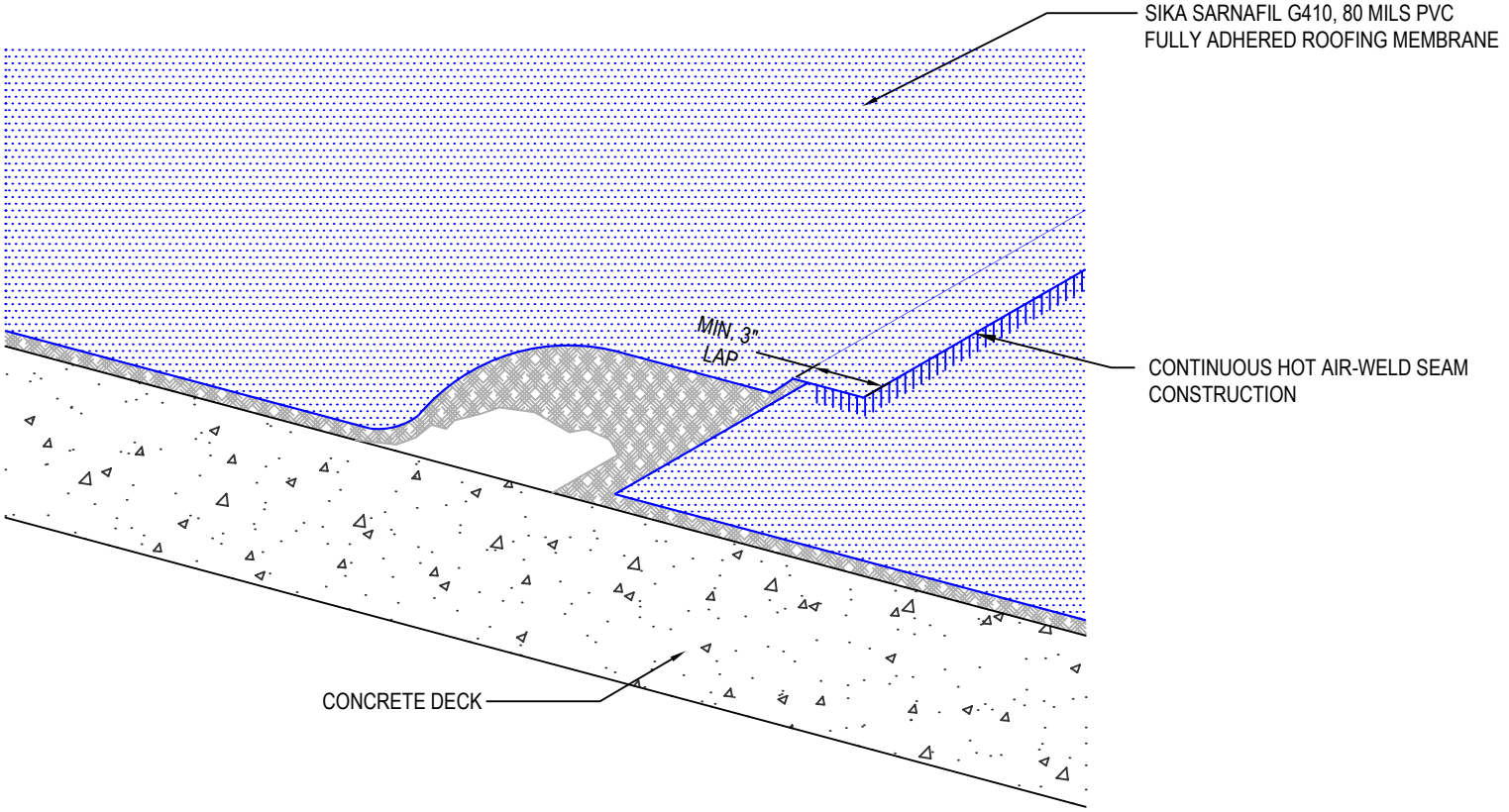

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2901 PULLMAN STREET
SANTA ANA, CA 92705
(949) 476-8626
(949) 476-9810 FAX
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TYPICAL SINGLE-PLY CROSS SECTION @ CONCRETE SUBSTRATE

IRC PROJECT NO:	00000.00
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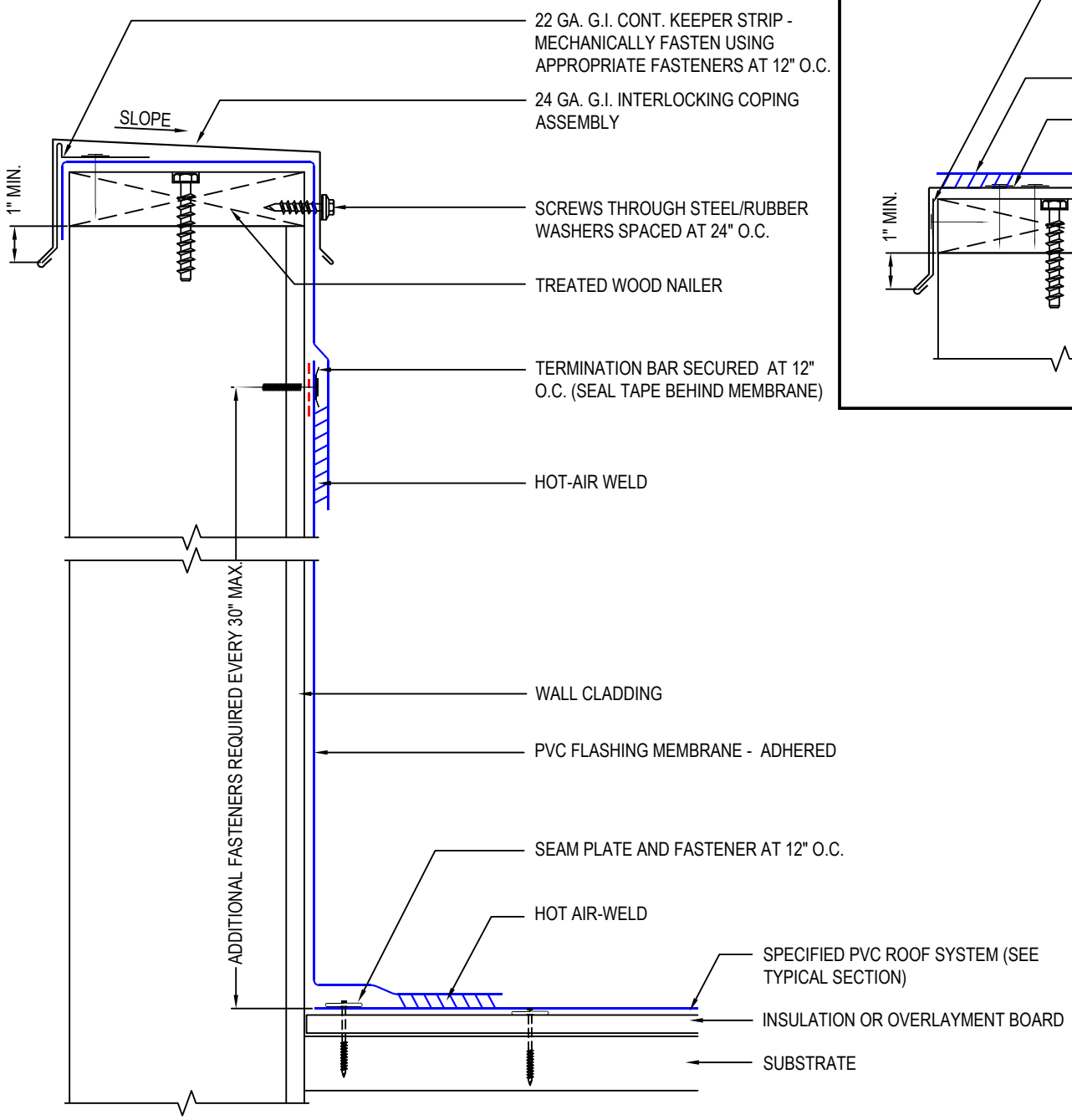

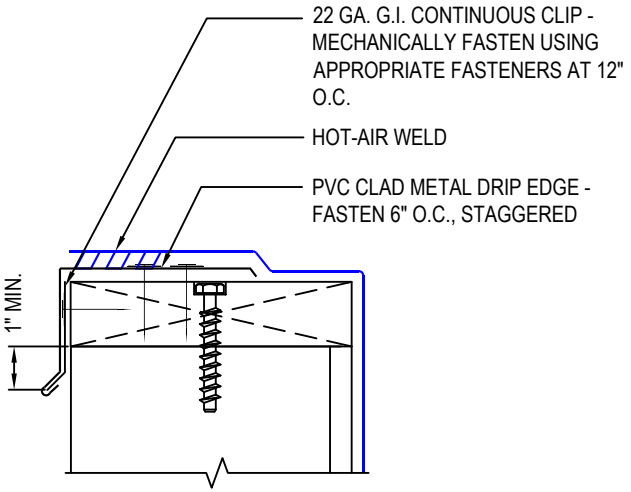

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2901 PULLMAN STREET
SANTA ANA, CA 92705
(949) 476-8626
(949) 476-9810 FAX
(800) 666-7663
WWW.IRCTECH.COM

NOTES:

PROJECT NAME:

GCCCD

CALIFORNIA

DETAIL DESCRIPTION:

BASE FLASHING @ PARAPET WALL

IRC PROJECT NO:	00000.00
DATE:	12/12/13
DRAWN BY:	BN
CHECKED BY:	PP
CAD DRAWING NO:	5423BF01
SCALE:	N.T.S

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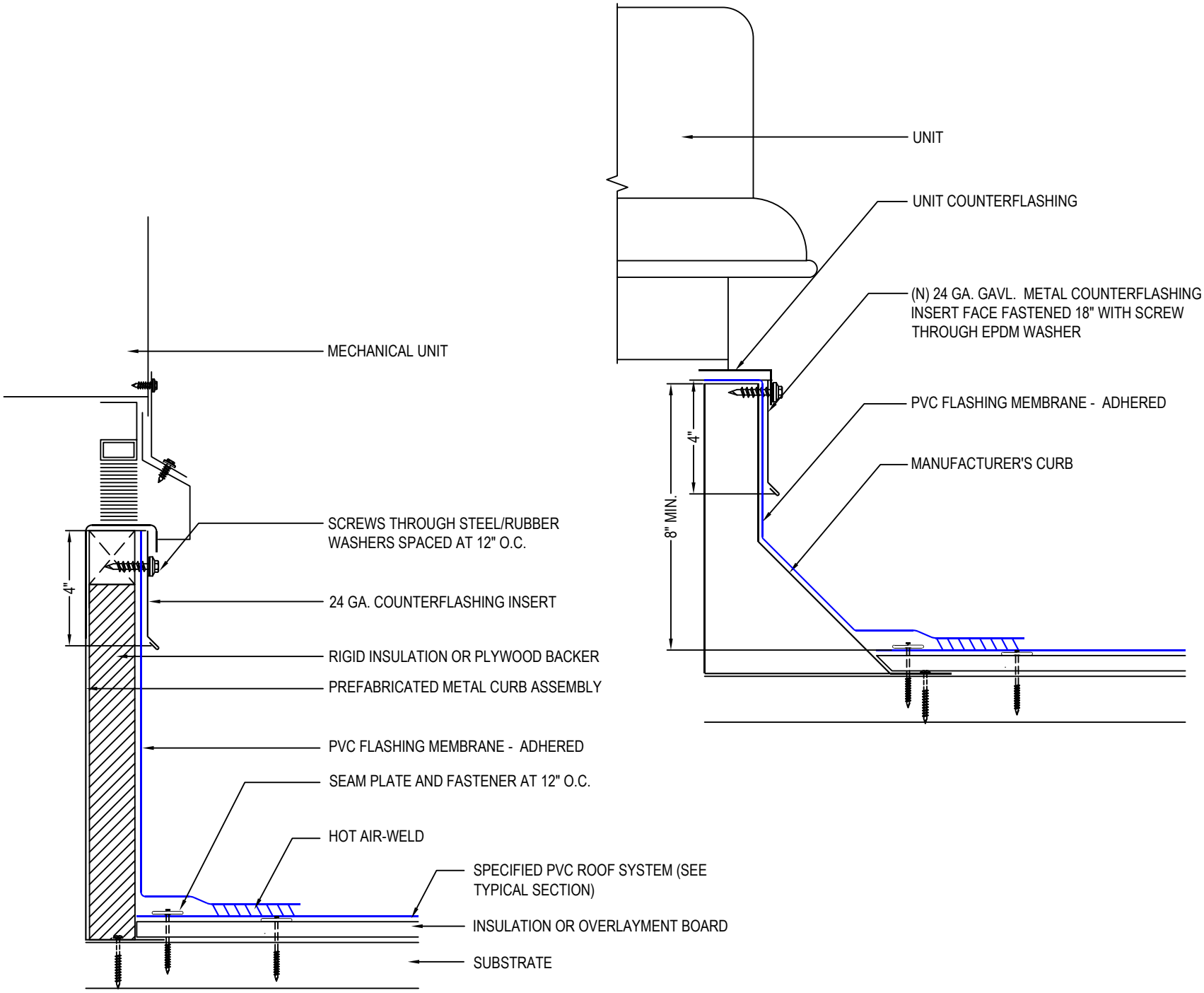

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2901 PULLMAN STREET
SANTA ANA, CA 92705
(949) 476-8626
(949) 476-9810 FAX
(800) 666-7663
WWW.IRCTECH.COM

NOTES:

PROJECT NAME:

GCCCD

CALIFORNIA

DETAIL DESCRIPTION:

BASE FLASHING @ PRE-FABRICATED CURB

IRC PROJECT NO:	00000.00
DATE:	12/12/13
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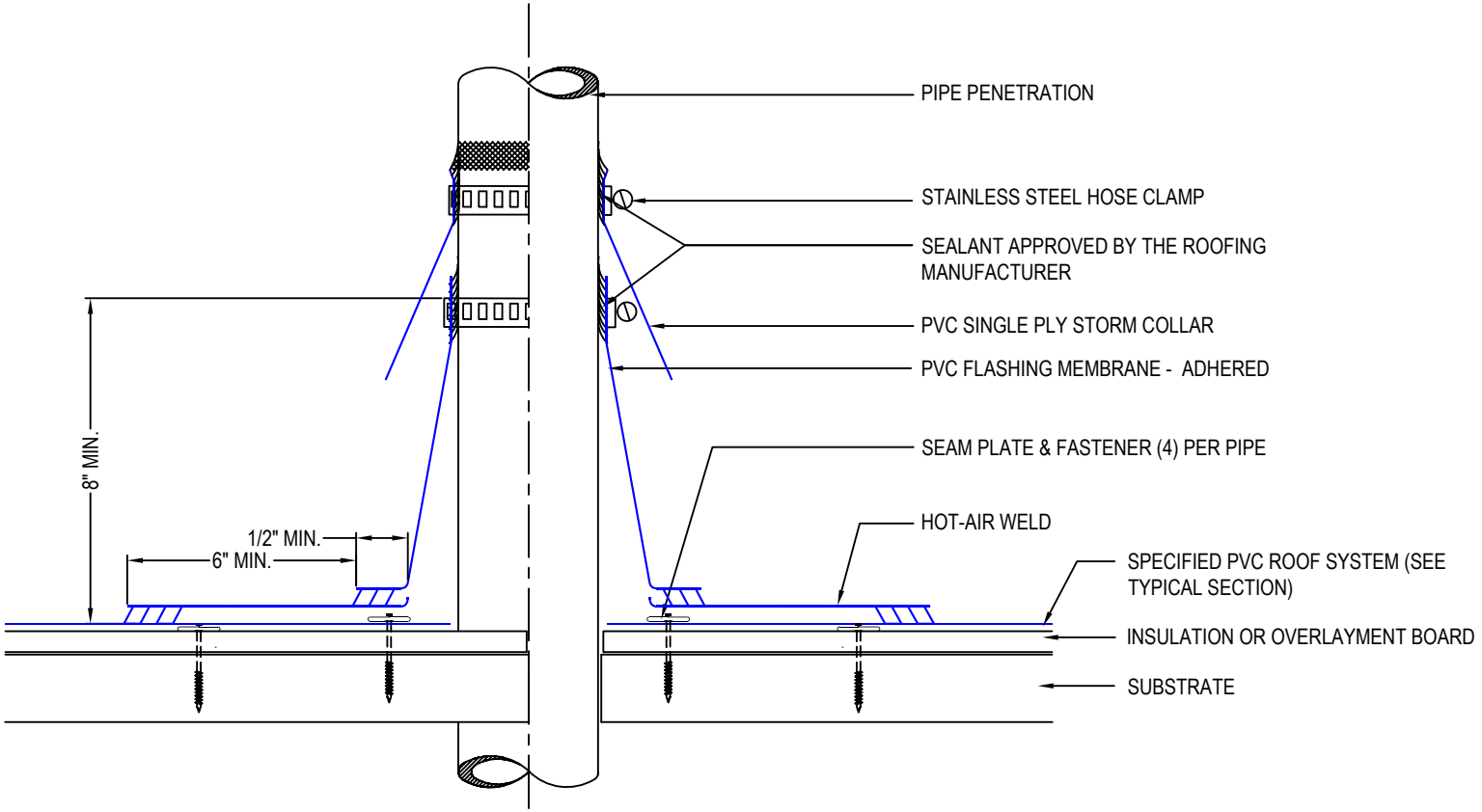

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2901 PULLMAN STREET
SANTA ANA, CA 92705
(949) 476-8626
(949) 476-9810 FAX
(800) 666-7663
WWW.IRCTECH.COM

NOTES:

PROJECT NAME:

GCCCD

CALIFORNIA

DETAIL DESCRIPTION:

CONE (PRE-FABRICATED) CURB

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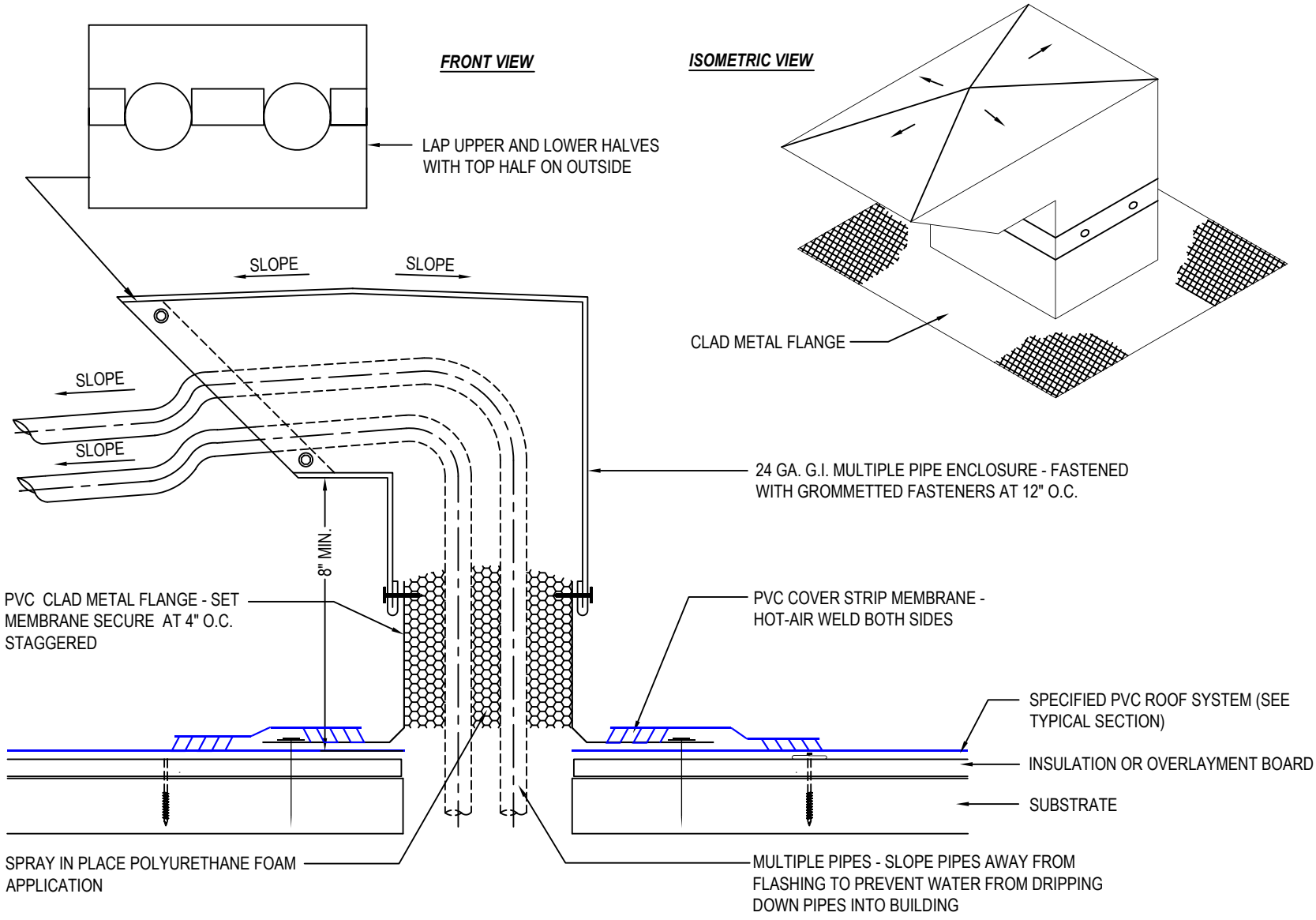

NOTE:

1. ***FACE COVERS MUST EXTEND TO METAL PIPES, NOT INSULATION.***

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SANTA ANA, CA 92705
(949) 476-8626
(949) 476-9810 FAX
(800) 666-7663
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NOTES:

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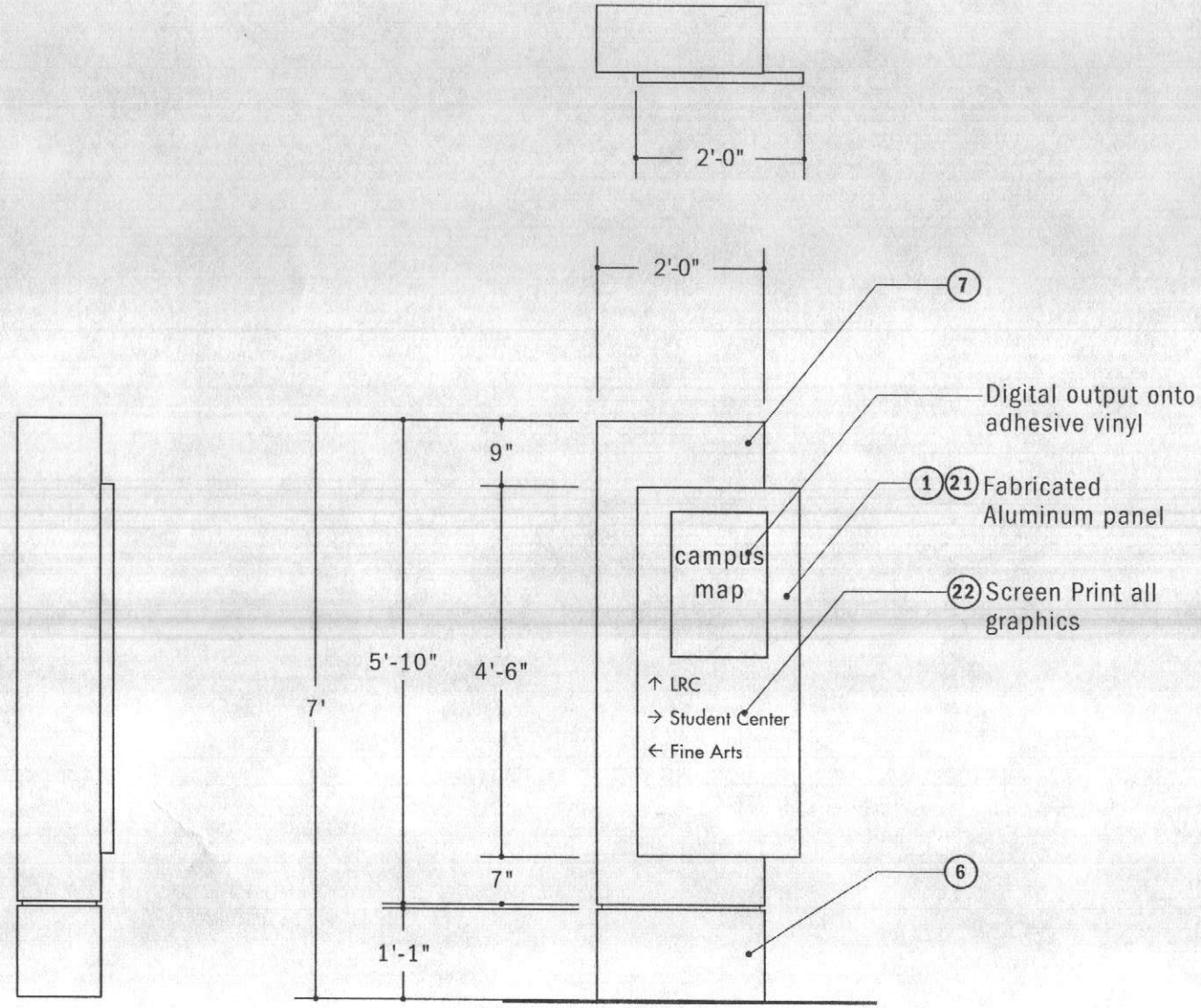
DETAIL DESCRIPTION:

MULTIPLE PIPE ENCLOSURE

IRC PROJECT NO:	00000.00
DATE:	12/12/13
DRAWN BY:	BN
CHECKED BY:	PP
CAD DRAWING NO:	5423MP01
SCALE:	N.T.S

Signage Guidelines - Drawings



SIGN TYPE

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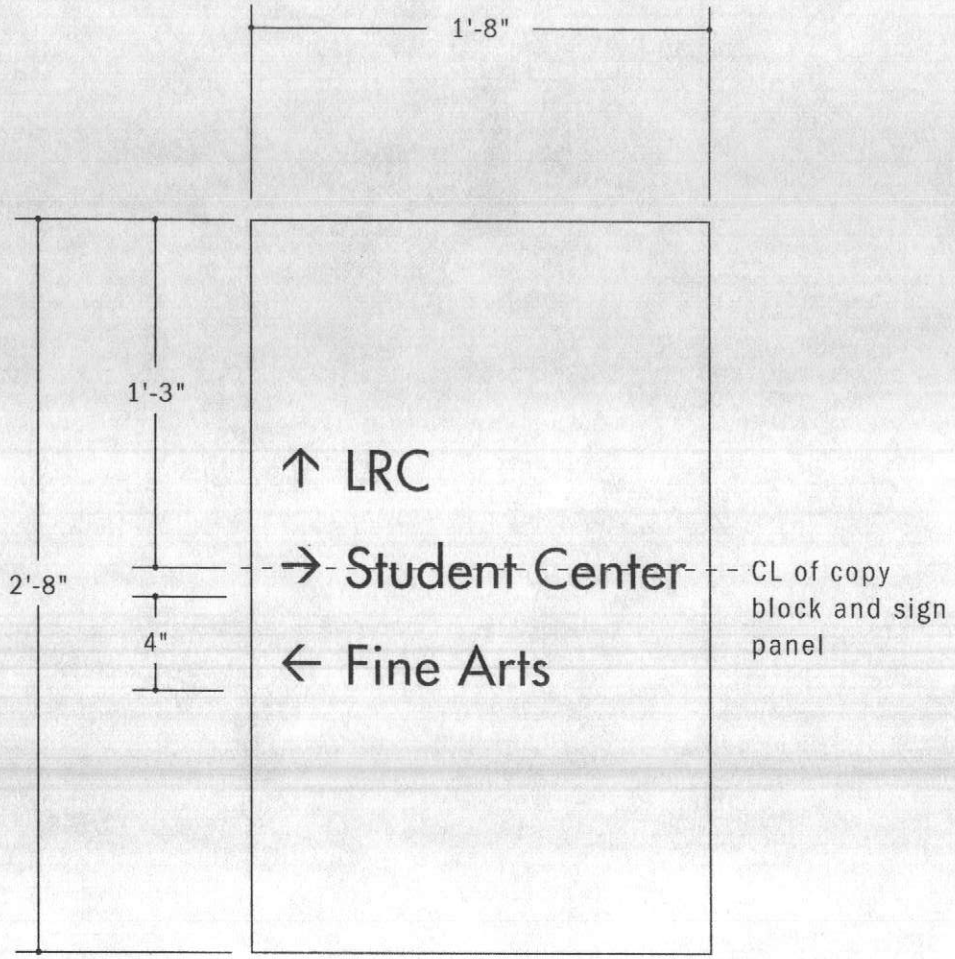
Primary Directory

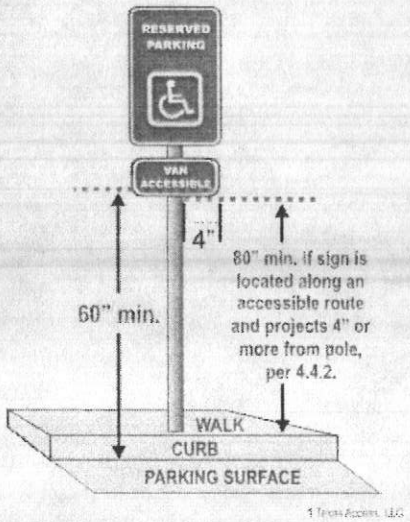
SCALE: 1/2"=1'-0"

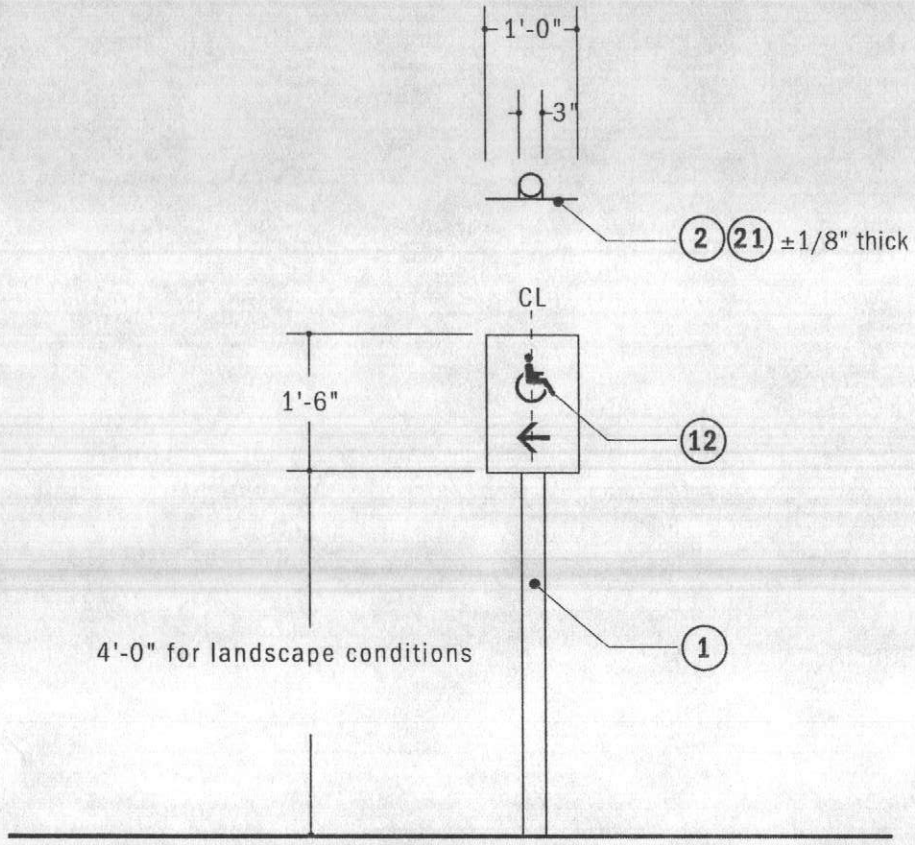


(2)(21) 3/16" sign panel
(22) 2" high copy - Futura Medium
(22) 2" arrow

SIGN TYPE
6
Primary Directional Wall Mounted

SCALE: 1 1/2"=1'-0"





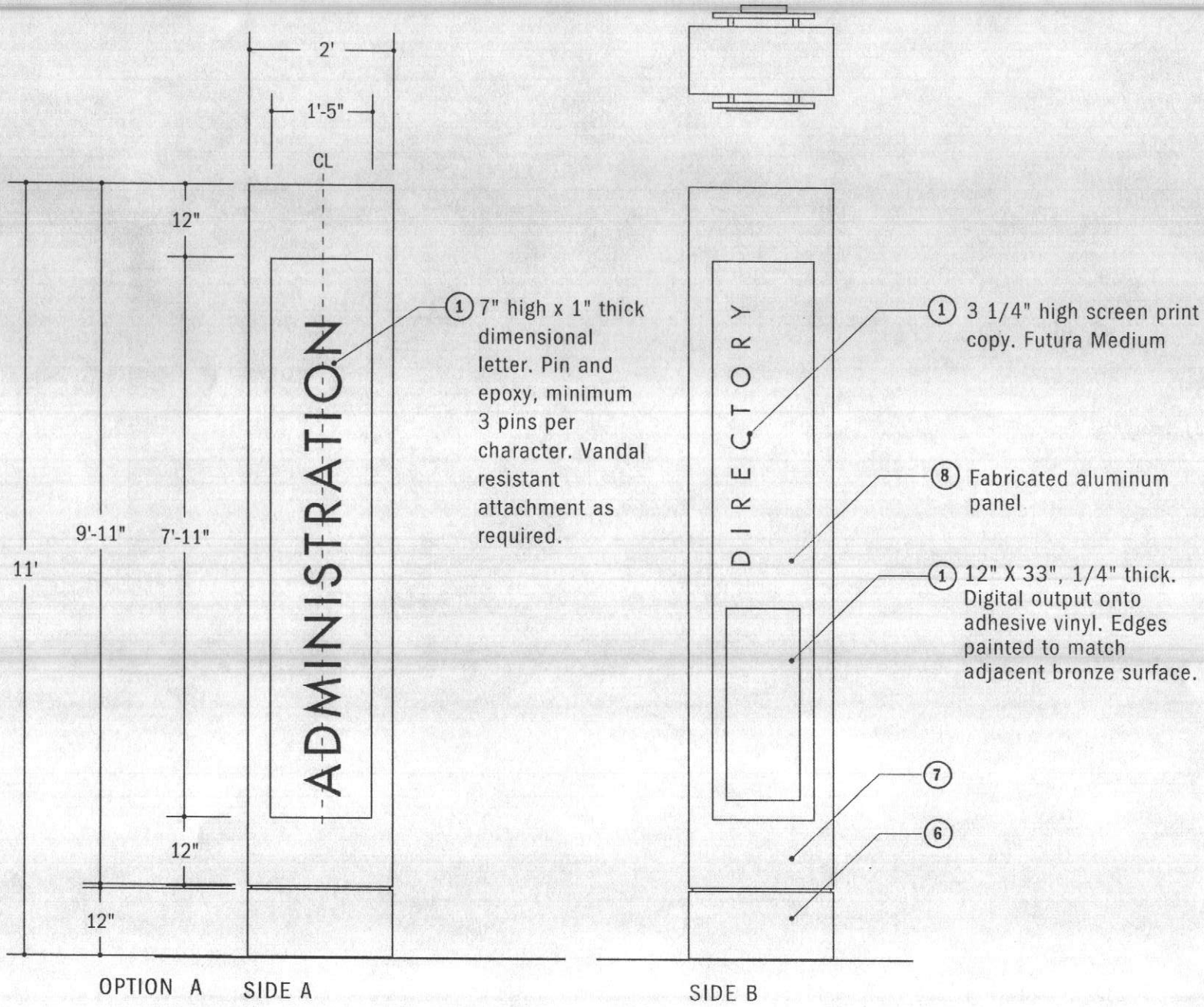
ELEVATION

SIGN TYPE

7

Secondary Directional

SCALE: 1/2"=1'-0"

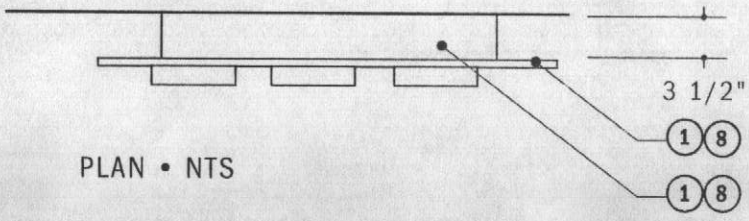


SIGN TYPE

8

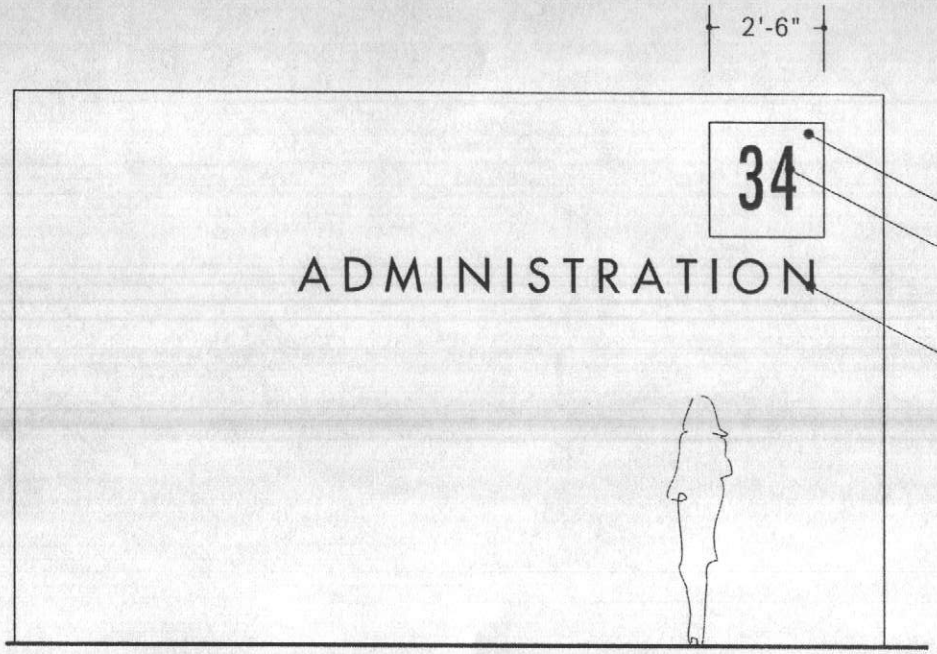
Area ID

SCALE: 1/2"=1'-0"



PLAN • NTS

18 3/4" deep return fabricated panel



18
1 1'-6" Futura Condensed Medium. 1" thick dimensional letter.

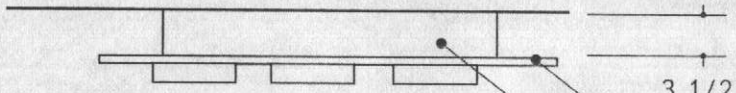
1 9" Futura Medium. Optional bronze finish when necessary for contrast purposes. 1" thick dimensional letter. Pin and epoxy, minimum 3 pins per character. Vandal resistant attachment as required.

SIGN TYPE

9

Primary Wall Mounted Building ID

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



PLAN • NTS

3'-3"

(1) (8) 3/4" deep return fabricated panel

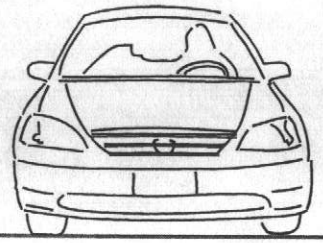
34

(1) (8)

(1) 1'-10" Futura Condensed Medium. 1" thick dimensional letter.

ADMINISTRATION

(1) 1'-0" Futura Medium. Optional bronze finish when necessary for contrast purposes. 1" thick dimensional letter. Pin and epoxy, minimum 3 pins per character. Vandal resistant attachment as required.

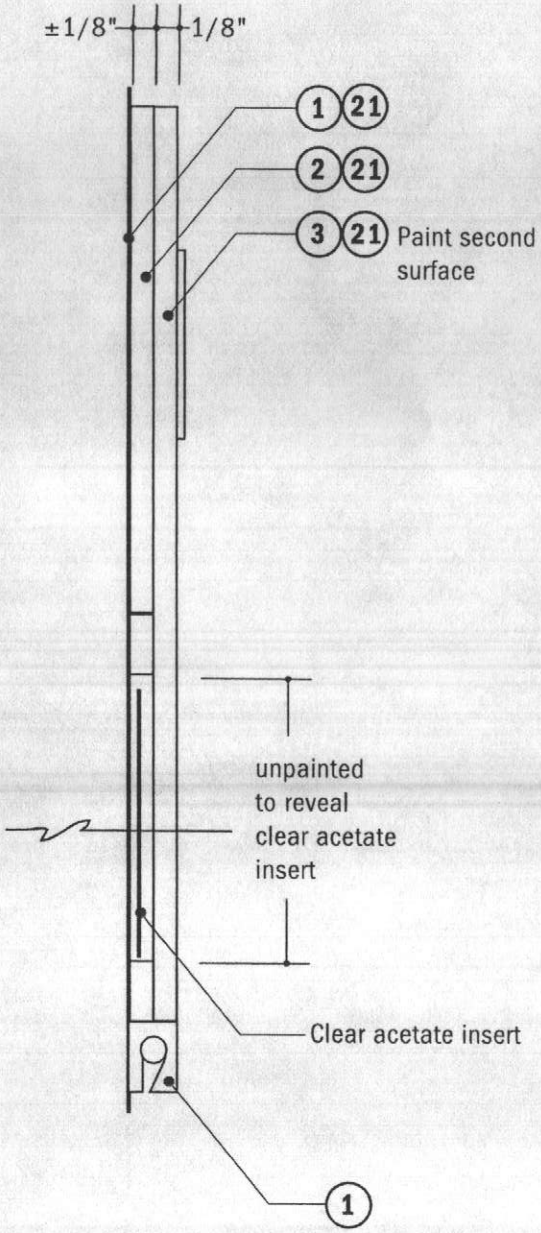


SIGN TYPE

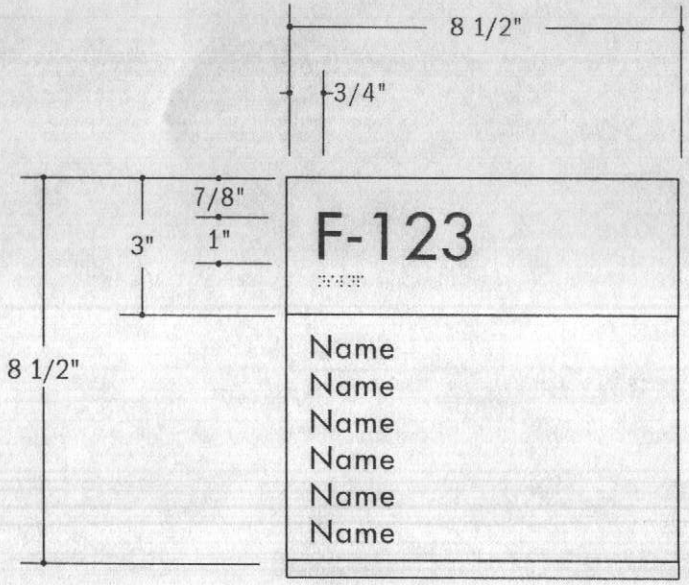
10

Wall Mounted Building ID - Vehicular

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



SIDE
SCALE: Actual Size



ELEVATION
SCALE: 3"=1'-0"

See sheet 93 for Braille specifications

2 21 1/4" thick sign panel

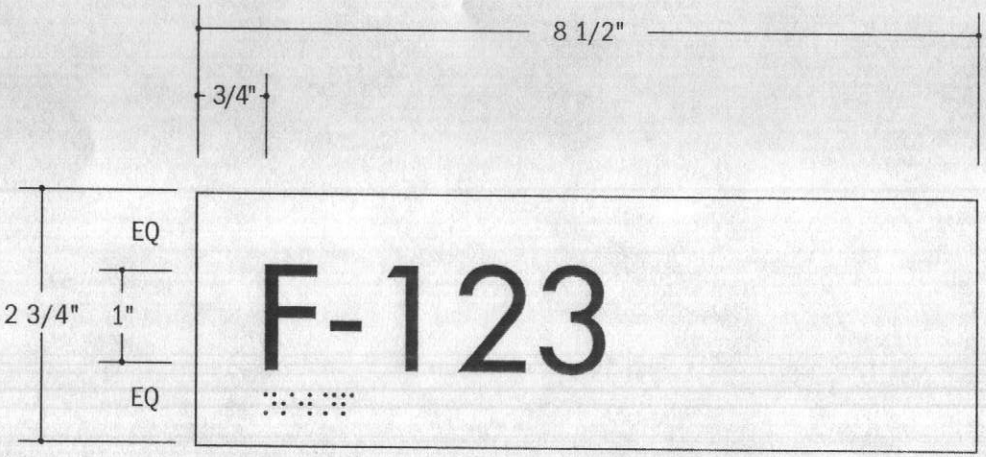
4 22 1" tactile numeral - Futura Medium

22 1/2" Name copy - Futura Medium

SIGN TYPE

19

Dept ID w/Roller Bar



See sheet 93 for Braille specifications

(2)(21) 1/4" thick sign panel

(4)(22) 1" tactile numeral - Futura Medium

SIGN TYPE

20

BOH ID w/Number Only

SCALE: Half Size

See sheet 93 for Braille specifications

(2)(21) 1/4" thick sign panel.

(4)(22) 1" tactile numeral - Futura Medium

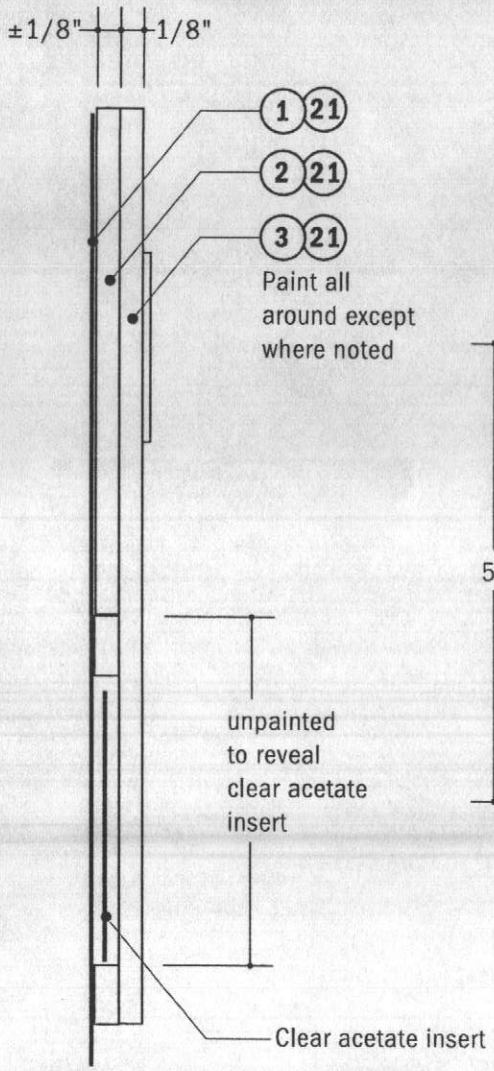
(22) 1/2" room function copy - Futura Medium

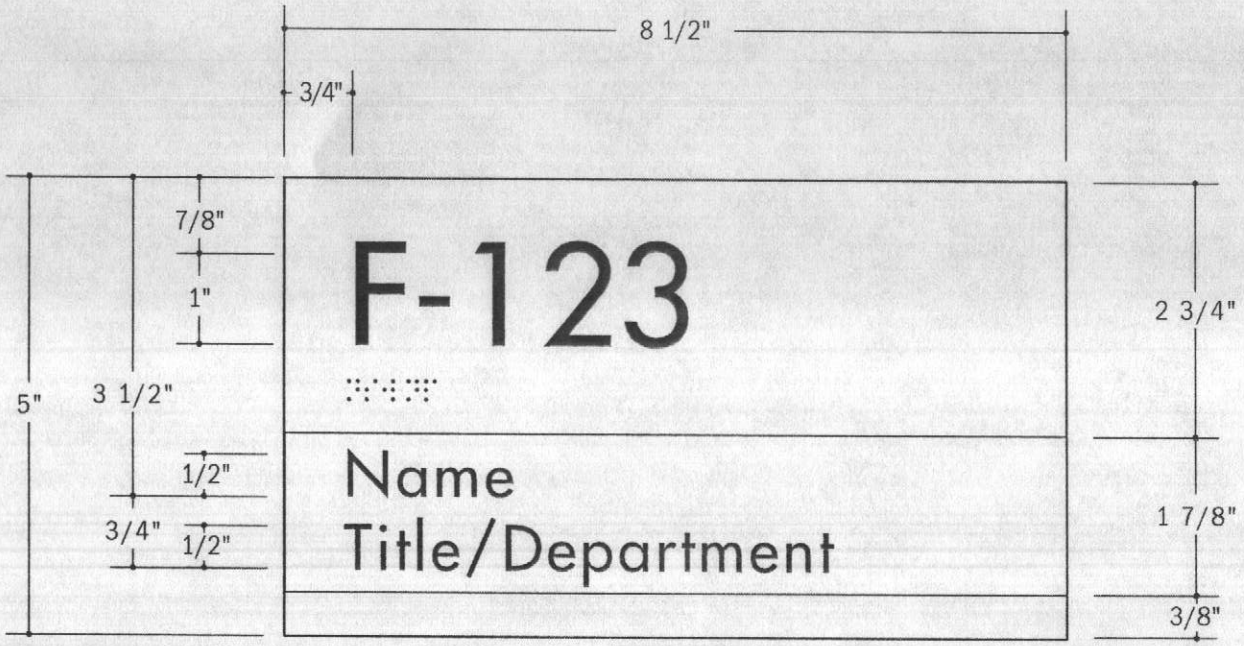
SIGN TYPE

21

BOH ID w/Fixed Name

SCALE: Half Size





ELEVATION
Scale: Half Size

See sheet 93 for Braille specifications

4 22 1" tactile numeral - Futura Medium

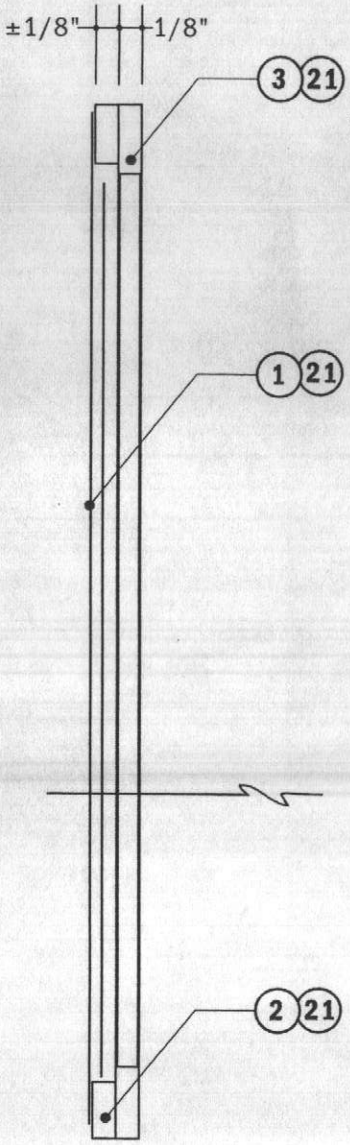
22 1/2" name/title copy - Futura Medium

SIGN TYPE

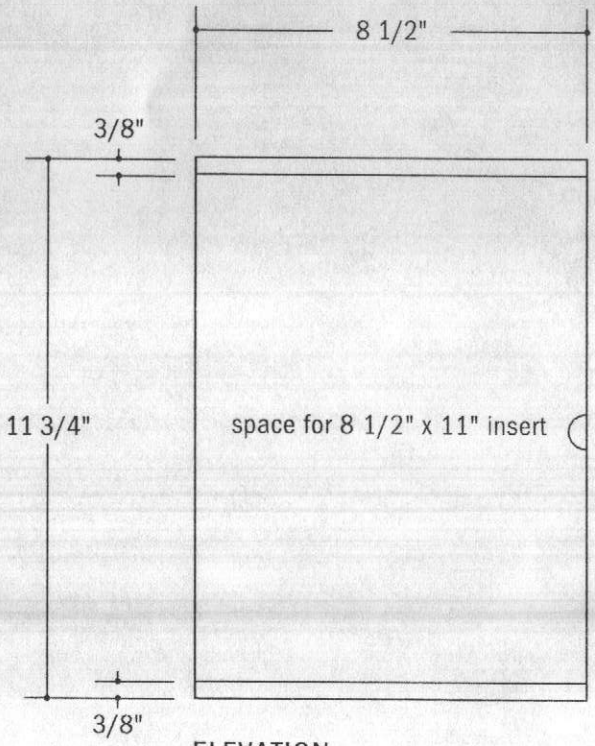
22

Office ID

SCALE: Actual Size



SIDE
SCALE: Actual Size

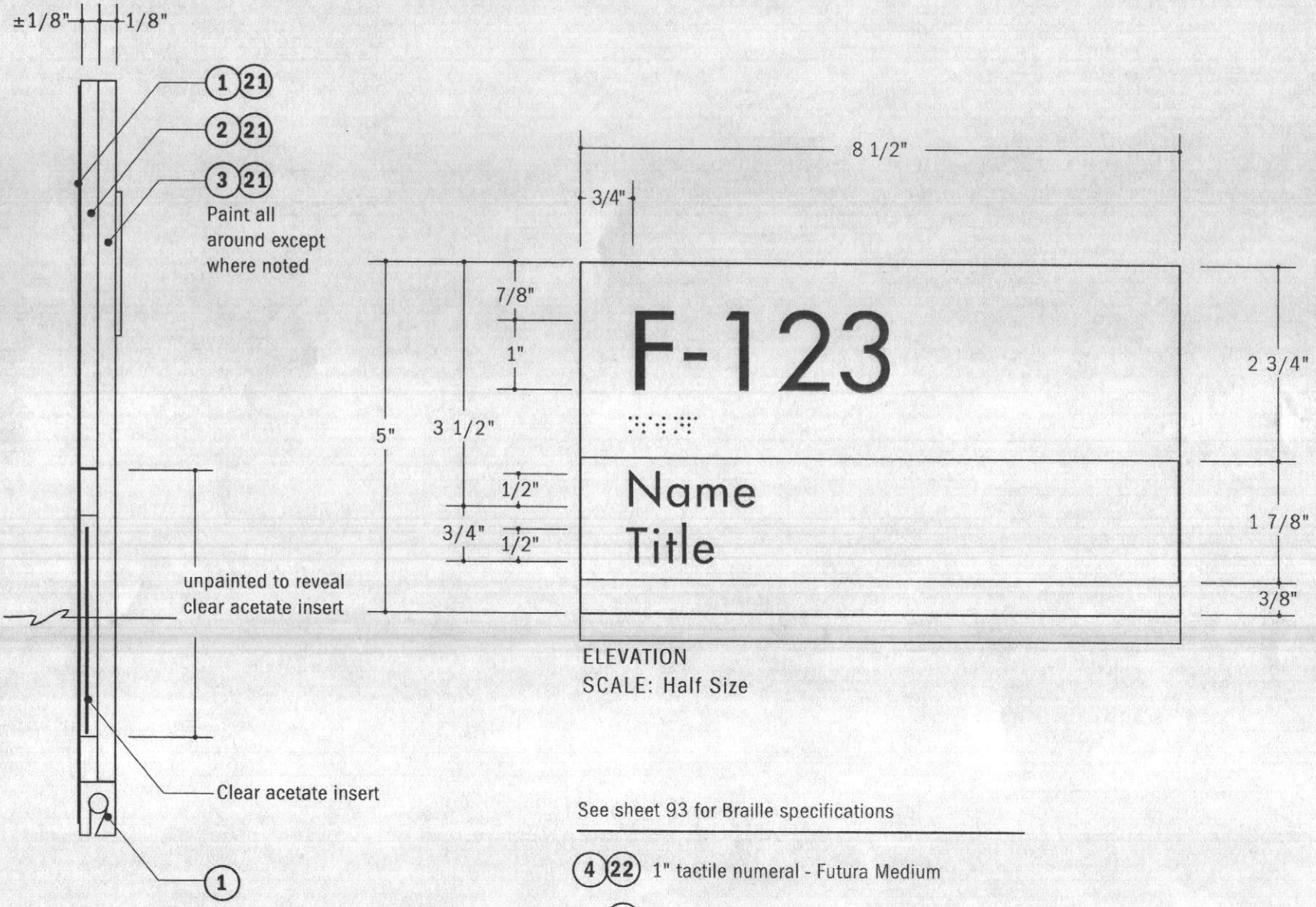


ELEVATION
SCALE: 3" = 1'-0"

SIGN TYPE

23

Message Holder



See sheet 93 for Braille specifications

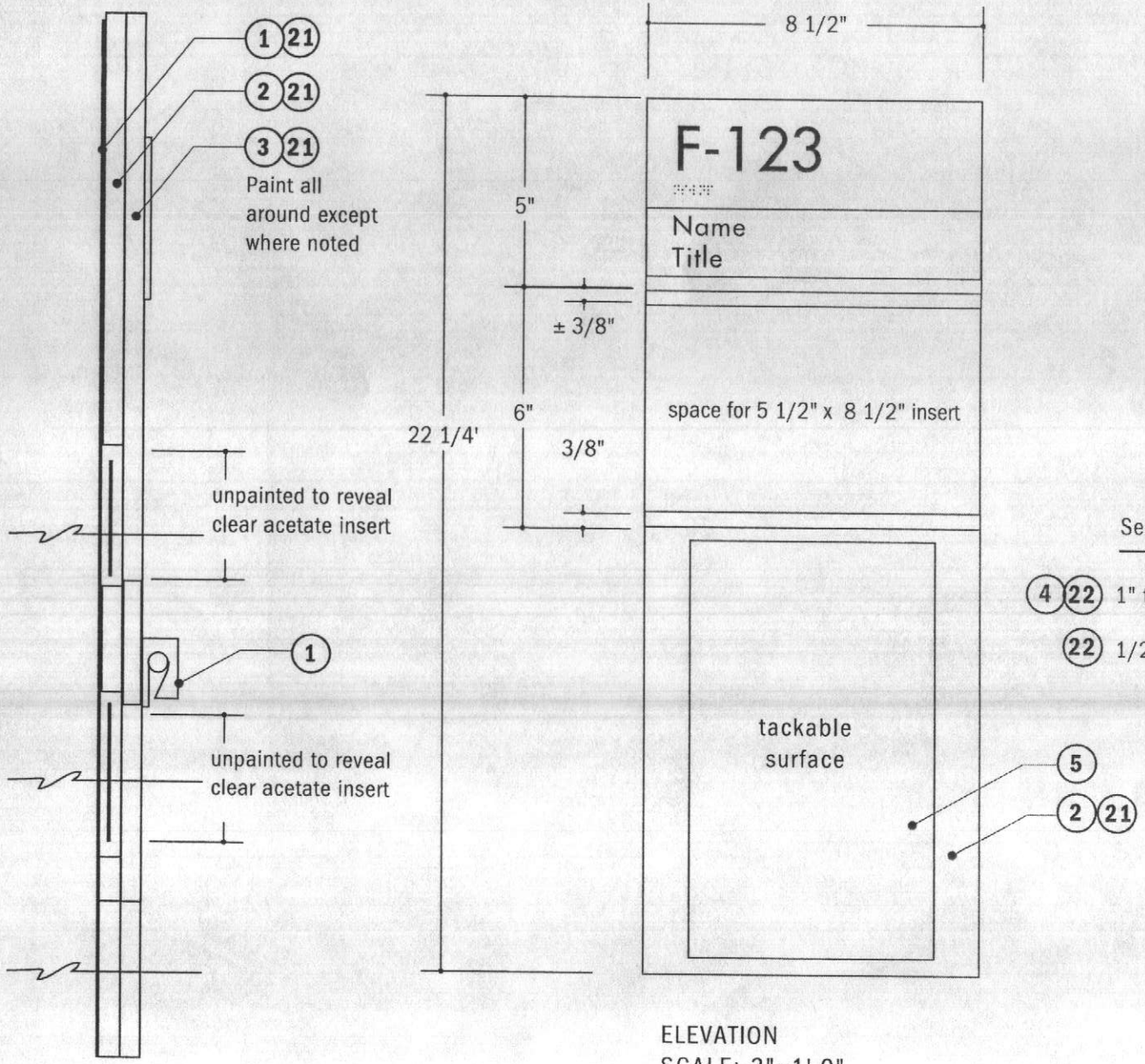
4 22 1" tactile numeral - Futura Medium

22 1/2" name/title copy - Futura Medium

SIGN TYPE

24

Office ID w/Roller Bar



SIDE
SCALE: Actual Size

ELEVATION
SCALE: 3"=1'-0"

See sheet 93 for Braille specifications

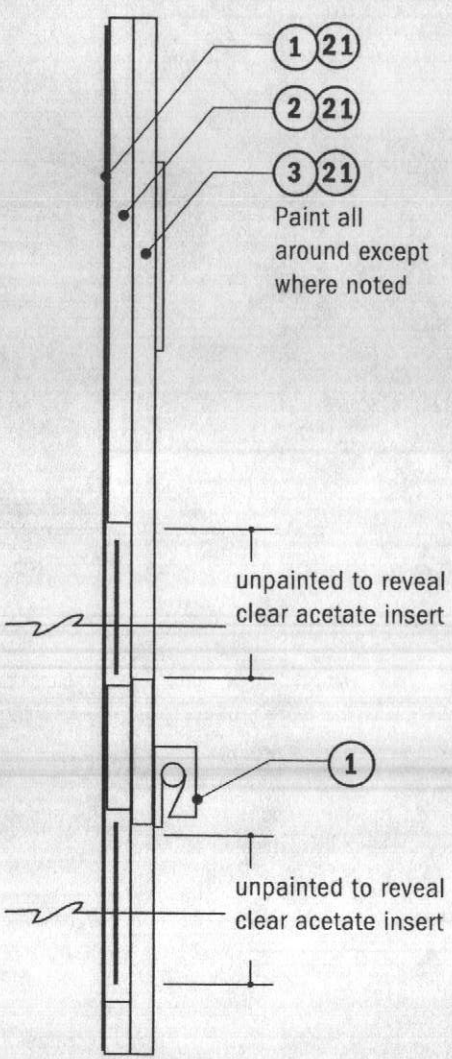
4 22 1" tactile numeral - Futura Medium

22 1/2" name/title copy - Futura Medium (laser print)

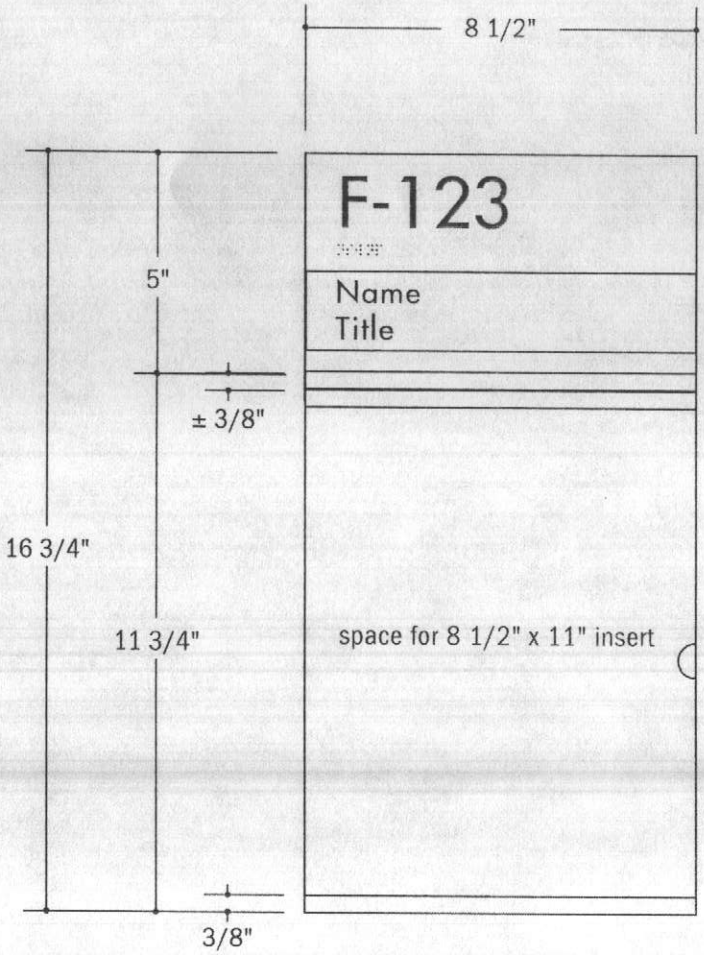
SIGN TYPE

25

Faculty ID w/Roller Bar & Tackable Surface



SIDE
SCALE: Actual Size



ELEVATION
SCALE: 3"=1'-0"

See sheet 93 for Braille specifications

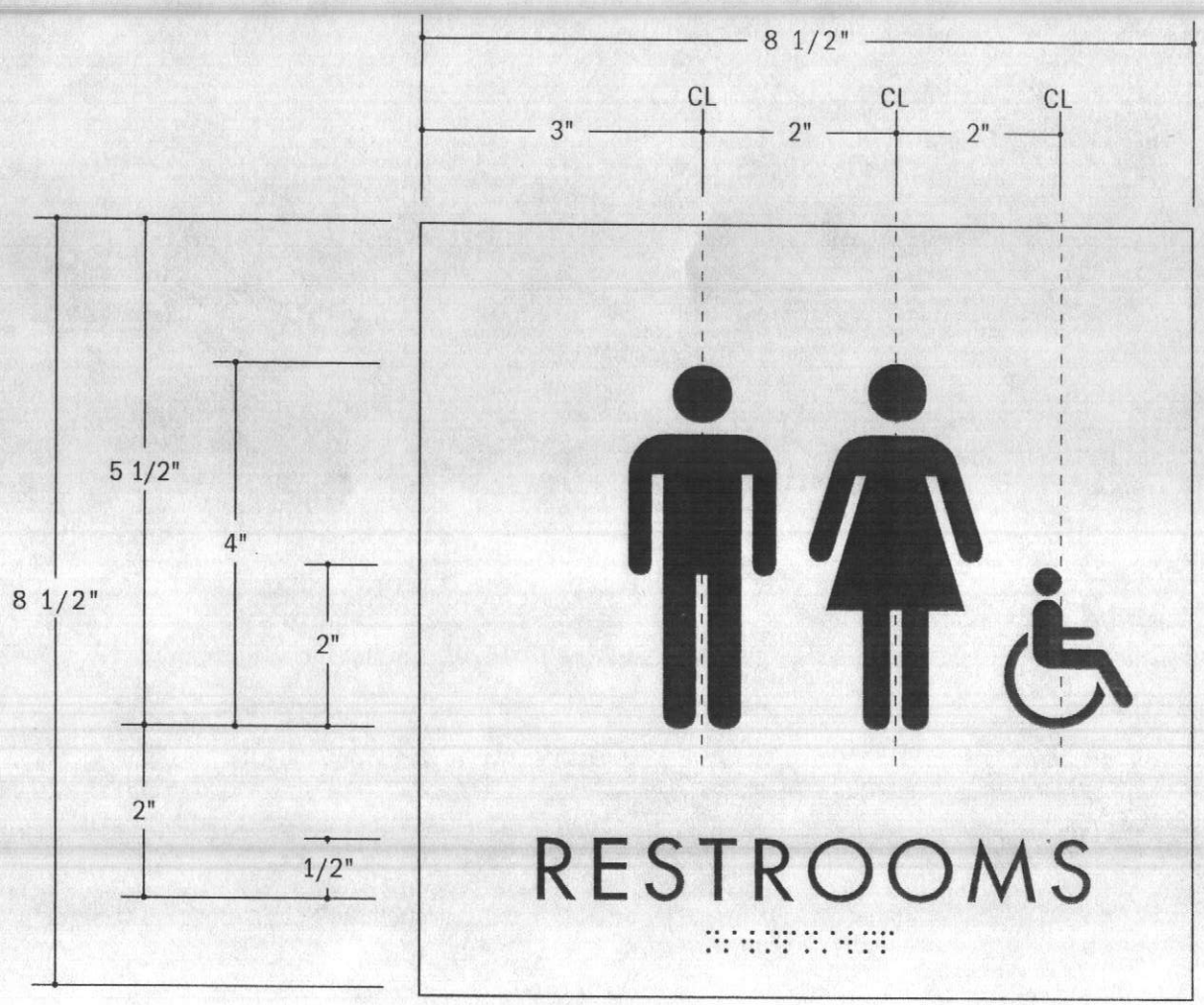
4 22 1" tactile numeral - Futura Medium

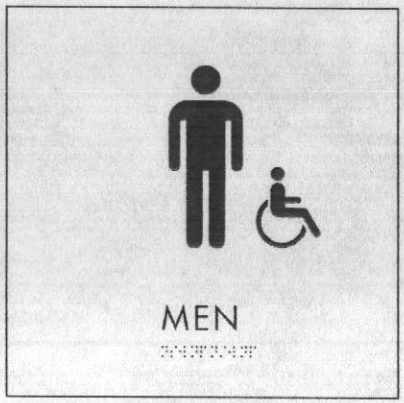
22 1/2" name/title copy - Futura Medium

SIGN TYPE

26

Classroom ID w/Roller Bar & Holder





See sheet 93 for Braille specifications

(2)(21) 1/4" thick sign panel

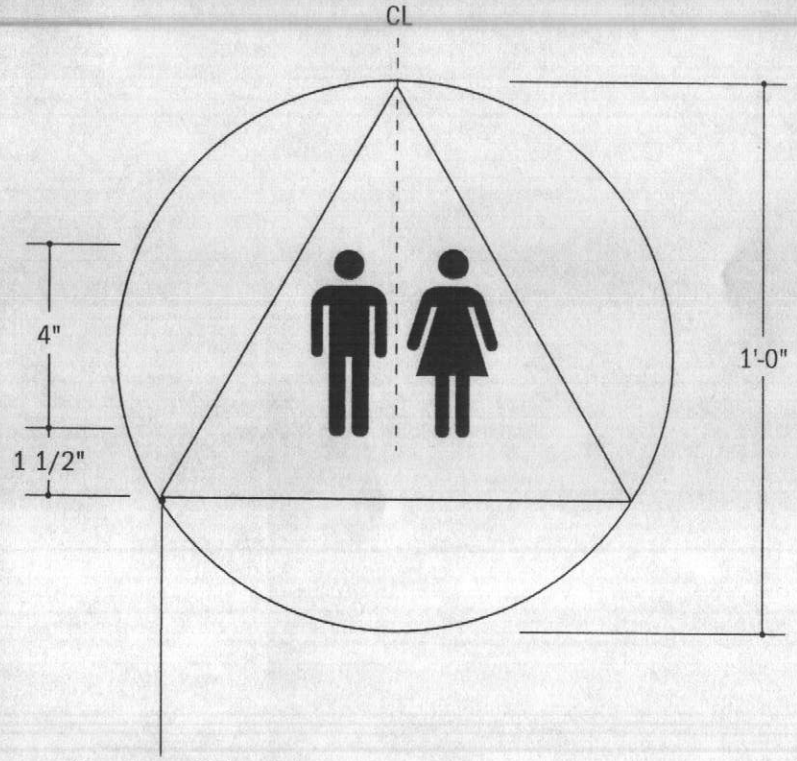
(4)(22) 1/2" tactile numeral - Futura Medium

(22) Screenprint symbols

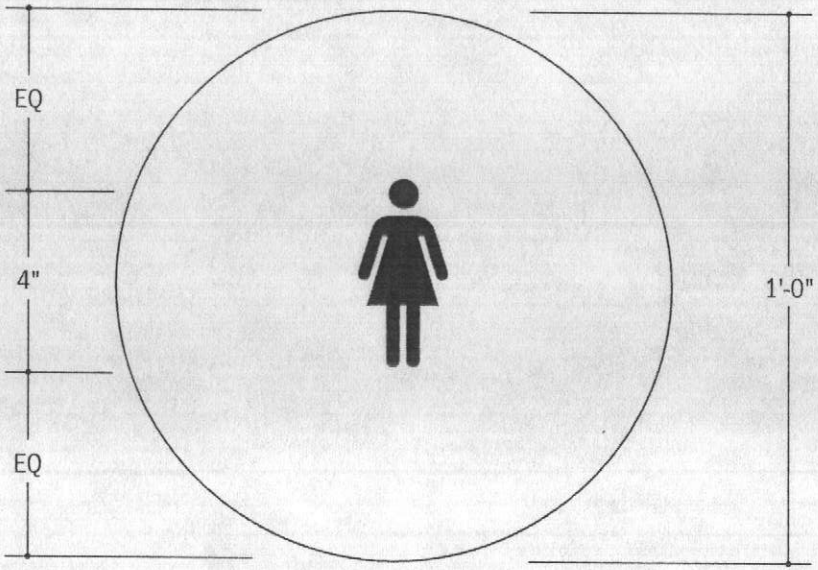
27

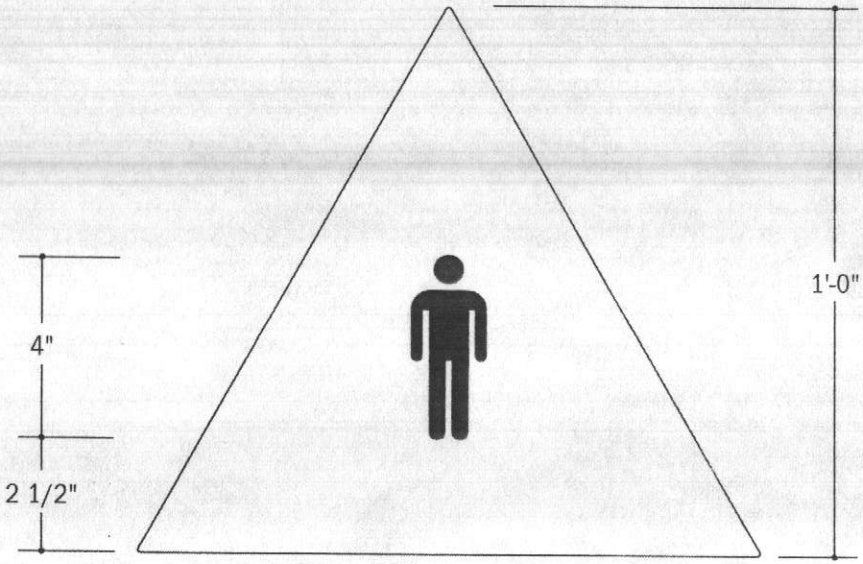
Restroom ID - ADA

ELEVATION
SCALE: Half Size



Corners of equilateral triangle to line up flush with edge of circle. Size triangle as needed to conform.





(2)(21) 1/4" thick sign panel
1/8" radius corners

(22) Screen print symbols

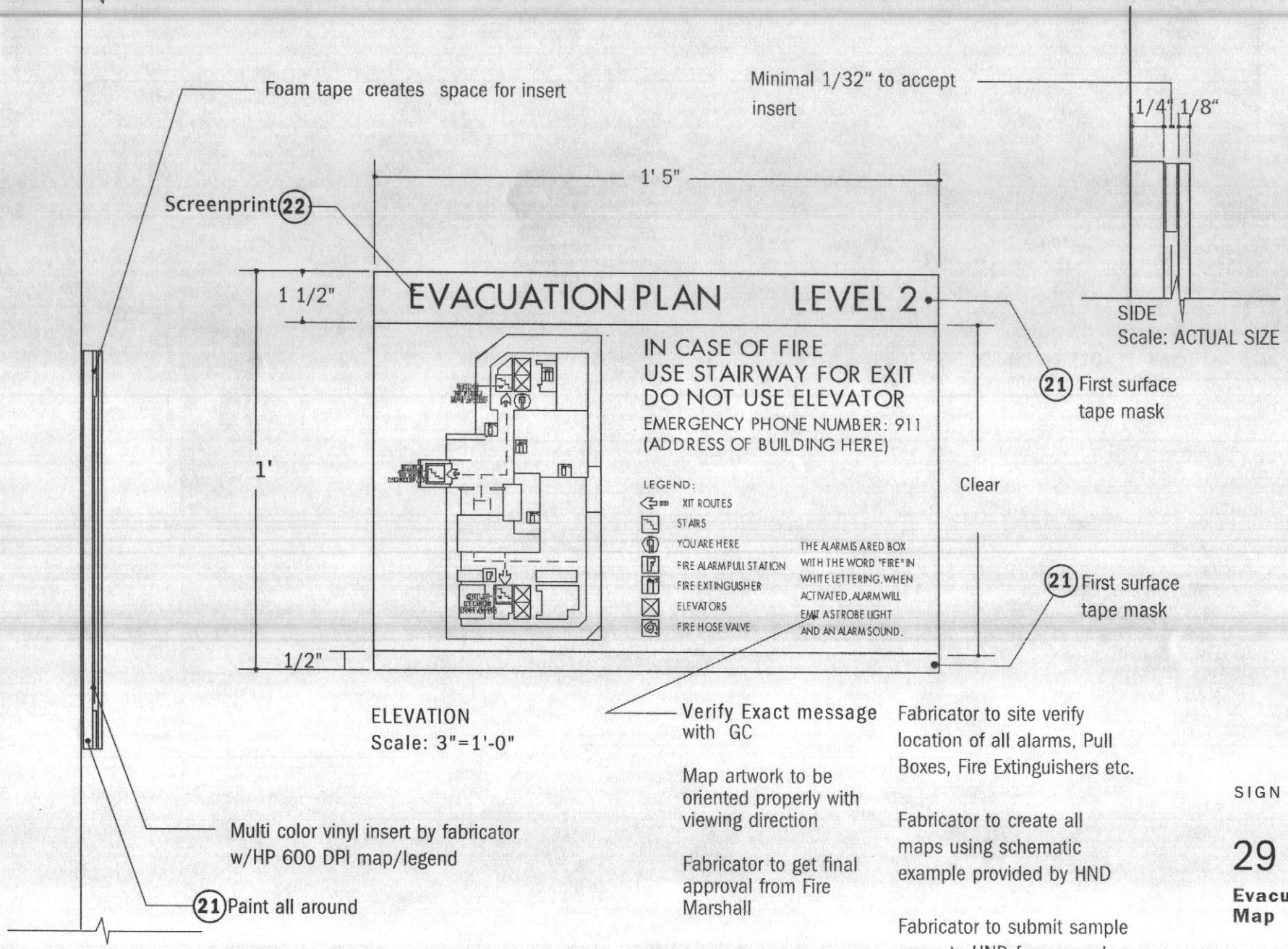
Sign panel to contrast door finish. Reverse finishes if necessary.

SIGN TYPE

28

Restroom ID - Title 24

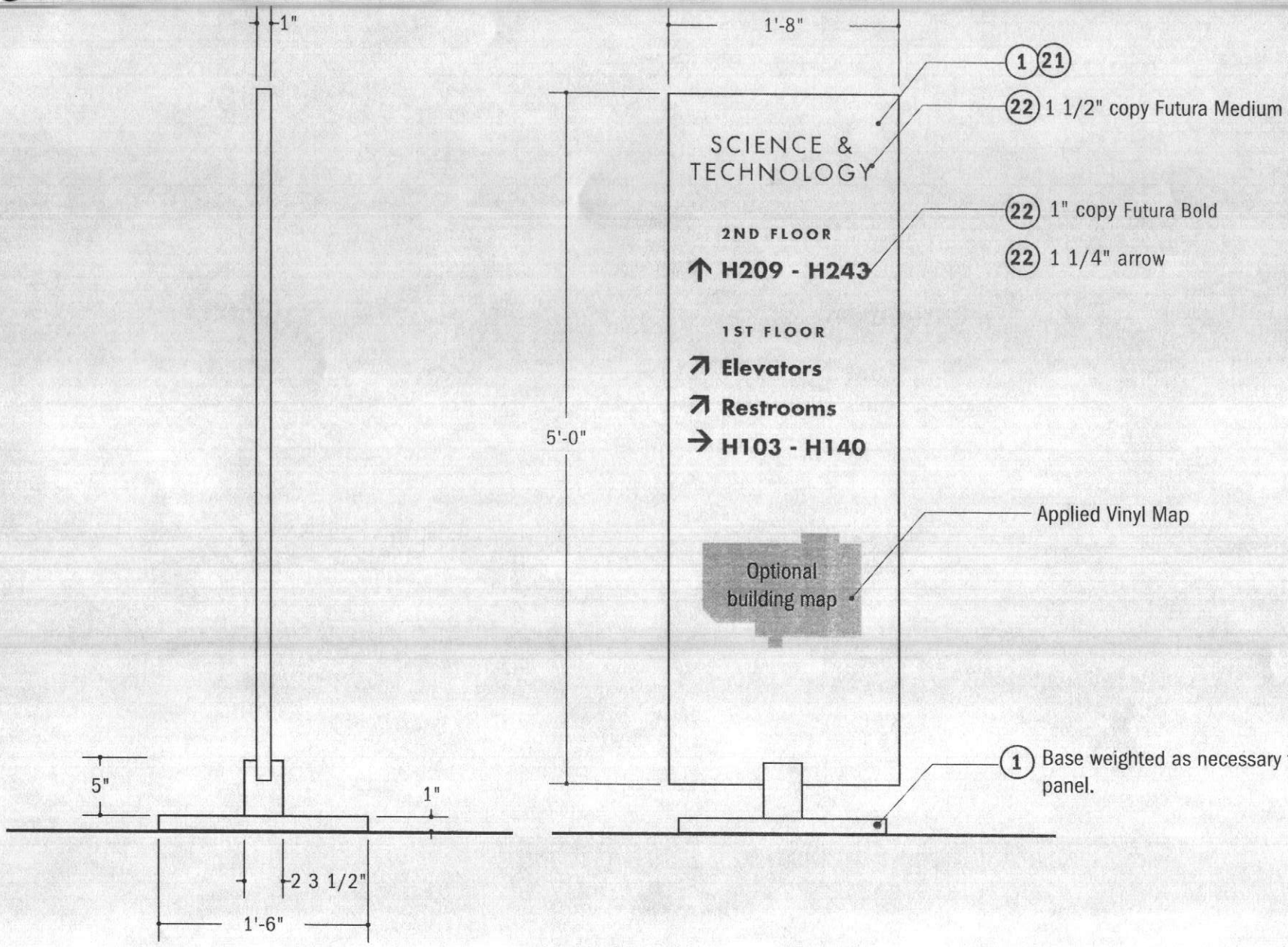
ELEVATION
SCALE: 3"=1'-0"



SIGN TYPE

29

Evacuation Map

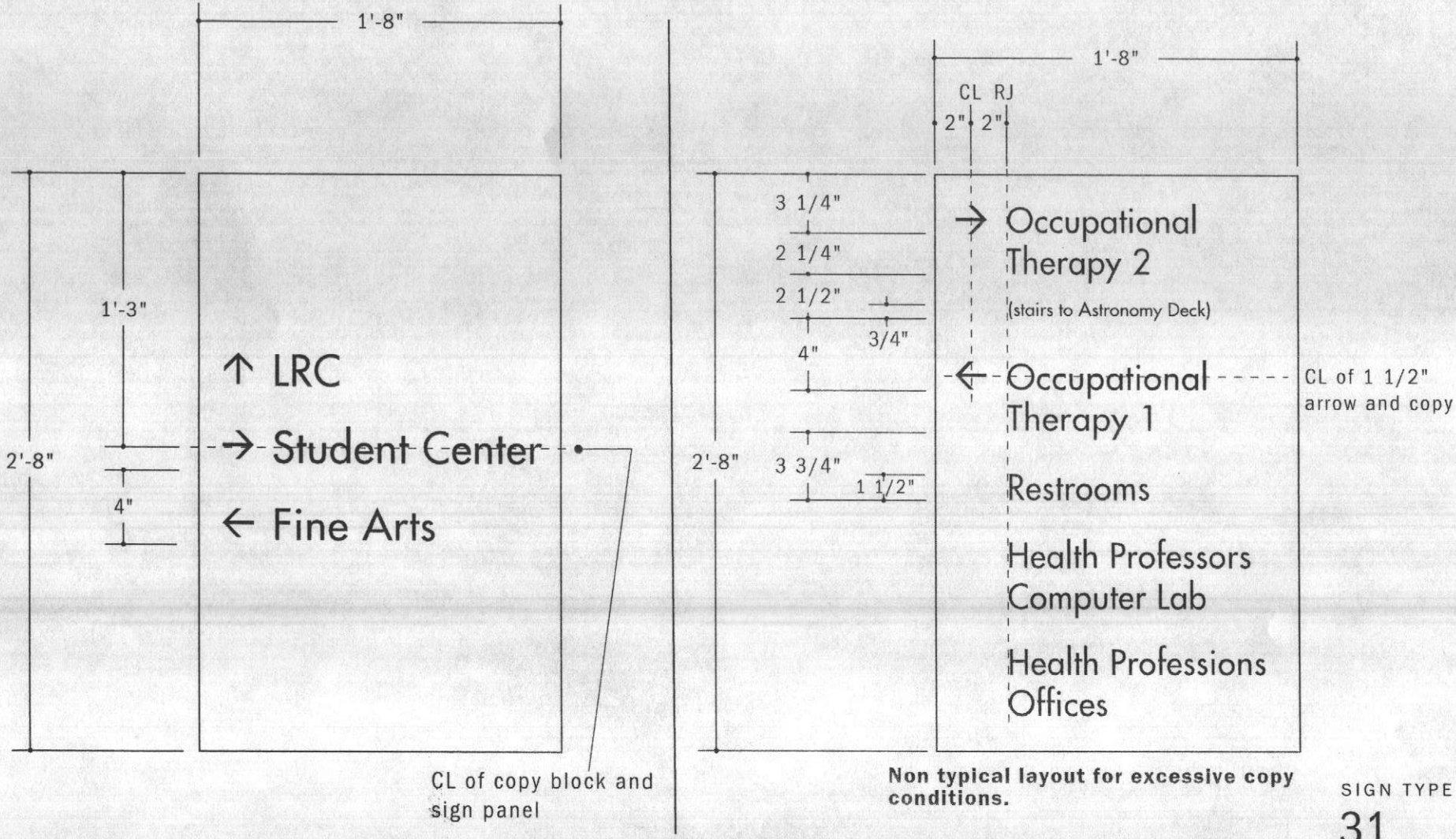


ELEVATION
SCALE: 1"=1'-0"

SIGN TYPE

30

Free Standing Directory



Non typical layout for excessive copy conditions.

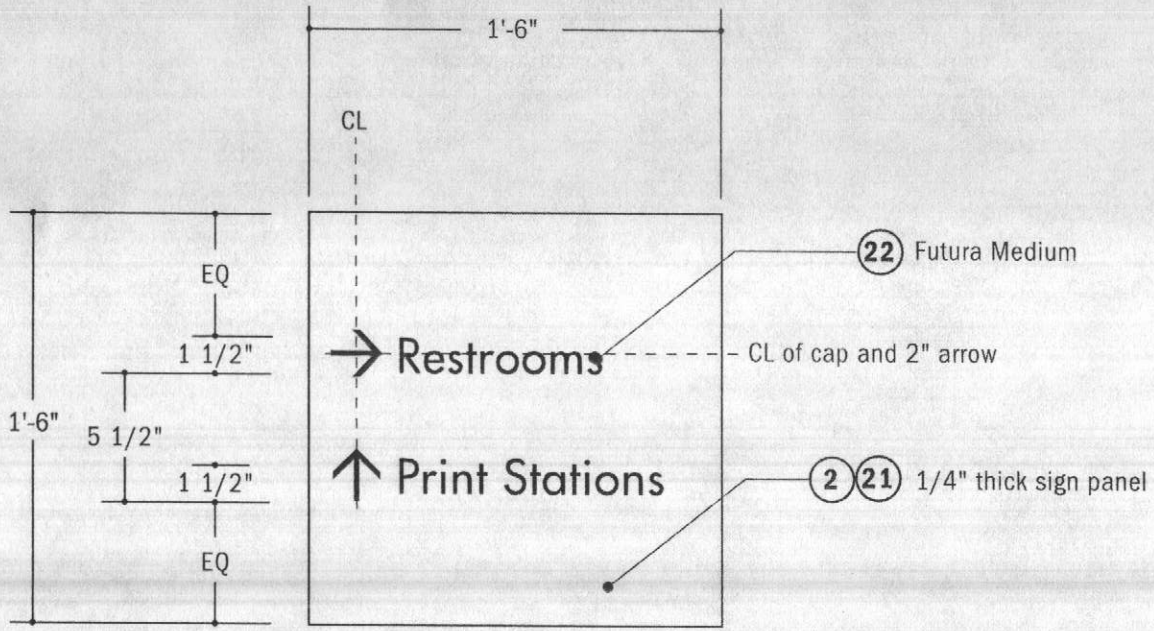
(2)(21) 3/16" sign panel

(22) 2" high copy - Futura Medium

(22) 2" arrow

ELEVATION
SCALE: 1 1/2"=1'-0"

SIGN TYPE
31
Wall-Mounted Directory

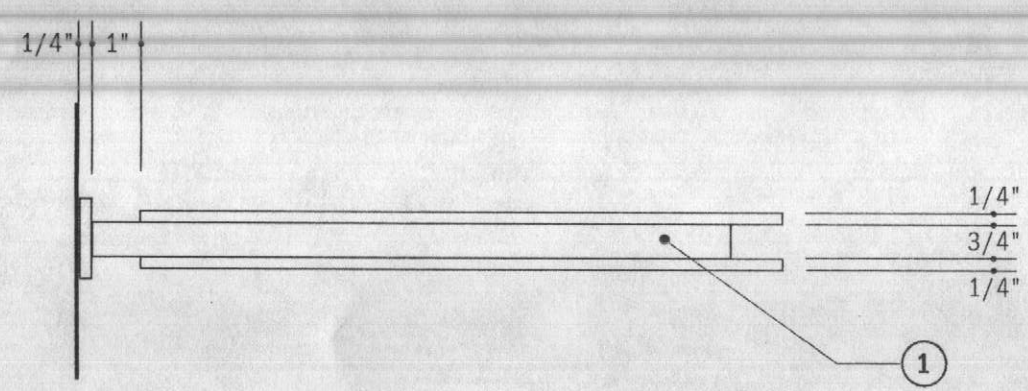


SIGN TYPE

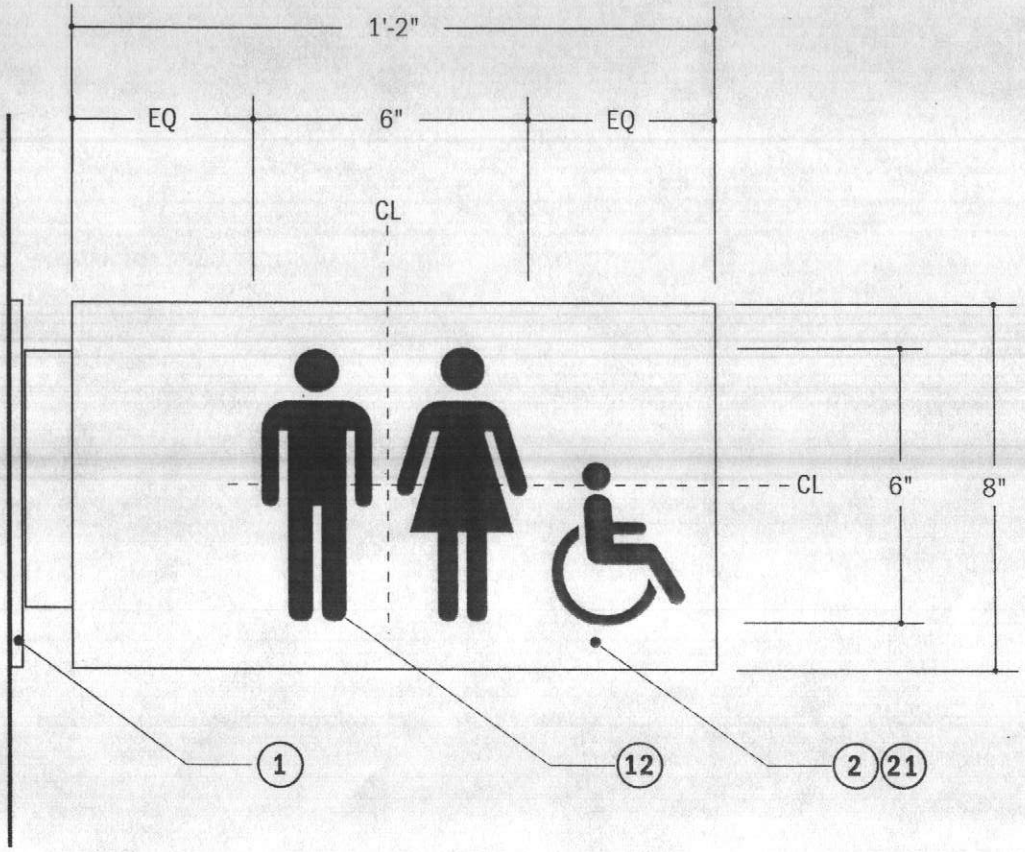
32

Directional

ELEVATION
SCALE: 1 1/2"=1'-0"

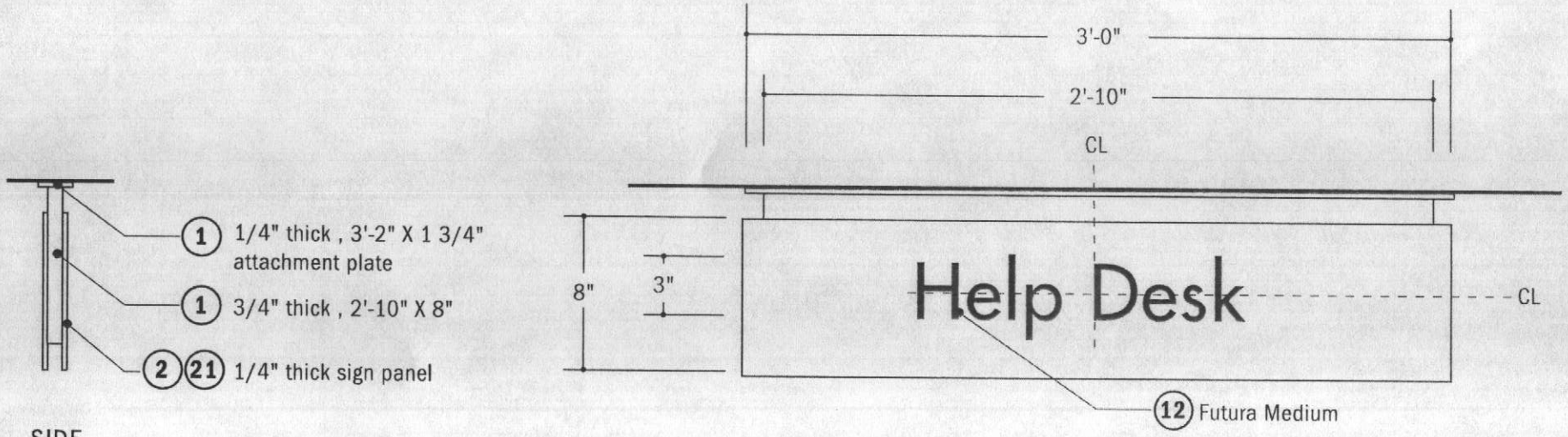


PLAN

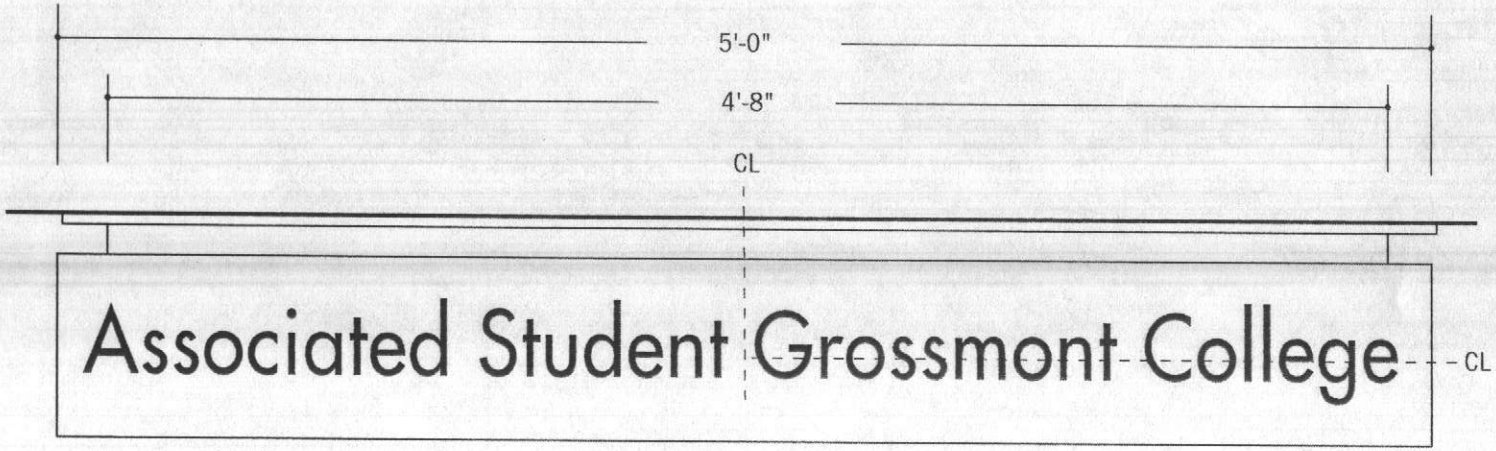


ELEVATION
SCALE: 3"=1'-0"

SIGN TYPE
33
Flag Sign



SIDE



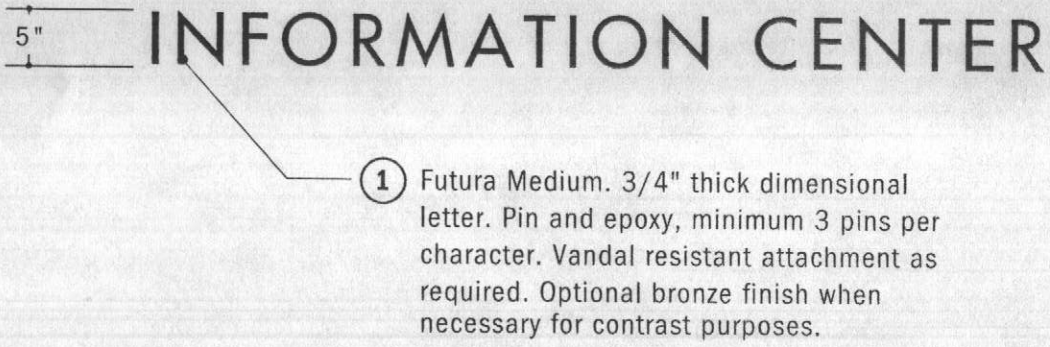
EXCESSIVE COPY CONDITION

SIGN TYPE

34

Overhead Sign

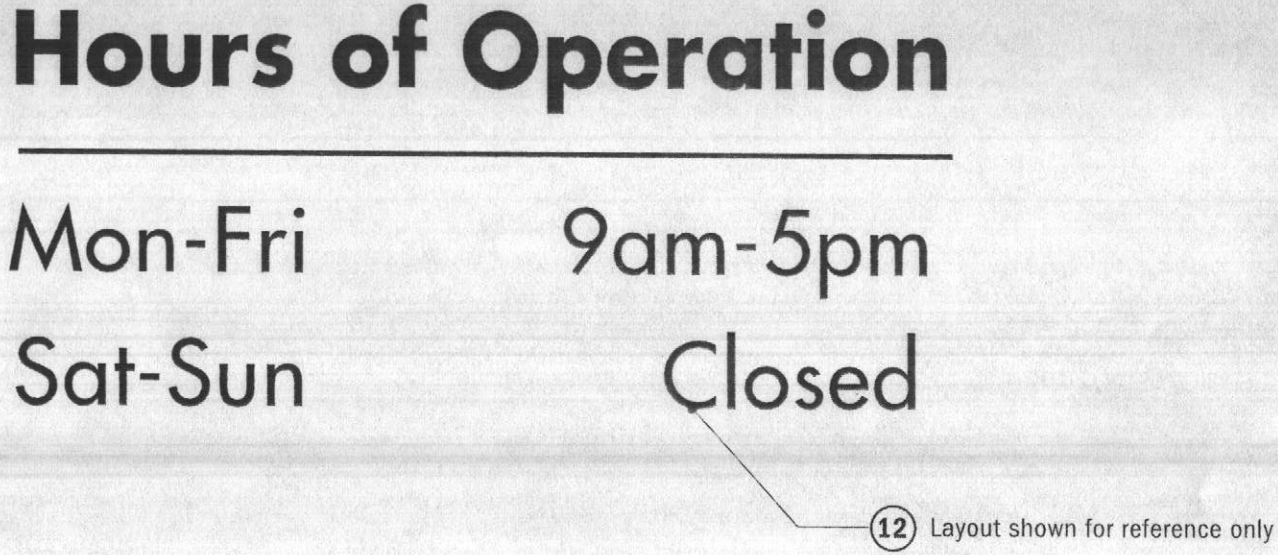
ELEVATION
SCALE: 1 1/2"=1'-0"



1 Futura Medium. 3/4" thick dimensional letter. Pin and epoxy, minimum 3 pins per character. Vandal resistant attachment as required. Optional bronze finish when necessary for contrast purposes.

SIGN TYPE
35
Dimensional Letters

ELEVATION
SCALE: 3/4"=1'-0"

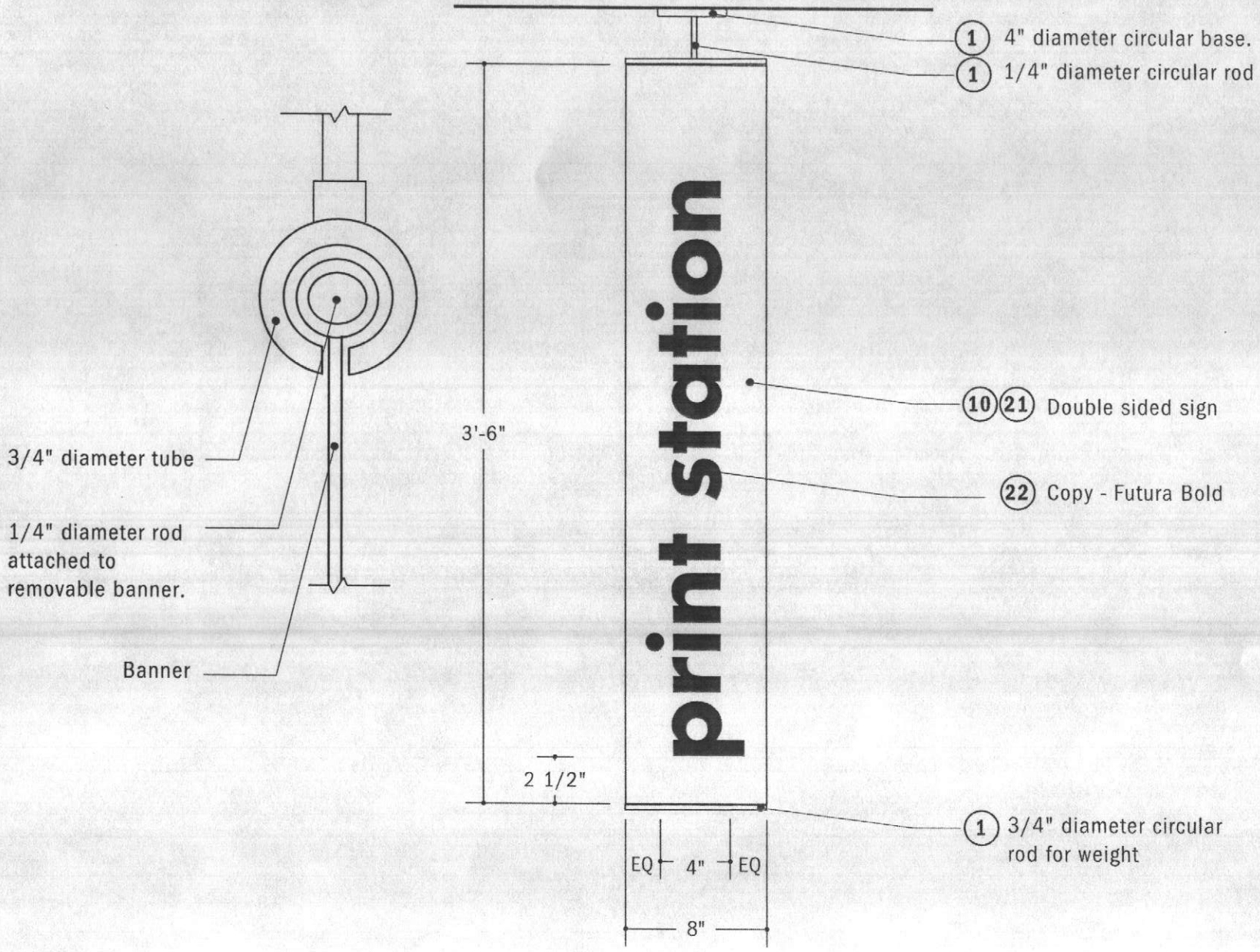


SIGN TYPE

36

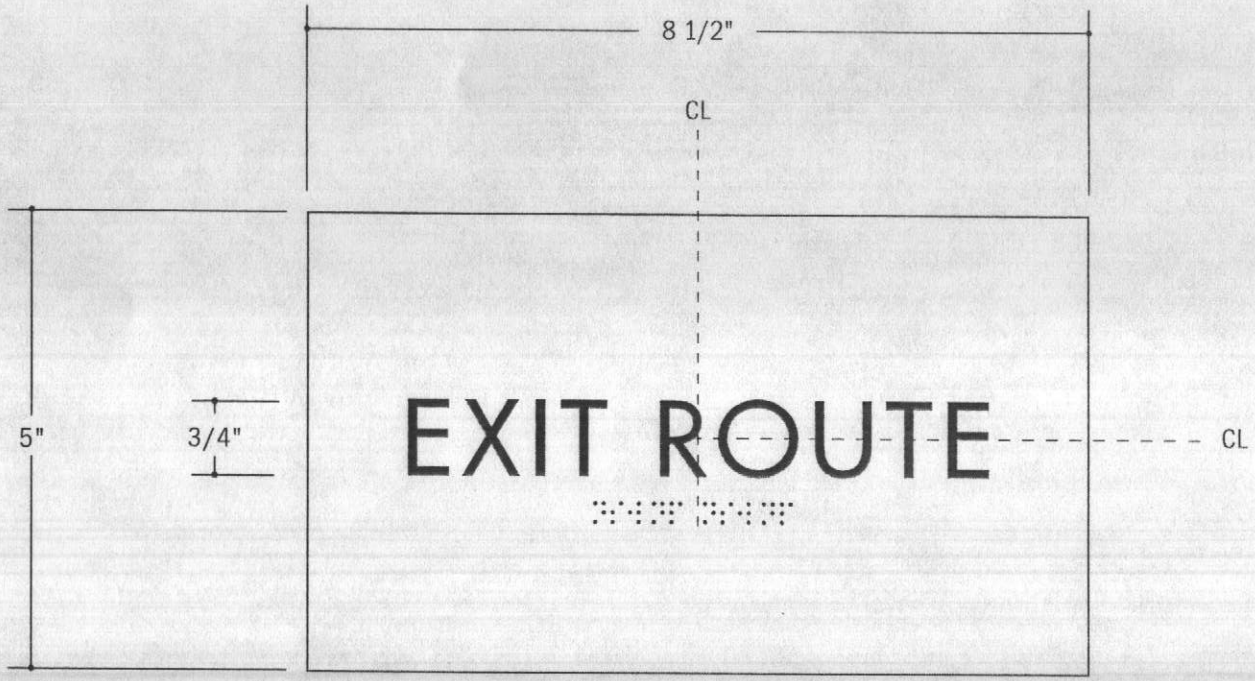
Vinyl Letters

ELEVATION
SCALE: 3"=1'-0"



ELEVATION
SCALE: 1 1/2"=1'-0"

SIGN TYPE
37
Banner



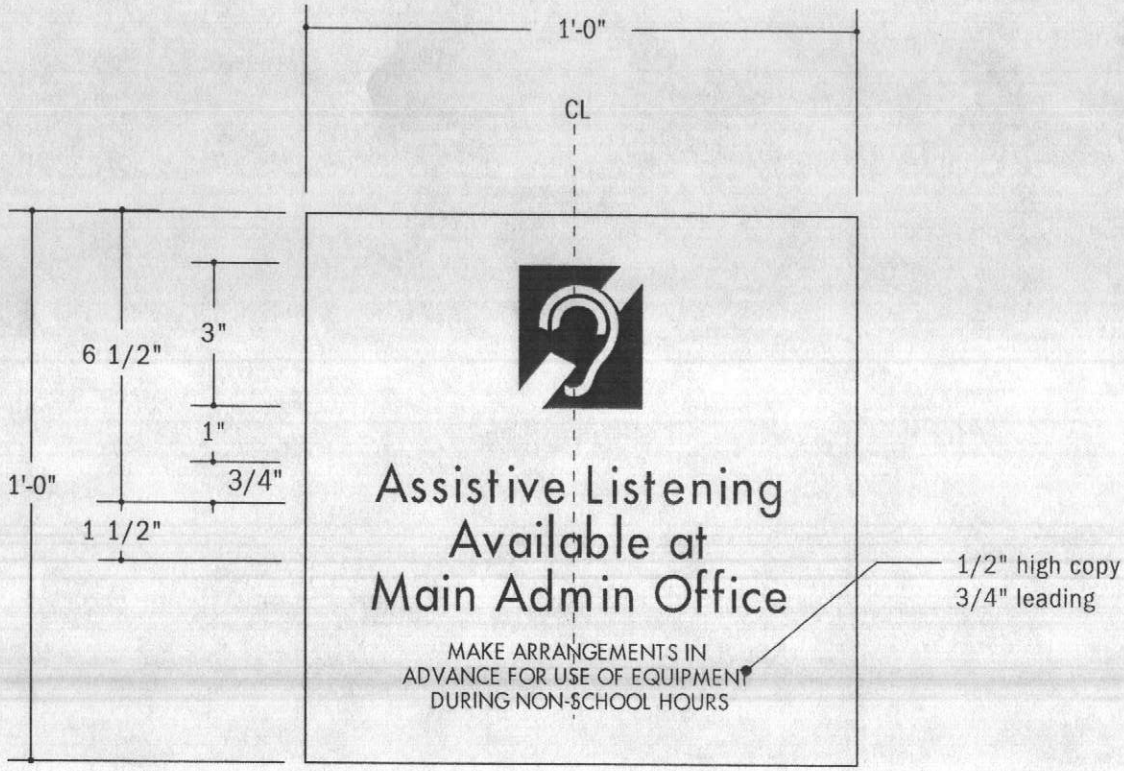
See sheet 93 for Braille specifications

(2)(21) 1/4" thick sign panel

(4)(22) 3/4" tactile numeral - Futura Medium

SIGN TYPE
38
Tactile Regulatory

ELEVATION
SCALE: Half Size

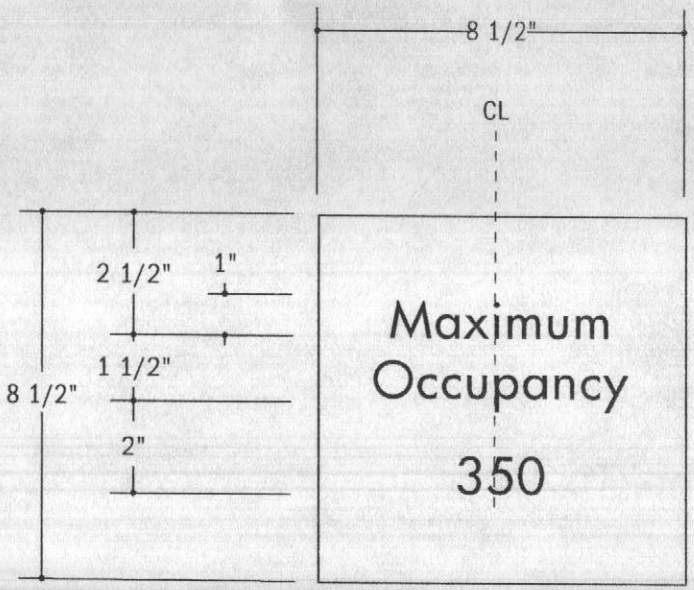


(2)(21) 1/4" thick sign panel

(22) Screenprint copy - Futura Medium

SIGN TYPE
39
Primary Regulatory

ELEVATION
SCALE: 3"=1'-0"



(2)(21) 1/4" thick sign panel

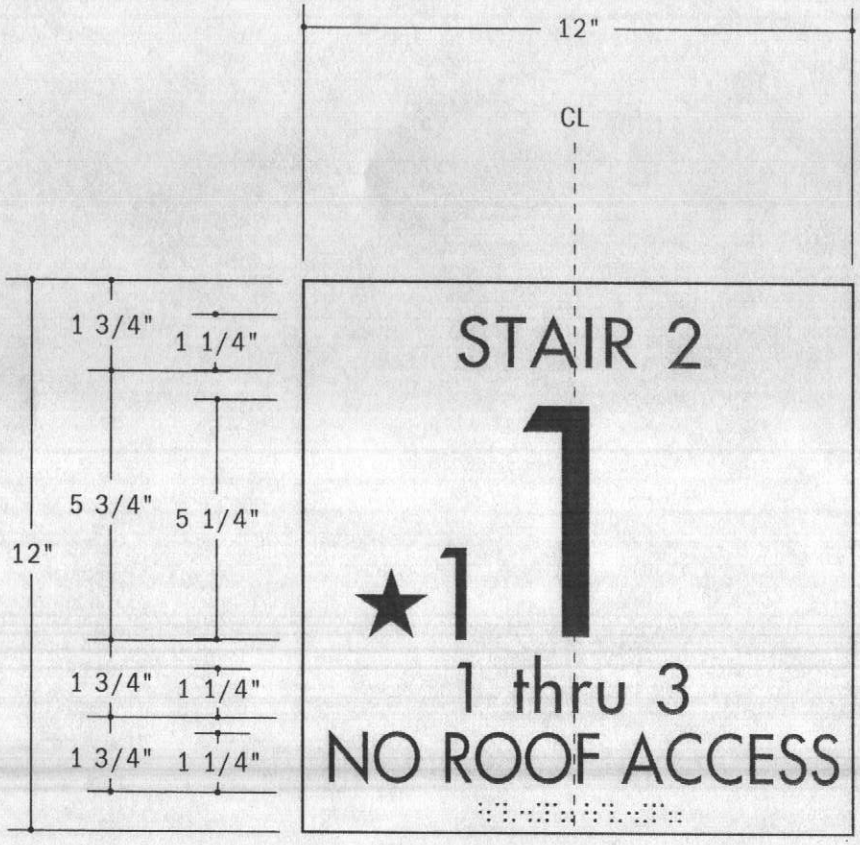
(22) Screenprint copy - Futura Medium

SIGN TYPE

40

Secondary Regulatory

ELEVATION
SCALE: 3"=1'-0"



See sheet 93 for Braille specifications

(2)(21) 1/4" thick sign panel

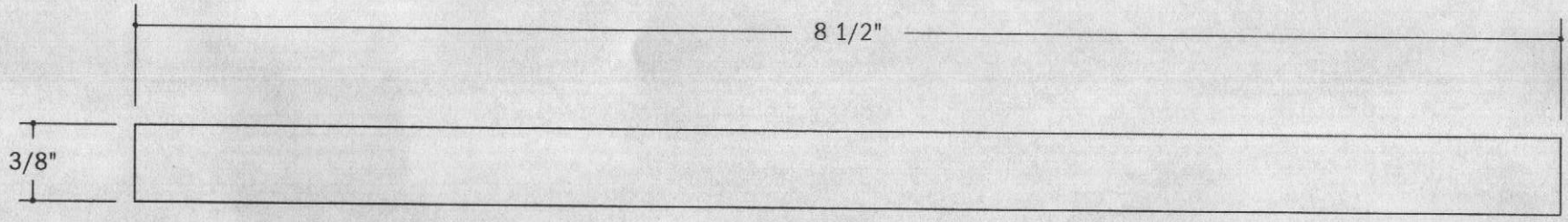
(4)(22) 1 1/4" tactile numeral - Futura Medium

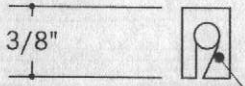
SIGN TYPE

41

Stairwell Sign

ELEVATION
SCALE: 3"=1'-0"





1 Roller bar flush with copy panel. See specifications for exact model.

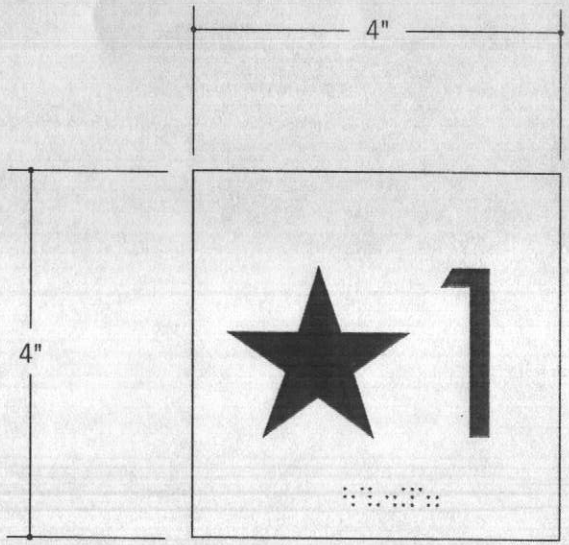
SIGN TYPE

42

Roller Bar

ELEVATION

SCALE: Actual Size



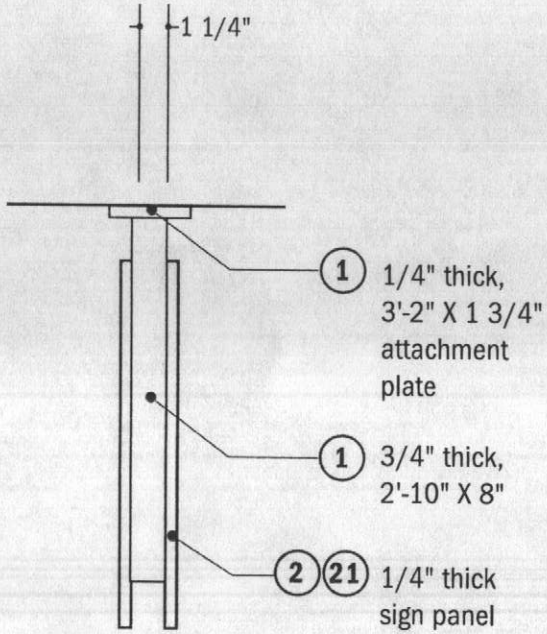
See sheet 93 for Braille specifications

(2)(21) 1/4" thick sign panel

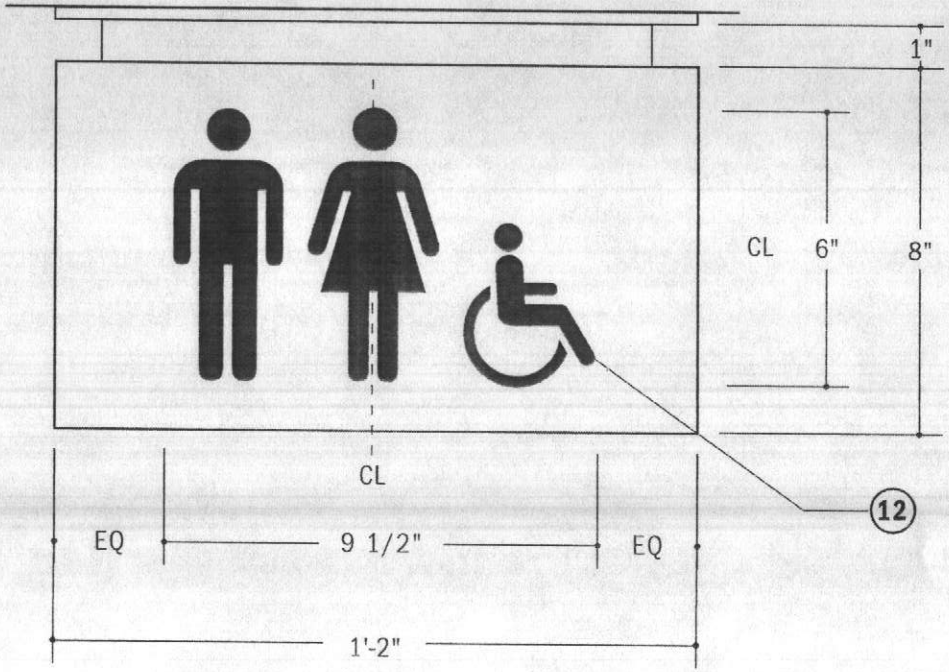
(4)(22) 2" tactile numeral - Futura Medium

SIGN TYPE
43
Floor Number ID

ELEVATION
SCALE: Half Size

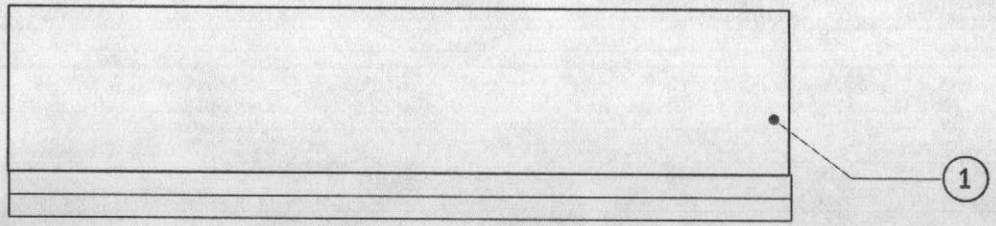


SIDE

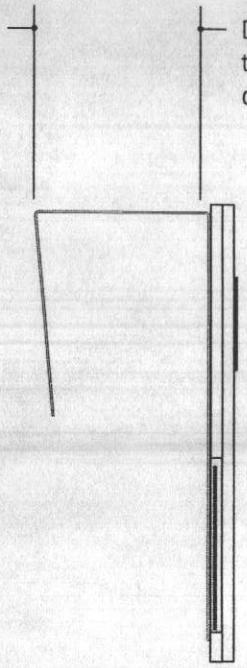


ELEVATION
SCALE: 3"=1'-0"

SIGN TYPE
44
Over Head Flag Sign

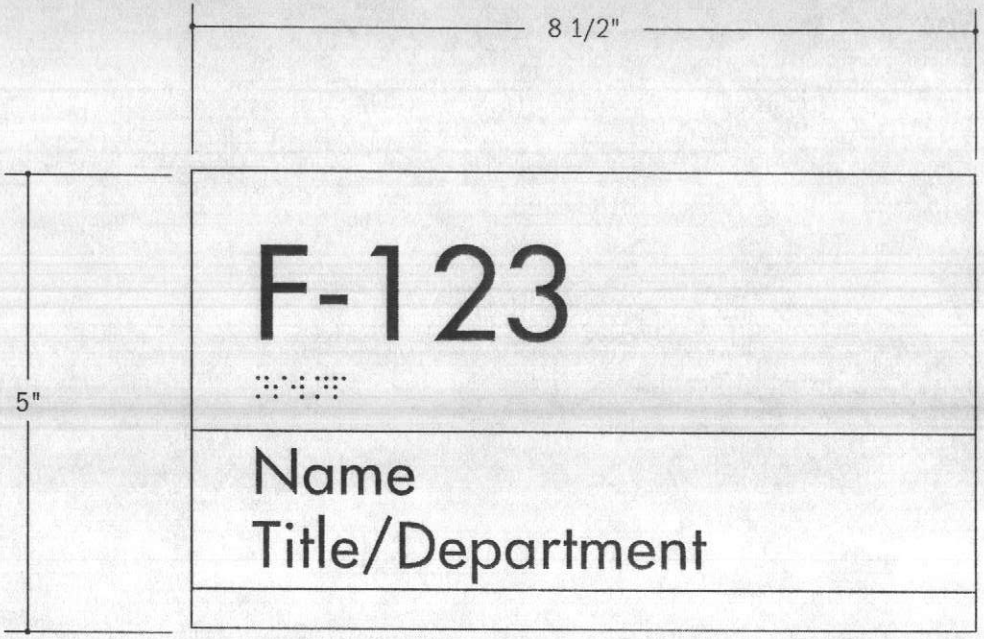


PLAN



Depth as needed
to secure to top of
cubicle

SIDE

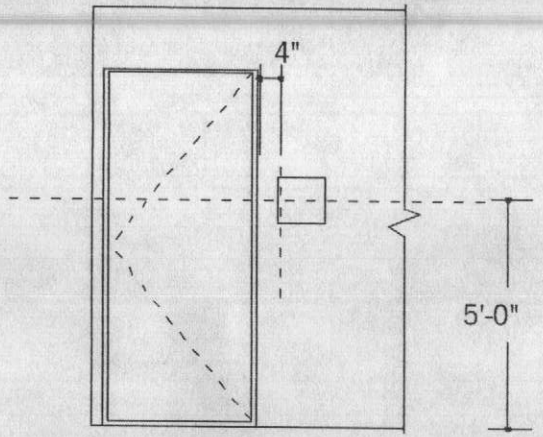


See sign type 22 for detail

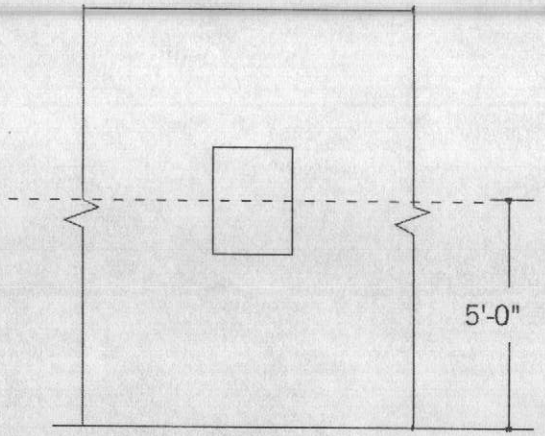
ELEVATION
Scale: Half Size

SIGN TYPE
45
Cubicle ID

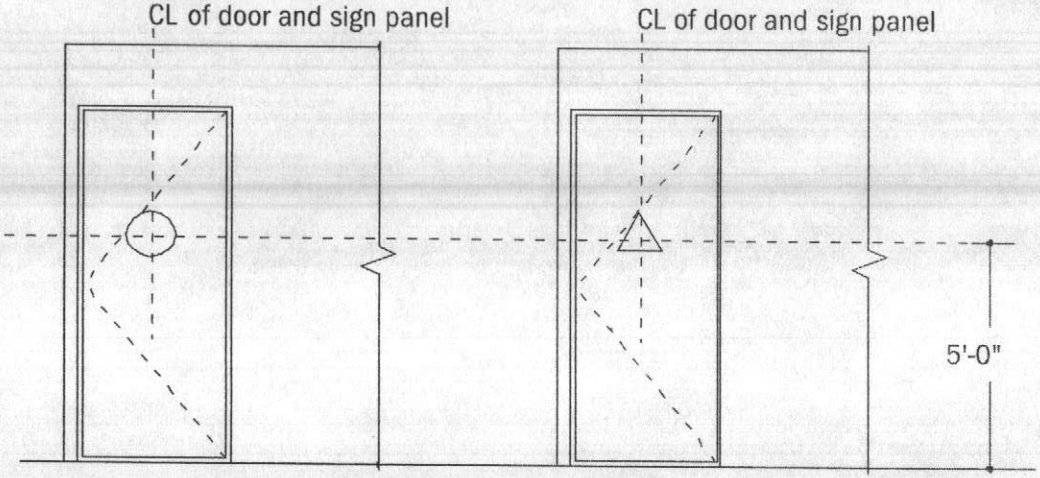
Scale: Half Size



TYPICAL MOUNTING DETAIL FOR SIGN TYPES 19, 20, 21, 22, 24, 25, 26, 27, and 38. Sign panels are attached to wall with silicone and foam tape, or as necessary concerning weight issues. Check individual locations - as this is "TYPICAL ONLY."

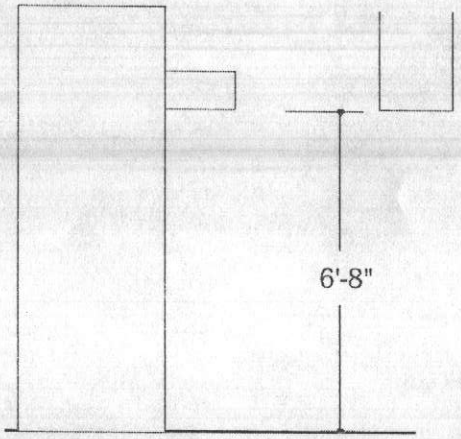


TYPICAL MOUNTING DETAIL FOR SIGN TYPE 29, 31, and 32.
Sign panels are attached to wall/door with silicone and foam tape, or as necessary concerning weight issues. Check all locations as this is "TYPICAL ONLY."



TYPICAL MOUNTING DETAIL FOR SIGN TYPE 28
Sign panels are attached to door with silicone and foam tape

ELEVATION
Scale: Not to scale



All other sign types not addressed on this sheet ie, flag, banner, dimensional letter, pole mount etc. Check all locations - as this is "TYPICAL ONLY."

FABRICATION MATERIALS

1. Aluminum - with satin, horizontally brushed finish all around unless otherwise noted in drawings. Square eased corners and edges all around. Submit finish with sample to HND prior to fabrication.

2. Acrylic - painted as designated in design drawings. Fine sanded and squared eased corners and edges all around.

3. Acrylic - Clear non-glare acrylic - Mizubishi, Shinkolite N2 001. Fine sanded and squared eased corners and edges all around.

4. Tactile copy with braille. Gravotac/Router method and clear braille beads plug mounted into sign surface. Gravotoc to be surface applied to sign panel prior to routing. Route minimal depth into sign panel to insure vandal resistance. Fabricator take necessary precautions to avoid distortion of letter forms.

5. Tackable Surface - Ecore International, Cork material; MIL-C-6183B TY2 CL1 GRC (brown color used per previous buildings

FABRICATION MATERIALS

6. Concrete aggregate

7. Project brick

8. Bronze

9. Interlocking pavers

10. Banner Material

VINYL COLORS

11. Project Dark Color

12. Project Light - 3M Oyster Vinyl

PAINT COLORS Low-sheen (typ.)

21. Project Bronze - Matthews Paint #MP 20159

22. Project Light - To match 3M Oyster Vinyl

Key Notes

PROJECT FONTS

FUTURA BOLD

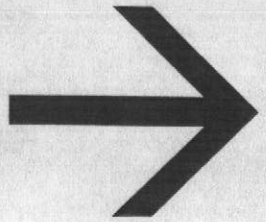
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
12345678&

FUTURA MEDIUM

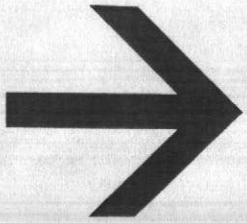
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
12345678&

PROJECT ARROWS

REGULAR ARROW



BOLD ARROW



Project Fonts and Arrows

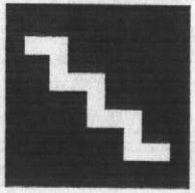
PROJECT SYMBOLS

MEN RESTROOM

WOMEN RESTROOM

RESTROOM

YOU ARE HERE

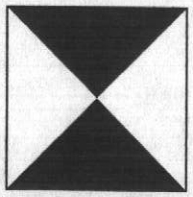


STAIRS

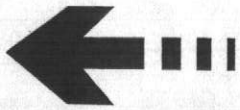
FIRE ALARM PULL

FIRE EXTINGUISHER

FIRE HOSE



ELEVATOR

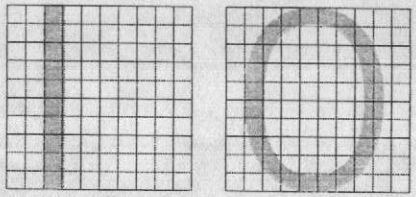


EXIT ROUTE

ISA SYMBOL

TACTILE BRAILLE REGULATORY NOTES

1) CHARACTER TYPE
Characters on signs shall be raised 1/32 - inch (0.794 mm) minimum and shall be sans serif uppercase characters accompanied by Grade 2 braille complying with 1117B.5.6.



2) CHARACTER SIZE
Raised characters shall be a minimum of 5/8 inch (15.9 mm) and a maximum of 2 inches (51 mm) high.

3) 1117B.5.2 FINISH AND CONTRAST
Characters, symbols and their backgrounds shall have a non-glare finish. Characters and symbols shall contrast with their background, either light characters on a dark background or dark characters on a light background.

4) 1117B.5.3 PROPORTIONS
Characters on signs shall have a width-to-height ration of between 1:5 and 1:1 and a stroke width-to-height ratio of between 1:5 and 1:10.

4.1) All letters measured must be uppercase. After choosing a typestyle to test, begin by printing letters "I," "X" or "O," whichever is more narrow. If the character is not wider than 1 inch, or narrower than the 3:5 rectangle, the proportions are correct. Use the 1:5 rectangle to determine if the stroke of the "I," is too broad, and the 1:10 rectangle to see if it is too narrow. If all tests are passed, the typestyle is compliant with proportion codes.

5) 1117B.5.6 BRAILLE
Contracted Grade 2 Braille shall be used wherever Braille is required in other portions of these standards. Dots shall be 1/10 inch (.54 mm) on centers in each cell with 2/10 inch (5.08 mm) space between cells, measured from the second column of dots in the first cell of the first column of dots in the second cell. Dots shall be raised a minimum of 1/40 inch (0.635 mm) above the background.

5.1) The Braille measurement template is used by placing the grid over a section of dots to check distance between Braille cells as indicated by the arch. Each box is 1/10 inch in height and width.

Lighting Guideline Matrix

Grossmont Cuyamaca Community College District
Exterior Lighting Matrix

Space Type	Target Illuminance (fc)[1, 2]	2013 Building Energy Efficiency Standards (Title24, Part 6)[3, 4, 5]	Recommended Light Sources and Approaches	Control Method[6, 7]
Building Façades- Details or Features	Surface Reflectance of >0.5: 4-15fc @ <20% of Area Surface Reflectance of <0.5: 7.5-30fc @ <20% of Area	0.35w/ sq. ft. (illuminated areas only) Façade lighting <150w/ fixture is exempt from Luminaire cutoff requirement per Exception 2, Section 130.2(b)	Wall mounted LED/ Linear Fluoresent fixtures at serviceable mounting height or in accessible locations, recessed LED wall mounted steplights, LED surface mounted flood/ accent lighting in accessible locations. Use of in-grade fixtures to be restricted to specialty areas.	Automated controls, astronomic time clocks, intelligent motion sensors, and/or partial or full range dimming from 40% to 80% required based on a number of factors including location, light source, fixture wattage, and height of fixture above grade. Please refer to Section 130.1 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls. Please note that more sophisticated control systems may be required for programmed/ color changing lighting and overrides may be required for Special Events.
Building Façades- Façade Fields	Surface Reflectance of >0.5: 1.5-5fc Surface Reflectance of <0.5: 3-10fc	0.35w/ sq. ft. (illuminated areas only) Façade lighting is exempt from Luminaire cutoff requirement per Exception 2, Section 130.2(b)	Wall mounted LED/ Linear Fluoresent fixtures at serviceable mounting height or in accessible locations, recessed LED wall mounted steplights, LED surface mounted flood/ accent lighting in accessible locations. Use of in-grade fixtures to be restricted to specialty areas.	Automated controls, astronomic time clocks, intelligent motion sensors, and/or partial or full range dimming from 40% to 80% required based on a number of factors including location, light source, fixture wattage, and height of fixture above grade. Please refer to Section 130.1 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls. Please note that more sophisticated control systems may be required for programmed/ color changing lighting and overrides may be required for Special Events.
Pedestrian Pathways less than 10' wide	0.5fc horiz 0.2fc vert 4:1 avg:min	General Hardscape Lighting Allowances, Zone 3: Area Allowance: 0.090w/sq. ft. Linear Allowance:0.60w/ linear ft. Initial Wattage Allowance: 770w Hardscape Ornamental Lighitng Allowance: 0.004w/ sq. ft. Special security lighting for retail and pedestrian hardscape allowance: 0.019w/sq. ft.	LED pedestrian poles, LED bollards, LED low level path lights. Illumination to be sufficient to allow pedestrians to percieve people approaching along path	Automated controls, astronomic time clocks, intelligent motion sensors, and/or partial or full range dimming from 40% to 80% required based on a number of factors including location, light source, fixture wattage, and height of fixture above grade. Please refer to Section 130.1 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Courtyards and Plazas	0.2-0.6fc horiz 0.1-0.2fc vert 4:1 avg:min	General Hardscape Lighting Allowances, Zone 3: Area Allowance: 0.090w/sq. ft. Linear Allowance:0.60w/ linear ft. Initial Wattage Allowance: 770w Hardscape Ornamental Lighitng Allowance: 0.004w/ sq. ft. Special security lighting for retail and pedestrian hardscape allowance: 0.019w/sq. ft.	LED pedestrian poles, LED/ Linear Fluorescent building-mounted accent lighting, low-level LED accent lighting. Use of in-grade fixtures to be restricted to specialty areas.	Automated controls, astronomic time clocks, intelligent motion sensors, and/or partial or full range dimming from 40% to 80% required based on a number of factors including location, light source, fixture wattage, and height of fixture above grade. Please refer to Section 130.1 for details regarding specific requirements and exceptions. Please note that more sophisticated control systems may be required for programmed/ color changing lighting and overrides may be required for Special Events.
Outdoor Dining	5-10fc	0.240w/ sq. ft. allowance for the total hardscape of outdoor dining. Qualifying luminaire shall be within 2 mounting heights of the hardscpe area of outdoor dining.	LED pedestrian light poles, wall mounted LED fixtures at serviceable mounting height, recessed LED wall mounted steplights, surface mounted LED flood/ accent lights mounted to Architectural elements, LED tree mounted accent/flood lighting, LED recessed downlight, lighting integrated with Architecture.	Automated controls, astronomic time clocks, intelligent motion sensors, and/or partial or full range dimming from 40% to 80% required based on a number of factors including location, light source, fixture wattage, and height of fixture above grade. Please refer to Section 130.1 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Entry Canopies (medium to high activity)	0.8-3fc horiz 0.4-1.5fc vert	0.408w/ sq. ft.	LED recessed downlight, lighting integrated with Architecture, surface mounted accent lighting	Automated controls, astronomic time clocks, intelligent motion sensors, and/or partial or full range dimming from 40% to 80% required based on a number of factors including location, light source, fixture wattage, and height of fixture above grade. Please refer to Section 130.1 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.

Space Type	Target Illuminance (fc)[1, 2]	2013 Building Energy Efficiency Standards (Title24, Part 6)[3, 4, 5]	Recommended Light Sources and Approaches	Control Method[6, 7]
Main Entries (medium to high activity)	0.8-3fc horiz 0.4-1.5fc vert	90w per door for luminares within 20 feet of door	LED recessed downlight, lighting integrated with Architecture, surface mounted accent lighting. Use of in-grade fixtures to be restricted to specialty areas.	Automated controls, astronomic time clocks, intelligent motion sensors, and/or partial or full range dimming from 40% to 80% required based on a number of factors including location, light source, fixture wattage, and height of fixture above grade. Please refer to Section 130.1 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Other Doors (low to medium activity)	1fc horiz 0.6-0.8fc vert	90w per door for luminares within 20 feet of door	LED recessed downlight, lighting integrated with Architecture, surface mounted accent lighting	Automated controls, astronomic time clocks, intelligent motion sensors, and/or partial or full range dimming from 40% to 80% required based on a number of factors including location, light source, fixture wattage, and height of fixture above grade. Please refer to Section 130.1 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Site Stairways (medium to high activity)	0.6-0.8fc horiz 0.2-0.4fc vert	Exempt per Item 9, Section 140.7(a)	Wall mounted LED/ Linear Fluoresent fixtures at serviceable mounting height, recessed LED wall mounted steplights, LED lighting integrated in stairs, low level LED bollards, LED pedestrian light poles, LED handrail light	Automated controls, astronomic time clocks, intelligent motion sensors, and/or partial or full range dimming from 40% to 80% required based on a number of factors including location, light source, fixture wattage, and height of fixture above grade. Please refer to Section 130.1 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Landscape Lighting	1.0fc Vert minium	Exempt per Item 10, Section 140.7(a)	LED surface-mounted tree uplights, low-level LED accent lighting, LED bench lighting, tree mounted lighting. Use of in-grade fixtures discouraged.	Automated controls, astronomic time clocks, intelligent motion sensors, and/or partial or full range dimming from 40% to 80% required based on a number of factors including location, light source, fixture wattage, and height of fixture above grade. Please refer to Section 130.1 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Parking Lot	1.0fc 3:1 avg:min	General Hardscape Lighting Allowances, Zone 3: Area Allowance: 0.090w/sq. ft. Linear Allowance:0.60w/ linear ft. Initial Wattage Allowance: 770w Hardscape Ornamental Lighitng Allowance: 0.004w/ sq. ft. Special security lighting for retail and pedestrian hardscape allowance: 0.019w/sq. ft.	LED/CMH hinged base area light poles	Automated controls, astronomic time clocks, intelligent motion sensors, and/or partial or full range dimming from 40% to 80% required based on a number of factors including location, light source, fixture wattage, and height of fixture above grade. Please refer to Section 130.1 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Street and Roadway Lighting	1.2fc 4:1 avg:min	General Hardscape Lighting Allowances, Zone 3: Area Allowance: 0.090w/sq. ft. Linear Allowance:0.60w/ linear ft. Initial Wattage Allowance: 770w Hardscape Ornamental Lighitng Allowance: 0.004w/ sq. ft. Public Streets, Roadways Exempt Luminaires that illuminte the public right of way on a publicly maintained roadway, sidewalk, and bikeway is exempt from Luminaire cutoff requirement per Exception 2, Section 130.2(b)	LED/CMH hinged base area light poles, use of campus standard fixtures encouraged	Automated controls, astronomic time clocks, intelligent motion sensors, and/or partial or full range dimming from 40% to 80% required based on a number of factors including location, light source, fixture wattage, and height of fixture above grade. Please refer to Section 130.1 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.

Space Type	Target Illuminance (fc)[1, 2]	2013 Building Energy Efficiency Standards (Title24, Part 6)[3, 4, 5]	Recommended Light Sources and Approaches	Control Method[6, 7]
Sports and Atheletic Fields (training, recreational, social level of play- higher levels required for competition)	20-30fc Baseball 20fc Basketball, Football, Soccer, Track, Volleyball 30fc Tennis	Exempt per Item 4, Section 140.7(a)	LED/CMH hinged area light poles, possible use of campus standard fixtures at perimeter	Automated controls, astronomic time clocks, intelligent motion sensors, and/or partial or full range dimming from 40% to 80% required based on a number of factors including location, light source, fixture wattage, and height of fixture above grade. Please refer to Section 130.1 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.

Notes:

1. Illuminance levels are based on the Illuminating Engineering Society (IES) Guidelines (10th Edition) for ages 25-65. Values are measured in footcandles and are average maintained levels. Values are measured at the horizontal task plane unless otherwise noted.
2. Illuminance levels for Entry canopies, main entries, other door entries and site stairways are shown in a range, depending on nighttime outdoor lighting zone definitions and levels of expected activity. Lighting zones are assumed to be LZ2-LZ3. Lighting zone (LZ0-LZ4) for this project to be confirmed based on surrounding ambient light and population based on 2010 Census. See IES Guidelines (10th Edition) section 26.2.2, Table 26.4.
3. LPD Allowances shown in this column are based on the values for Outdoor Lighting Zone 3 (Urban Area) per definitions in Table 10-114A of 2013 Building Energy Efficiency Standards (Title24, Part 6).
4. District may require compliance with Voluntary Measure A5.203.1.1.1 Outdoor Lighting, Tier 1 per the Energy Provisions of the California Green Building Standards Code (CalGreen Part 11), states that *"Newly installed outdoor lighting power shall be no greater than 90% of Title 24, Part 6 calculated value of allowed outdoor lighting power."* Project to confirm if College District requires compliance with CalGreen Voluntary Measures prior to beginning Design.
5. Refer to Sections 130.0, 130.2, and 140.7 of 2013 Building Energy Efficiency Standards (Title24, Part 6) for detailed requirements
6. Control methods shown are based on requirements included in the 2013 Building Energy Efficiency Standards (Title24, Part 6), but level of control beyond this base level may be open for discussion. Electrical Engineer to review proposed control approach and comment.
7. Refer to Table 130.2A for Uplight Ratings based on maximum Zonal Lumens and Table 130.2-B for Glare Ratings based on maximum Zonal Lumens. Project to refer to College District for Zonal classification prior to beginning Design.

Space Type	Target Illuminance (fc)[1]	2013 Building Energy Efficiency Standards (Title24, Part 6)[2,3] Values shown based on Area Category Method	Recommended Light Sources and Approaches	Control Method[4, 5]
General Classrooms, Lecture Halls	5fc dedicated VDT viewing 15fc laptop only 15fc dedicated VDT screen 15fc vert tack board 30fc vert markerboard 40fc hardcopy and writing 50fc speaker, no AV 100fc demonstration	1.2w/ sq. ft.	Dimmable LED for all uses: ambient, perimeter, and marker board lighting. Lighting in front of projection screen should be controlled independently. Coordinate light fixtures with ceiing mounted projector. Indirect/ glare free illumination in classrooms is essential to mitigate impact of overhead lighting on computer/ hand-held devices. Dimmable linear fluorescent is discouraged	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Study Halls	30fc	1.2w/ sq. ft.	Dimmable LED for all uses: ambient, perimeter, and White board lighting. Dimmable linear fluorescent is discouraged. Indirect/ glare free illumination in classrooms is essential to mitigate impact of overhead lighting on computer/ hand-held devices. Dimmable linear fluorescent is discouraged.	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Multipurpose Spaces	5-10fc AV and notes 15-30fc vert Whiteboard 50fc speaker, no AV 100fc demonstration	1.4w/ sq. ft.	Switched alternate lamp linear fluorescent or dimmable LED, 1x4 basket or pendant direct/indirect or wall mounted. Dimmable linear fluorescent is discouraged.	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Main Lobbies	5-10fc circulation 20 to 40fc reception, waiting areas	1.5w/ sq. ft.	Dimmable LED for all uses: ambient lighting, accent lighting, decorative fixtures, cove lighting, color-changing architectural accent could be considered. Dimmable linear fluorescent is discouraged.	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls. Please note that more sophisticated control systems may be required for programmed/ color changing lighting and overrides may be required for Special Events.
Auditoria as classroom/ lecture hall	15fc laptop only 30fc studying and test taking, paper and/or laptop	1.2w/ sq. ft.	Dimmable LED for all uses: ambient, perimeter, and White board lighting. Dimmable linear fluorescent is discouraged. Indirect/ glare free illumination in classrooms is essential to mitigate impact of overhead lighting on computer/ hand-held devices. Dimmable linear fluorescent is discouraged.	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.

Space Type	Target Illuminance (fc)[1]	2013 Building Energy Efficiency Standards (Title24, Part 6)[2,3] Values shown based on Area Category Method	Recommended Light Sources and Approaches	Control Method[4, 5]
Auditoria as Theatre/ Performing Arts	.2-7.5 house lighting during performance 30fc amateur performance (dance, music, theatre) 100fc demonstration	1.5w/ sq. ft. Lighting for performance is exempt	Dimmable LED for all uses: ambient lighting, accent lighting at walls/ceiling. Stage lighting to be provided from front, top and at the back of the stage. Possible LED color-changing architectural accent. Dimmable linear fluorescent is discouraged.	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls. Please note that more sophisticated control systems may be required for performance lighting and programmed/ color changing lighting.
Conference/Meeting Rooms	30fc horz at table 15-30fc vert Whiteboard 30fc vert for Video Conferencing	1.4w/ sq. ft.	Dimmable LED for all uses: ambient, task, perimeter, cove, and accent lighting. Possible decorative dimmable LED fixture above table. Dimmable linear fluorescent is discouraged.	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Open Offices	15-30fc Ambient 50fc Print Task	0.75w/ sq. ft. Offices >250 sq. ft. 1w/ sq. ft. Offices >250 sq. ft.	Switched alternate lamp linear fluorescent or dimmable LED, 1x4 basket or pendant direct/indirect, LED task lighting at work stations/ desks. Dimmable linear fluorescent is discouraged.	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Private Offices	15-30fc Ambient 50fc Print Task	0.75w/ sq. ft. Offices >250 sq. ft. 1w/ sq. ft. Offices >250 sq. ft.	Switched alternate lamp linear fluorescent or dimmable LED, 1x4 basket or pendant direct/indirect, LED task lighting at work stations/ desks. Dimmable linear fluorescent is discouraged.	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Administration Spaces (copy rooms, filing rooms, etc.)	10-30fc depending on task	0.6w/ sq. ft.	Switched alternate lamp linear fluorescent or dimmable LED, 1x4 basket or pendant direct/indirect or wall mounted. Dimmable linear fluorescent is discouraged.	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Retail/Bookstore	15fc circulation 40fc retail counters	1.2w/ sq. ft.	Dimmable LED for all uses: ambient lighting, direct/ indirect suspended fixtures, track-mounted LED accent lighting, cove lighting. Dimmable LED task/ table lamps at retail counters and information desks.	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.

Space Type	Target Illuminance (fc)[1]	2013 Building Energy Efficiency Standards (Title24, Part 6)[2,3] Values shown based on Area Category Method	Recommended Light Sources and Approaches	Control Method[4, 5]
Library	10-15fc circulation and ambient 30-50fc lending desk 50fc reading areas 30fc horz, 20fc vert Stacks at 30" AFF	1.2w/ sq. ft. reading area '1.5w/ sq. ft. stack area	Dimmable LED for all uses: ambient lighting, direct/ indirect suspended fixtures for stack lighting, track-mounted LED accent lighting, cove lighting. Dimmable LED task/ table lamps at lending desk and information desks.	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Dining (Café, Fast Food)	10-20fc	1.1w/ sq. ft.	Dimmable LED for all uses: ambient lighting, accent lighting, wall washing, coves, possible decorative fixtures or color-changing architectural accent/ wall washers	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls. Please note that more sophisticated control systems may be required for programmed/ color changing lighting and overrides may be required for Special Events.
Recreation/ Games Rooms	15-30fc	1w/ sq. ft.	Switched alternate lamp linear fluorescent or dimmable LED, 1x4 or direct/ indirect. Dimmable LED decorative fixtures, such as pendants, table lamps, and floor lamps may be utilized.	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls. Please note that more sophisticated control systems may be required for programmed/ color changing lighting and overrides may be required for Special Events.
Interior Stairway- Public	5-10fc horz 3-5fc vert	0.6w/ sq. ft.	Dimmable LED handrail lighting, integrated LED striplights/ steplights in stairs/ adjacent walls, possible dimmable LED downlights from ceiling if fixtures are in an accessible location. For secondary stairs, switched alternate lamp linear fluorescent or dimmable LED wall mounted at serviceable height.	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.
Corridor	5fc horz 3fc vert	0.6w/ sq. ft.	Switched alternate lamp linear fluorescent or dimmable LED wall mounted at serviceable height.	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.

Space Type	Target Illuminance (fc)[1]	2013 Building Energy Efficiency Standards (Title24, Part 6)[2,3] Values shown based on Area Category Method	Recommended Light Sources and Approaches	Control Method[4, 5]
Public Restrooms	5-10fc Ambient 15fc Vanity	0.6w/ sq. ft.	Recessed lensed linear fluorescent downlight, surface mounted fluorescent cove light at vanity and recessed LED downlights as required	Automated controls, such as full range dimming, step dimming, and/or alternate lamp switching, daylighting controls, occupancy sensing control, astronomic time clocks, and intelligent motion sensors are required based on a number of factors including light source, wattage, fixture type, and fixture location. Please refer to Section 130.2 for details regarding specific requirements and exceptions. Refer to Lighting Controls and Lighting Control Devices sections of the District Guidelines and Standards for additional details and system requirements and room controls.

Notes:

1. Illuminance levels are based on the Illuminating Engineering Society (IES) Guidelines (10th Edition) for ages 25-65. Values are measured in footcandles and are average maintained levels. Values are measured at the horizontal task plane unless otherwise noted.
2. College District may require compliance with Voluntary Performance Standard A5.203.1.2, Tier 1 and/ or A5.203.1.2.2, Tier 2 for building projects per the Energy Provisions of the California Green Building Standards Code (CalGreen Part 11), Measures state that; *"For building projects that include interior lighting and mechanical systems: No greater than 90%* (A5.203.1.2, Tier 1)*/ no greater than 85%* (A5.203.1.2.2., Tier 2) *of the Title 24, Part 6 Energy Budget for the Proposed Building as calculated by Compliance Software certified by the Energy Commission."* Project to confirm if with College District
3. Refer to Sections 130.0, 130.1, and 140.5 of 2013 Building Energy Efficiency Standards (Title24, Part 6) for detailed requirements.
4. Refer to the Tables 140.6-A thru 104.6-G from the 2013 Building Energy Efficiency Standards (Title24, Part 6) Tables for additional information to determine appropriate LPD (Lighting Power Density) and method of calculation on a per Project basis.
5. Control methods shown are based on requirements included in the 2013 Building Energy Efficiency Standards (Title24, Part 6), but level of control beyond this base level may be open for discussion. Electrical Engineer to review proposed control approach and comment. Code required controls to be as specified by Electrical Engineer.
6. Refer to Table 130.1-A included in the 2013 Building Energy Efficiency Standards (Title24, Part 6) for Multi-Level Lighting Controls and Uniformity Requirements based on fixture and lamp/light source types.

AV SYSTEMS LIGHTING GUIDELINES

- Fixtures
    - Fixtures shall not interfere with the projected image or visibility of the viewing surface. Avoid the use of pendant lights. If pendants must be used, coordinate with projection light path to avoid interference with projected image. Choose pendant fixtures with selectable three-bulb design for more diverse lighting levels. Additional lighting zones may be required if pendant fixtures are used.
- Zoning
    - Regardless of dimming requirements, AV-enabled spaces shall require zoned lighting.
    - While the quantity and types of zoned/dimmed lighting will change based on the room use, the levels and contrast ratios are typically consistent for a zone type throughout the facility. For instance, the lighting designer should design to a maximum light level of 4 foot-candles on a front projection screen, with lectern and task lighting at 30 foot-candles. This requirement would be typical for a conference room with a front projection screen as well as an 80-seat classroom.
- Light Levels
    - The requirements for contrast ratios and photometric data for quality AV systems are as follows:
        - Display Zone/Presentation Wall: Provide minimal lighting on the screen or monitor for good contrast and image sharpness. The contrast of the screen to the surrounding areas (or monitors) should be 10:1 with the display being the brightest. To achieve this level of contrast we require:
        - Front Projection Screens: ≤4 foot-candles measured at the center of the screen vertically
        - Wall Mounted Flat Panel Displays: Typically these displays work well in all environments where task lighting is measured up to 40 foot-candles
        - Task Lighting: Typically 30-35 foot-candles
        - Standard Classroom Lectern: Typically 25-30 foot-candles. Note that lecterns are typically positioned approximately 4 to 5 feet from projection screens. This presents a unique challenge in achieving the proper contrast ratio and illuminating both the screen and lectern properly. Typically, this level of design is achieved using fixtures with controlled cutoff patterns.
        - Whiteboard: Typically 25-30 foot-candles
        - Distance Education (DE) /Course Capture / Videoconference (VTC): The amount of light falling on the face of the subject should be 30 to 35 foot-candles. Use three-point lighting for presenter/subject lighting, consisting of: Key Light: Focused light between 35˚ and 50˚ vertical and 20˚ to side (horizontal), Fill Light: Diffused light 45˚ vertical and 60˚ horizontal to other side, half as bright as Key, Back Light: Illumination angled at 30˚ to back and top of presenter, twice as bright as key lighting. Additional VTC/DE/Course Capture lighting considerations Set Lighting: Even, un-scalloped illumination on the walls behind and to the side of the presenter. The presenter's location is typically off to one side. It is best to balance the room

with set lighting that may be separately controlled, but capable of the same light level on the opposing wall. This lighting is to be separately zoned and controlled from whiteboard and/or projection surface lighting. Light level ratios from the presenter to the back wall should be within 3:1 while the sidewalls can be 5:1.

- Light Quality
    - The wall finishes and furniture should be neutral. The reflectance value of these colors should be around 30 to 40 percent.
    - Color temperature is important. 3500° Kelvin highly preferred and a CRI (Color Rendering Index) of 82+.
    - Avoid incandescent lights. Color temperature for these types of fixtures varies too much when dimming is applied.
    - Broad (but controlled pattern) light sources are better than pinpoint down lights.
- Dimming
    - Use dimming wherever practical. If dimming is incorporated:
    - Use dimming system with an additional external interface to allow for control from third party AV touch panel in addition to the lighting systems preset recall panel.
    - Place low-voltage on/off switches at door and full scene recall panel near presenter; setup panel is often best put in a closet.
- Lighting Control
    - Where dimming and/or electronically controlled switched systems are incorporated, the dimming and lighting control specification should require system commissioning in each AV-enabled space and the creation of various lighting presets. Typical presets and nomenclature for AV enabled spaces are:
        - High: All lighting (except specialty fixtures such as whiteboard or recording) to 100 percent.
        - AV: Typical lighting preset for AV. This preset should have the front wash off the projection surface and other lighting set to outlined in previously in this section (Zoning)
        - Low: All lighting to 15 percent of the designed maximum. Leave front projection screen wash off.
        - Off.
    - Additional lighting presets to be used where applicable:
        - Whiteboard: Turns on and off the whiteboard lighting without affecting the rest of the system lighting.
        - Recording: Engages the Key, Fill, Back and Set lighting to the required design targets. This preset may also raise the task lighting to minimize contrast between audience and presenter.

IT and Cabling Information

GCCCD IT + CABLING REQUIREMENTS

I) DESIGN GUIDELINES FOR TELECOMMUNICATIONS

A) General Issues

1) A Grossmont-Cuyamaca Community College District Information Systems Designee shall be assigned to all construction projects

   a) The IS designee shall

      (1) Be available and participate during all phases of design and during the construction period.

      (2) assist in understanding the current needs of the IT department to support the student, faculty and staff IT needs within the building

   b) GCCCD Information Technology Contacts

      (1) Primary contact(s):

      Brian Nath
      GCCCD Senior Director of Information Systems
      619-6447536-1135 (office)
      Brian.nath@gcccd.edu

      (2) Secondary Contact

      Steve Abat
      GCCCD Director, Technical Services
      619-644-7776 (office)
      Steve.abat@gcccd.edu

2) Telecommunications Room (MDF/IDF)

   a) MDF (Main Distribution Frame)

      (1) Each building will have one MDF. The MDF will contain core routers and switches for the building and provide services to additional IDF's if required.

      (2) Requires a non-vented door leading directly to the outside of the building. If outside door is not possible, then leading into the main hallway on the 1st floor.

      (3) Requires dedicated computer room air conditioning (CRAC) with a thermostat located inside the MDF room. Room temperature to be maintained at 72 degrees ± 2 degrees 24 hours a day 7 days a week.

      (4) Requires dedicated 208V power distribution panel

   b) IDF (Intermediate Distribution Frame)

      (1) All secondary telecommunication rooms are called IDFs and will contain additional switches and/or server equipment to support the surrounding area

      (2) Requires a non-vented door leading directly to a main hallway

      (3) Requires dedicated computer room air conditioning (CRAC) with a thermostat located inside the MDF room. Room temperature to be maintained at 72 degrees ± 2 degrees 24 hours a day 7 days a week.

   c) All MDF/IDF's

      (1) When possible, the door should open out of the room

      (2) Door should be located at one corner of room

      (3) When possible, the door should be on the "short" wall

      (4) Doors should be keyed for a using GCCCD Keycard with conventional key lock in case of power outage

   d) Access

      (1) To other spaces shall not be granted through MDF/IDF

      (2) To MDF/IDF shall not be gained through other spaces

   e) Location

      (1) If possible each MDF /IDF should be located close to the center of area servicing within the building

      (2) If possible IDF's for each floor should be stacked on top of each other

      (3) Location must not exceed 260 feet per drop inclusive of all pathways, conduits and cable trays

      (4) If cable lengths will exceed 260 feet per drop, an additional IDF must be added to each floor to support all current and future data/telecommunication needs

   f) Assignable Space

      (1) Assignable space shall be determined using interior room dimensions

(2) Typical MDF combined room will be at least 150 assignable square feet with a minimum short wall of 10 feet.

(3) Typical IDF will be at least 64 assignable square feet with a minimum short wall of 8 feet.

g) Walls/Surface Finishes

(1) Drywall/Sheetrock from floor to ceiling

(2) All walls to be taped, spackled and painted

(3) After final paint has been applied, install Fire-Rated Backboard

(a) Shall be installed on all walls

(b) Shall be 100% painted after IOR's inspection of material (Fire Rating Symbol can be masked and remain visible)

(c) Shall be 5/8" minimum thickness

(d) Shall start at 6" AFF

(e) Shall rise to 8 ½' AFF (similar to standard 4' x 8' plywood sheets)

(f) Shall be installed before any equipment, conduits, etc. is mounted on the wall

h) Flooring

(1) Shall have 100% vinyl composition tile (VCT) coverage on all floors including Access Flooring

(2) Shall include linoleum base molding on all walls

(3) Conduits or sleeves penetrating the floor shall extend between 3" and 6" AFF

i) Ceiling

(1) Shall be open to floor above with no T-Grid or other plenum ceiling

(2) All ventilation ducts shall be installed at the wall and not enter the room

(3) When installed within the MDF/IDF, "Fan Coil Units" shall be mounted above the door

(4) No other HVAC units or components will be placed within the MDF/IDF

j) Lighting

(1) Shall consist of a minimum of two (2) each double bulb 4' fluorescent type fixtures

(2) Shall be hung by chain from the ceiling and allow for a 90 degree reposition to maintain parallel positioning

(a) Intent is to light the front and back of Data/Server racks and not the cable tray running through the middle, racks may be parallel to the long or short wall

(3) Shall not be controlled by building lighting control panel (LCP)

(a) MDF/IDFs must be usable 24/7

(4) Light switch can have motion or occupancy sensor to turn lights on and off but must have a manual override to turn lights on or off.

(5) Should be installed at minimum 10' AFF

k) Plumbing or other "water" pipes

(1) No plumbing supplies, returns, drains, etc. shall run through any MDF or IDF

(2) When this is not possible, a solid run with no joints must be used. Plumbing should run as not to have any leaks directly over items mounted to the wall or Data/Server racks running through "middle" of the room. This must be coordinated with assigned IT project Manager

l) Other utilities or services

(1) No fan coils, compressors, pumps, water or drainage pipes, ducts or other devices not directly related to the function of the MDF/IDF shall be placed in any MDF/IDF

(2) No transformers, UPS, converters, power supplies or other electrical items not directly related to the function of the MDF/IDF shall be placed in any MDF/IDF

B) Pathways (CFCI)

1) All data conduits will be installed with pull string

2) All data conduits shall have a **blue/green** banding & labeled "**TEL/DATA Use Only**" both ends

3) Sufficient number and size NOT to exceed 40% fill ratios depending on type of cable (plenum, outside plant, fiber or CAT6) and its corresponding outside diameter (O.D.)

a) For O.D. purposes, use the following in determining 40% fill ratios

(1) Systimax CAT 6 copper

(2) Systimax 48 SM fiber

The following table demonstrates appropriate fill rations when using Systimax Category 6 Plenum rated cable with a cable diameter of 0.224".

Conduit Size	28% Fill	40% Fill	60% Fill	100% Fill
0.75	3	5	8	13
1	6	8	13	21
1.25	10	15	22	37
1.5	14	21	31	52
2	23	34	51	85
2.5	41	59	89	148
3	62	89	134	224
3.5	82	117	175	292
4	104	149	224	374

The above calculations are based upon NEC standards and the internal area of Electrical Metallic Tubing (EMT) of various diameters.

- 28%: Recommended fill ratio for the cable capacity of horizontal pathway conduits that have no more than two 90 degree bends (180 degrees total) and are no longer than 100 ft. (Per BICSI TDMM)
- 40%: Recommended fill ratio for initial installation of cable in furniture and horizontal pathway. (Per BICSI TDMM)
- 60%: Recommended fill ratio allowed to accommodate unplanned additions after initial installation. This fill ratio range may be used as an estimate and does not account for corners and other factors. (Per BICSI TDMM)
- 100%: BICSI standards specify that a 100% fill capacity is permissible for a straight sleeve not exceeding 10 feet in length.

Per Systimax, standard Cable Diameters

Category 5E PVC	0.200”	
Category 5E Plenum	0.180”	
Category 6 PVC	0.232”	
Category 6 Plenum	0.224”	typical cable used by GCCCD
Category 6 OSP	0.250”	
Category 6A PVC	0.285”	
Category 6A Plenum	0.285”	

b) Fire-rated wall penetrations

(1) Use E-Z Path or Hilti devices

(2) Observe 40% fill ratios based on same criteria as above

(3) Ensure all fire caulking is 100% complete and inspected by IOR prior to cable pulls

Outside plant

c) All conduits shall

(1) be 4” inside diameter Schedule 40 or higher grade PVC

(2) Be a package of 4 each (minimum). Total number to be verified by IT PM

(3) have a **pull tape** not rope installed in all conduits

(4) have one mule tape installed within the package

d) Innerduct

(1) Contractor shall install

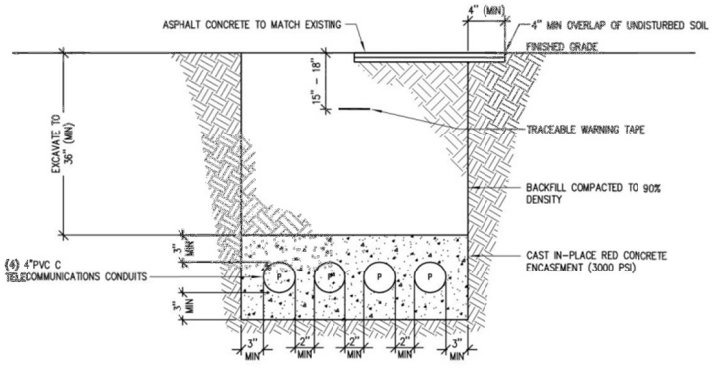
(a) Two 3-pocket MaxCell 4” in one conduit per package for fiber OSP

(b) Two 3-pocket MaxCell 4” in one conduit per package for copper OSP

e) Slurry encasement

(1) All 4” conduits to be installed during construction will be installed at prescribed depth using chairs to set spacing and encased in slurry (see diagram below).

(2) Typical depth is 4 feet with 3 feet of coverage over encasement as shown



TELECOMMUNICATIONS DUCT BANK (TYPICAL)

4) Inside Plant

a) Inside conduits, cable trays, pathways and wall penetrations

(1) Shall meet all requirements as specified by IEEE 802.3u

(2) Shall be clearly identified on all DD, DSA and Construction Drawings

(3) All conduits and cable trays must have access from an accessible area

(4) The primary pathways for inside plant should be via the above ceiling grid space. Below or in slab conduits for data should only be utilized when absolutely necessary.

(5) Inside plant should utilize cable tray as the primary means of distribution in the above ceiling grid areas.

b) Floor Boxes/Wall Access panels

(1) Raised floor/Access flooring

(a) Submit one with electrical and data compartments configured as a submittal item.

(b) Comply with requirements of applicable local codes, NEC, UL, and NEMA Standards pertaining to floor boxes and components. Meet or exceed UL Fire Classification requirements for recessed and flush style boxes. Listed and Labeled in accordance with NFPA 70, Article 100

(c) Accessibility Compliance: Design device flange to meet ADA Accessibility Guidelines as to changes in floor and ground surface levels.

(d) Must be capable of accommodating a minimum two 20 amp 120VAC electrical circuits and 12 CAT-6 data circuits

(e) Box should have at a minimum, three (3) 1" concentric knockouts, one (1) 1.25" Knockout, and one (1) 2" knockout.

(f) Floor box covers should be manufactured from die-cast aluminum with powder coat finish. The covers should have the capability to accept tile or carpet inserts or solid covers.

(g) Conduits feeding floor box need to accommodate the fill ratio for power and data cables being installed at the specific location. Coordinate final configuration with IT PM.

(2) Cast in Concrete

(a) Submit one with electrical and data compartments configured as a submittal item.

(b) Comply with requirements of applicable local codes, NEC, UL, and NEMA Standards pertaining to floor boxes and components. Meet or exceed UL Fire Classification requirements for recessed and flush style boxes. Listed and Labeled in accordance with NFPA 70, Article 100

(c) Accessibility Compliance: Design device flange to meet ADA Accessibility Guidelines as to changes in floor and ground surface levels.

(d) Must be capable of accommodating a minimum two 20 amp 120VAC electrical circuits and 12 CAT-6 data circuits

(e) Box should have at a minimum, three (3) 1" concentric knockouts, one (1) 1.25" Knockout, and one (1) 2" knockout.

(f) Floor box covers should be manufactured to meet requirements for cast in concrete environment. The covers should have the capability to accept tile or carpet inserts or solid covers.

(g) Conduits feeding floor box need to accommodate the fill ratio for power and data cables being installed at the specific location. Coordinate final configuration with IT PM.

c) Surface Mounted Raceways

(1) Surface mounted Raceways

(a) Raceway will be a minimum dual channel raceway for branch circuit wiring and data network, voice, audio video low voltage wiring.

(b) Raceway should be manufactured from aluminum alloy and be UL Listed

(c) Should feature a two piece design with a base and a snap-on cover.

(d) Minimum size should be a minimum of 8 sq. inches of internal volume space of which 4.5 sq. inches for the data compartment and 3.5 sq. inches for the electrical compartment.

d) Number of riser conduits/sleeves shall be sufficient between the floors

(1) All conduits or sleeves will be 4" in size

(2) Minimum of two conduits/sleeves for each IDF above or below MDF. Refer to 40% fill ratios in determining the number conduit/sleeves required. This shall be verified with IT PM

Example - MDF (1st Floor) to IDFs on 2nd, 3rd and 4th floors

- MDF to IDF 2nd floor – minimum 6 conduits/sleeves
- IDF (2nd floor) to IDF (3rd Floor) – minimum 4 conduits/sleeves
- IDF (3rd floor) to IDF (4th floor) – minimum 2 conduits/sleeves

e) Conduit risers within classrooms, labs, lecture halls, conference rooms and offices

(1) All data drops should be fed by minimum 1" conduits within the wall and/or floors

(2) All data boxes should be Quad electrical J-box with duplex reducer mounted within the wall

(3) Data boxes should normally have (1) 1" EMT from j-box location to an accessible ceiling space

(4) If more than 6-8 cable drops are needed, either use;

(a) One each 2" EMT, or

(b) Two each 1" EMT, or

(c) More as prescribed by 40% fill ratio for CAT6 UTP plenum cable per manufacturer's specification

f) Recommended penetrations for fire-rated walls are EZ-Path (preferred) and Hilti devices

(1) Quantity and size of these devices should be consistent for the number of cables that will pass through the wall.

(2) Installation of these devices should include all fire stopping required to maintain fire rating of fire-rated walls

(3) Wiring contractors will provide fire stopping to the interior of conduits, etc.as required to maintain fire rating of fire-rated wall

C) Electrical Requirements

5) Power Panels/Distribution Panels (CFCI)

a) A dedicated surface-mounted Power Distribution Panel (sized as necessary to accommodate the required circuits) should be located in the MDF room. This panel will provide power (at a minimum) to the main Critical Power IT UPS (Uninterruptible Power Supply) and convenience outlets within the MDF

b) A surface-mounted Critical Power Distribution Panel (sized appropriately to accommodate all individual dedicated circuits for all floors in a stack) to be located in the MDF room. This panel is fed from the output of the Critical Power IT UPS.

6) Ground Bus (CFCI)

a) A ground bus bar is required in each MDF/IDF

b) All ground bus bars are to be the same electrical ground as building ground for electrical systems for the building

c) Each MDF/IDF ground bus bar shall be tied together with the ground bus bar located in the MDF

7) Convenience Outlets

a) One Quad Outlet will be located in the middle each wall

(1) If any wall is longer than 10 feet, then place (2) each quad outlets evenly spaced

b) One Duplex Outlet will be located at 96" AFF on the opposite "short" wall from the door

c) One Duplex outlet will be located on the "short" wall adjacent to the door per Intrusion panel

(1) Verify with District Fire/Alarm team on number of intrusion panels in each MDF/IDF

8) Controls

a) MDF/IDF requires 7/24 service

b) Electrical, lighting and CRAC requirements preclude placing these services on a building management system

c) District monitoring of lighting and CRAC should be included with local controls for both.

d) HVAC/Lighting Control may be located in the MDF Telco on same short wall adjacent to Door as Fire/Intrusion alarm systems at 96" AFF or higher

9) Transformers/Inverters

a) No transformers should be co-located within the MDF or IDF rooms

b) No transformers in adjacent rooms should be on common walls with the MDF or IDF rooms

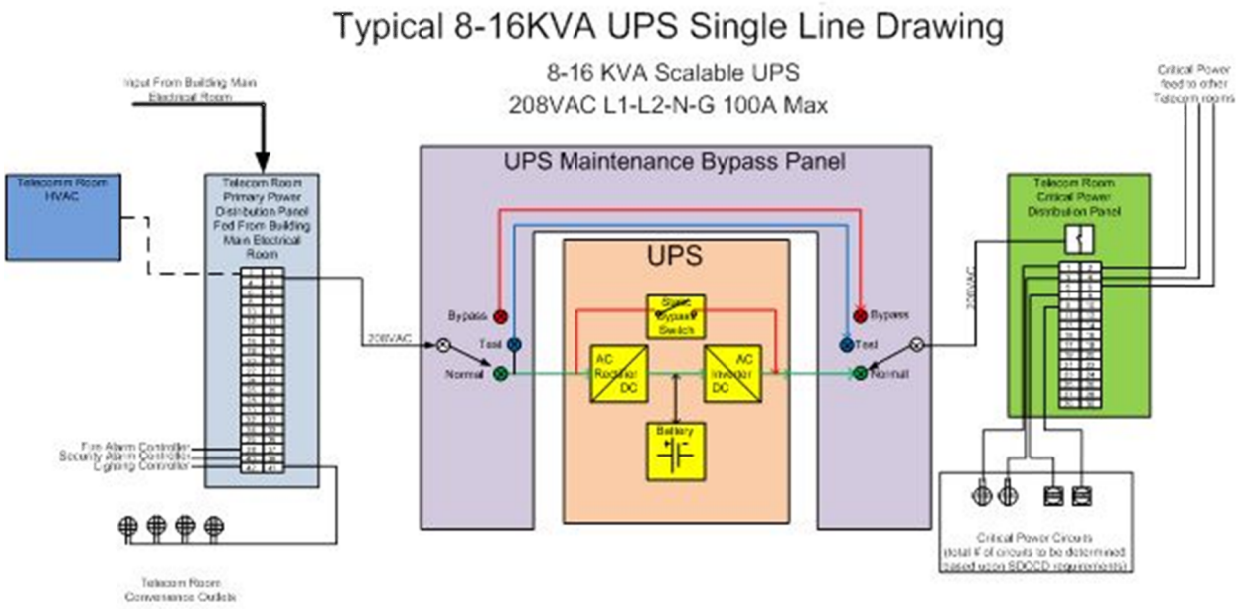
c) No Inverters should be co-located in any MDF/IDF

10) Telco UPS Requirements (OFCI)

a) District IT will purchase an appropriate size UPS for each MDF/IDF

b) Construction Electrical contractor shall be responsible to provide the appropriate plugs, outlets, wiring, conduits and installation as required, thus Owner Furnished Equipment (UPS) and Contractor Installed (all other items not limited to what is described here)

c) District IT will determine which makes and models will be installed for each new building. This information will include the number of UPS that will be installed, which MDF/IDFs and make/models of each unit.



a) The above diagram should be used as a reference and should be modified for each new building. Final design should be completed in concert with direction from the assigned IT PM for the project

b) Per the diagram above, the project electrical contractor will perform the following tasks;

(1) Install the Surface Mounted Telecom Room Primary Power Distribution Panel [single phase 208 panel with a double 100 amp breaker is minimum requirement, a 3 phase panels is NOT required} with appropriately sized circuits for the required services (to be confirmed by the IT PM)

(2) Install the Surface Mounted UPS Maintenance Bypass Panel(OFCI)

(3) Install the Surface Mounted Telecom Room Critical Power Distribution Panel with appropriately sized circuits for the required services (to be confirmed by the IT PM)

(4) Route power from the Telecom Room Primary Power Distribution Panel to the UPS Bypass Switch/Panel using EMT

(5) Route power from the UPS Bypass Switch/Panel to the UPS using EMT and Seal Tight

(6) Route Power from the UPS back to the UPS Bypass Switch/Panel

(7) Route Power from the UPS Bypass Switch/Panel to the “Telecom Room Critical Power Distribution Panel”

(8) From the “Telecom Room Critical Power Distribution Panel” (4) each dedicated Quad circuits will be provided to each MDF/IDF room

(a) Location will be verified by IT PM

(9) From the “Telecom Room Critical Power Distribution Panel” (2) each dedicated circuits will be provided to (normally) one MDF/IDF room utilizing a L5-30R receptacle

(a) Location will be verified by IT PM

(10) All circuits and receptacle's will be labeled at each location

c) In addition, a dedicated wall mounted L6-30R is needed in each IDF. Location to be determined by assigned IT PM

(1) Separate dedicated circuit from the "Telecom Room Primary Power Distribution Panel" to each Telco

(2) L6-30R will be mounted on the wall

(a) Location to be verified by IT PM

D) Heat Loads

2) Initial equipment heats loads will be based on the placement of 1-3 core switches in the MDF and 1-2 Core switches or multiple Stackable Switches in each IDF.

a) Location of the Core Switches will generally be in the 1st floor MDF room but could be located on an upper floor as directed by the District IT Manager

b) Each Core switch has redundant 1200 watt power supplies and will be at max loads

c) Stackable switches at 375 watts may be distributed throughout the building MDF/IDF locations

3) MDF will have a minimum of one 12-16 kVA UPS with up to 16kVA load (this includes a core router switches and servers)

4) Each IDF will have a minimum of 2 and a maximum of 8 switches at 375 watts each (750-3000 watts) plus any required HP DL380 series servers. Estimating 2-4 servers (800 watts each) could be added within 1- 2 years after opening building. This could add an additional 1600 - 3200 watts of load in an IDF room.

C) GCCCD Information Systems Designee

1) A GCCCD Information Systems designee will assist the project architect and electrical engineer to determine the following information;

a) Cable pathways

(1) Cable trays

(2) Conduits

(3) Which manhole will provide District IT backbone facilities

b) J-box locations for;

(1) Data/telephone drops

(2) Emergency phone drops including site located Talk-a-phone

(3) Call box drops

c) Provide location in MDF and/or IDFs for the following items;

(1) Fire panels and Annunciators

(2) Intrusion panels

(3) Wiring (110 blocks)

(4) HVAC controller(s)

(5) Lighting Control panel(s)

d) The GCCCD Information Systems designee will work with Campus A/V coordinator, will provide assistance with Infrastructure to support A/V equipment

e) Coordinating work of district wiring vendor

f) MDF and IDF room layout

g) Wiring plan

h) Outside Plant Cabling (OSP) both copper and fiber

i) Inside Plant Cabling (ISP) both copper and fiber

j) All other wiring needed for other items, TV, Video-teleconferencing, etc.

k) IT switch locations

l) Assist (with campus A/V coordinator)in coordinating work of district A/V vendor

m) Assist (with District Police) in coordinating work of District Safety Camera vendor.

D) GCCCD Information Systems designee will assist the General Contractor foreman/project manager or Construction Manager (CM-Multi-Prime contracts) Superintendent/Project manager with the following;

1) Setting up a meeting to integrate installation of OSP and ISP cabling with District Wiring Vendor into the Project Master Schedule

2) Setting up a meeting to integrate installation of A/V wiring and equipment into the Project Master Schedule

3) Coordinating District IT personnel to support network and telephone needs for commissioning items

4) Coordinating District IT personnel and District Wiring Contractor to support FF&E items for a successful move-in of District Staff/faculty/Students into new and renovated buildings

5) Be the primary point of contact for District IT related issues during to the construction period

6) Attending meetings as needed to maintain active communications for District IT during the construction period.

E) The GCCCD Information Systems (IS) Department works with the architect and engineers to design the following:

1) Data/telephone cabling pathways

a) Cable Trays

b) Data/Telephone Conduit and Box Locations

c) Conduit Labeling

d) Pull Strings

2) Ladder rack installations in primary corridors/hallways
3) Audio Visual solutions, infrastructure to support (power/conduits/floor box locations)
4) Lighting issues in all classrooms/conference rooms that will have Audio Visual solutions
5) Dedicated power to Audio Visual locations
6) MDF/IDF room (MDF/IDF) size, backboards, lighting, ground bus bars
7) Fire Panel location if in MDF/IDF
8) Alarm Panel location if in MDF/IDF
9) MDF/IDF Dedicated Power Distribution panels
10) MDF/IDF Dedicated CRAC if needed
11) Conduit from nearest campus data manhole to new building

NOTE: All of the above shall be part of the construction contract

F) GCCCD contracts with their own third party vendors to procure and/or install some or all of the following:

1) UPS and UPS Equipment
2) All racks, cable tray, wire management residing in the MDF/IDF(s)
3) All Data/Telephone Cabling
4) Audio Visual equipment to include possible electric screens in ceiling grid and projector mounting hardware
5) Telephone solutions, including desktop phones and emergency classroom phones
6) Camera systems, if any
7) All fiber-optic and copper connectivity to new building
8) All fiber-optic and copper cabling in new building

G) The following items shall be accommodated in the construction schedule. Please provide the assigned GCCCD IS Designee with a copy of the construction schedule and place The assigned GCCCD IS Designee shall attend the weekly meetings as needed and on a periodic basis to maintain good communications with the project management team.

1) Completion of MDF/IDF rooms
    a) VCT Flooring
    b) Walls completed and painted
    c) Backboards installed, inspected and painted on all walls
    d) Door installed (may be temporary with construction core)
    e) Lighting (may be temporary construction lights provided by electrical contractor)
2) Date to begin installation of Outside Plant cabling (both copper and fiber facilities)
3) Date to begin rough in of Inside Plant Cabling (both copper, CAT6 and fiber facilities)

4) Date to complete IT cabling related to commissioning items;
    a) HVAC controller
    b) EMS
    c) LCP
    d) PV
    e) Elevators
    f) Fire Alarm
    g) Intrusion Alarm
5) Date to complete IT cabling related to move-in of faculty and staff;
    a) Faculty/Staff
    b) Computers
    c) Phones
    d) Fax machines
    e) Printers
    f) Other IT related items
6) Instructional
    a) Computers
    b) Emergency Phones
    c) Printers
    d) Other IT related items

H) Communications between management team and GCCCD IS vendors

1) GCCCD IS Vendors understand construction safety rules, and are bonded and insured. For each construction project, all GCCCD IS vendors (each worker) shall attend safety orientation, safety briefings as directed by the GC and/or CM.
2) GCCCD IS Vendors shall attend the weekly foremen meetings as directed by the GC and/or CM.
3) Conflicts between GCCCD IS Vendors and the GC and/or CM, should be directed to the assigned IS designee. The IS designee shall resolve the conflict and shall take appropriate action when conflict involves workmanship, inappropriate conduct and failure to perform issues. Scheduling issues shall be discussed and corrected as swiftly as possible.
4) The goal of the GCCCD IS department is for a smooth partnership between the District's personnel and its vendors, and the project construction team.

District Preferred AV Products/Details

Advantage® Deluxe Electrol®

Automatic Electric Projection Screen Model

DA-LITE®

SPECIFICATION DATA

SUGGESTED SPECIFICATIONS: _____projection screen(s), 65" (H) x 104" (W). The Advantage® Deluxe Screen shall have two motors, one to operate door and one to operate screen. Door motor electrically operated 120 volt (60 Hz) not more than 1.2 amp, mounted inside the roller, to be three wire with ground, quick reversal type, oiled for life, with automatic thermal overload cutout, integral gears, capacitor and an electric brake to prevent coasting. To have pre-set but adjustable limit switches to automatically stop fabric door in the "down" position. The door will lift to the closed position where a micro switch shall cut off the electrical current to the door motor. Screen motor is electrically operated 120 volt (60 Hz) not more than 2.4 amp, mounted inside the roller, to be three wire with ground quick reversal type, oiled for life, with automatic thermal overload cutout, integral gears, capacitor and an electric brake to prevent coasting. To have pre-set but adjustable limit switches to automatically stop picture surface in the "up" and "down" positions. The roller to be of rigid metal. Screen fabric to be flame retardant and mildew resistant fiberglass with black masking borders standard. Bottom of fabric shall be formed into a pocket holding a metal rod with plastic caps. Case shall be a white powder coated aluminum extrusion. Bottom of case to be self-trimming with a built-in flange around the bottom of the case. A section of the bottom of the case shall be an aluminum door equipped with concealed hinges so that it opens and closes automatically with the lowering and raising of the picture surface. The balance of the bottom of the case shall be a second hinged aluminum door with manual opening to provide access. Junction box shall be internally integrated into the housing making it possible to install the housing and wire to the building's electrical system during construction. The junction box shall contain a quick connect connector that is mounted in the housing for easy plug-in connection to the motorized fabric and roller assembly. The motorized fabric and roller assembly to be installed in the case at the factory or at a later time at the job site. To be complete with integrated low voltage control unit and three position control switch with cover plate. Suitable for use in environmental air space in accordance with section 300-22 (c) of the National Electric Code, and sections 2-128, 12-010 (3) and 12-100 of the Canadian Electrical Code, part 1, CSA C22.1. Screen to be listed by Underwriters' Laboratories.

c UL us

HDTV (16:9) Format Dimensions (2" Standard Black Drop at Top)

Viewing Area (H x W)		Nominal Diagonal		Overall Length of Case*		Approx. Ship. Wt.	
In.	Cm	In.	Cm	In.	Cm	Lbs.	Kg
45" x 80"	114 x 203	92"	234	96¼"	244	122	55.3
52" x 92"	132 x 234	106"	269	108¼"	275	137	57.6
54" x 96"	137 x 244	110"	279	112¼"	285	141	64.0
58" x 104"	147 x 264	119"	302	120¼"	305	153	69.4
65" x 116"	165 x 295	133"	338	132¼"	336	165	74.8
78" x 139"	198 x 353	159"	404	156¼"	397	190	86.2
90" x 160"	229 x 406	184"	467	176¼"	448	198	89.8

Wide (16:10) Format Dimensions (2" Standard Black Drop at Top)

Viewing Area (H x W)		Nominal Diagonal		Overall Length of Case*		Approx. Ship. Wt.	
In.	Cm	In.	Cm	In.	Cm	Lbs.	Kg
50" x 80"	127 x 203	94"	239	96¼"	244	120	54.4
57½" x 92"	146 x 234	109"	277	108¼"	275	138	62.6
60" x 96"	152 x 244	113"	287	112¼"	285	141	64.0
65" x 104"	165 x 264	123"	312	120¼"	305	156	70.7
69" x 110"	175 x 279	130"	330	126¼"	321	161	73.0
72½" x 116"	184 x 295	137"	348	132¼"	336	165	74.8
87" x 139"	221 x 353	164"	417	156¼"	397	190	86.2
100" x 160"	254 x 406	189"	480	176¼"	448	198	89.8

Video (NTSC 4:3) Format Dimensions (2" Standard Black Drop at Top)

Viewing Area (H x W)		Nominal Diagonal		Overall Length of Case*		Approx. Ship. Wt.	
In.	Cm	In.	Cm	In.	Cm	Lbs.	Kg
43" x 57"	109 x 145	72"	183	72¼"	184	83	37.6
50" x 67"	127 x 170	84"	213	82¼"	209	93	42.2
57" x 77"	145 x 196	96"	244	96¼"	244	114	51.7
60" x 80"	152 x 203	100"	254	96¼"	244	118	53.5
69" x 92"	175 x 234	120"	305	108¼"	275	128	58.1
87" x 116"	221 x 295	150"	381	132¼"	336	165	74.8
105" x 140"	267 x 356	180"	457	156¼"	397	190	86.2
120" x 160"	305 x 406	200"	508	176¼"	448	198	89.8

Square Format Dimensions (Screens With ^ Have 2" Standard Black Drop at Top)

Sizes (H x W)		Overall Length of Case*		Approx. Ship. Wt.	
In.	Cm	In.	Cm	Lbs.	Kg
50" x 50"	127 x 127	62¼"	158	71	32.2
60" x 60"	152 x 152	72¼"	184	81	36.7
70" x 70"	178 x 178	82¼"	209	104	47.2
84" x 84"	213 x 213	96¼"	244	115	52.2
6' x 8'^	183 x 244	108¼"	275	128	58.1
8' x 8'	244 x 244	108¼"	275	131	58.4
7' x 9'^	213 x 274	120¼"	305	136	61.7
9' x 9'^	274 x 274	120¼"	305	149	67.6
8' x 10'^	244 x 305	132¼"	336	165	74.8
10' x 10'	305 x 305	132¼"	336	176	79.8
9' x 12'^	274 x 366	156¼"	397	190	86.2
12' x 12'	366 x 366	156¼"	397	200	90.7

*Case length does not include flange

PRODUCT NOTES

- **Matte White:** Horizontal seam required when both dimensions exceed 10'.
- **High Contrast Matte White:** Available in sizes where both dimensions do not exceed 10'.
- **Video Spectra 1.5:** Available in sizes up to 8' in height.
- **Silver Lite 2.5:** Available in sizes up to 8' in height and width.
- **High Power®:** Horizontal seam required when both dimensions exceed 8'.
- Overall case length dimensions +/- ¼" (6 mm).
- Detail dimensional drawings, wiring diagrams and installation instructions available upon request.
- Specifications subject to change without notice.
- Custom formats and sizes available upon request.

WHEN ORDERING, MARK APPROPRIATE SELECTIONS

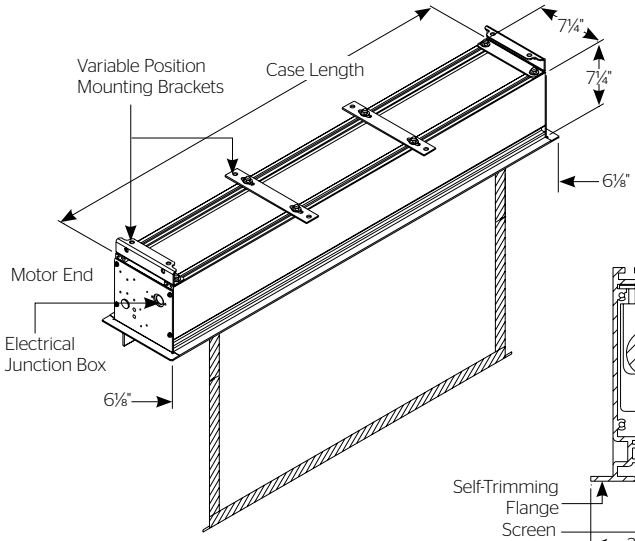
1. Select size from charts on other side.
2. Select viewing surface (All Da-Lite surfaces are GREENGUARD GOLD Certified.):

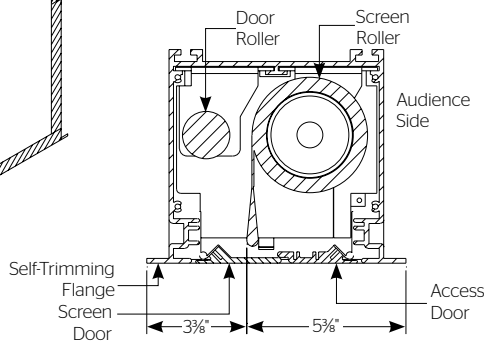
- ○ Matte White
- ○ Video Spectra 1.5
- ○ Silver Lite 2.5
- ○ High Contrast Matte White
- ○ High Power®

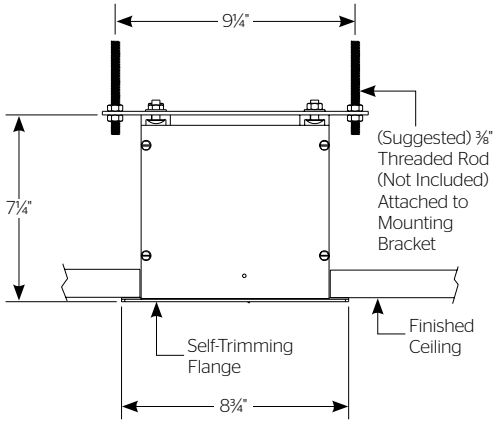
3. Optional accessories:

- ☐ Extra Drop available to lower picture area more than normal. Specify total drop at top ___ ((black or white) or at bottom ___ (black or white)). 13' maximum total surface height including picture area.
- ☐ No Borders (Black masking borders standard).
- ☐ Wireless Remote Control for LVC.
  - ☐ Radio Frequency Remote.
    - ☐ Radio Frequency Range Extender
    - ☐ Infrared Remote.
- ☐ Key Locking Cover Plate for 120V Switch or LVC.
- ☐ 220/240 Volt (50 Hz) Motor.
- ☐ Video Projector Interface Control – built-in
- ■ SCB-100 RS-232 Serial Control Board – built-in.
- ☐ NET-100 Ethernet-Serial Adapter
- ☐ SCB-200 RS-232 Serial Control Board – built-in only.
- ☐ NET-200 Ethernet-Serial Adapter
  - ☐ WC-200 Wall Controller
  - ☐ IR-200 Infrared Remote

PRODUCT VIEWS







DA-LITE®

A Milestone AV Technologies Brand

3100 North Detroit Street
Warsaw, Indiana 46582
P: 574.267.8101 or 800.622.3737
F: 574.267.7804 or 877.325.4832
E: info@da-lite.com
www.da-lite.com

DL-0182 (Rev. 1) 08.14

Project Name: _____

Architect: _____ Phone: _____

Contractor: _____ Phone: _____

Supervisor: _____ Phone: _____

Supplier: _____ Date: _____

Revised: _____

CMS440

Speed-Connect Above Tile Suspended Ceiling Kit

This ceiling tile kit provides a host features that make installing most lightweight front projectors faster and more secure. Chief also offers the CMS440P ceiling kit with built-in power conditioner and also the CMS440N with an assembled electrical housing.

Color

☐

Certifications

Videos

Features

- WireVice Cable Suspension System for quick and easy tie-off
- TwisTile Ceiling Tile Cutter easily pierces a circular hole in the ceiling tile for extension column
- Flexible solution provides infinite column placement within a 2' x 2' or 2' x 4' ceiling tile
- Single and dual electrical outlet cutouts
- All-Points Security System provides exclusive locking hardware at column connection point to protect against theft
- Includes (4) 25' flexible cables, (4) wood eyebolts, (4) concrete anchors and a chrome trim ring
- Fits 24" (600 mm) wide ceiling tile grids
- 1.5" NPT compatible

RPAU

RPA Universal & Custom Ceiling Projector Mounts

The RPAU has all of the great features of the RPAO and even more! This Universal Projector Mount is coupled with the newly designed SLBU Universal Interface Bracket. This 2nd Generation Interface Technology has enhanced security and unlimited projector access.

Note: *To ensure this mount works with your equipment check the "Compatibility" tab below.*

Overview | Specifications | Downloads | Accessories | FAQ | Compatibility

Color

■

Certifications

UL

MountFinder Compatibility

Features

- Ships newly designed SLB universal bracket to fit most inverted projectors on the market
- Independent roll, pitch and yaw for quick and precise projector image registration
- Quick projector connect and disconnect with convenient lamp and filter access on most projectors
- Maintains registration when disconnected and doesn't affect preset adjustments
- All-Points™ Security Systems provides exclusive steel into steel locking hardware at all connection points to protect against theft
- Multiple installation options: flush mount to ceiling, 0.25" threaded rod, or 1.5" NPT threaded extension column
- Integrated cable management through top of mount without additional accessories

MountFinder™

Flat Panel Projector

Select Manufacturer

Find Mounts

Don't see your model #?

Recently Viewed

Tools

Build in MountBuilder

Find Throw Distance

Get Chief Certified

Become a Dealer in 3 Easy Steps

Cable Cubby 500

Series/2 Cable Access Enclosure for AV Connectivity and AC Power

Key Features

- Accommodates one Series/2 AC or AC+USB Power Module, plus three Retractors, four AV cables, or two AAP-Architectural Adapter Plates
- Patent-pending modular design for fast assembly and serviceability
- Retractor, Cable Pass-Through, and AAP brackets included
- Retractor Bracket holds three Retractor Series/2 or Retractor Series/2 XL cable retraction modules
- Optional Retractor cable retraction system supports most AV and data signal types
- AC Power and AC+USB Power Modules are available for US, Europe, and other major world markets

Model	Version Description	Part #	Education Contract	MSRP
Cable Cubby 500	Black-with US AC Power Module	60-1404-02	$290.00	$500.00
Cable Cubby 500	Black-AC Module Not Included	70-1045-02	$174.00	$300.00
Cable Cubby 500	Brushed Aluminum-AC Module Not Included	70-1045-08	$174.00	$300.00

Note: For complete compatibility information on supported AC plug types, see the Multi-Region AC Outlet Compatibility Guide, available online at ***www.extron.com/Multi-RegionGuide*** *(http://media.extron.com/download/files/userman/68-2532-01_A.pdf).*

Check local electrical standards before installing.

The Extron **Cable Cubby® 500** is a modular, furniture-mountable cable access enclosure for AV connectivity and AC power. The Cable Cubby 500 accommodates one AC 100 Series (/product/product.aspx?id=cablecubbypowermod) or AC+USB 200 (/product/product.aspx?id=acusb200) AC power module and includes mounting brackets for Retractor Series/2 (/product/listbytype.aspx?id=584&subtype=587&s=3#584) cable retraction modules, AV cables, or AAP - Architectural Adapter Plates. The enclosure's patent-pending modular design allows cables and AAPs to be installed or serviced from the top of the enclosure after it is installed. For fast installation, the Cable Cubby 500 features a simple, integrated clamp system that quickly secures the enclosure to the furniture surface without the need for additional parts or tools. The power modules are available for the US, Europe, and other major world markets. The Cable Cubby 500 is available in a black anodized or brushed aluminum finish.

The Cable Cubby 500 is equipped with a number of Extron-exclusive, integration friendly features for fast assembly and installation. The integrated clamp system quickly secures the enclosure to the furniture surface without tools. Simply install the enclosure in the opening, slide the clamp up to the surface, and then rotate the cam to lock the enclosure in place. A lid damper ensures smooth, quiet operation that complements installations in high end conference rooms and board rooms. The Cable Cubby 500 includes standard connectivity brackets for mounting up to three Retractor modules, two AAPs, or four AV cables. The AV connectivity brackets can be positioned to the left or right of the selected AC power module.

The enclosure's patent-pending modular design allows cables and AAPs to be installed or serviced from the top of the enclosure after it is installed. The Cable Pass-Through Bracket features a unique, split-ring design that facilitates cable installation while eliminating the need for separate cable grommets. AC Power Modules are available for the US, Europe, and other major world markets. Most AC 100 Series AC Power Modules provide two unswitched AC outlets. An available Multi-Region AC outlet is compatible with a variety of AC plug types. To support the growing use of smartphones and tablets in AV presentation environments, the optional AC 200 Series AC+USB Power Modules provide one or two AC power outlets, and two 5 VDC USB power outlets with 2.1 A / 10.5 watts of total power for charging mobile devices such as smartphones and tablets. Cable Cubby Series/2 enclosures are UL/c-UL listed and CE compliant. Installation routing templates and other accessories are also available.

To quickly customize AC power and AV connectivity selections for a Cable Cubby 500 installation, the Cable Cubby Series/2 Builder (/product/ccb/index.aspx?subtype=cablecubbyconfig) is an interactive tool that guides the user through the selection of AC power modules, AV connectivity, cables, and installation accessories. As you build your Cable Cubby, a bill of materials is prepared automatically. When you're finished, the Builder allows you to review your Cable Cubby and make any last minute changes before placing your order (dealer login required).

Included Accessories

Mounting Brackets	Capacity	Quantity Included
Connectivity Bracket	(1) AAP Frame or Cable Pass-Through Plate	1
AAP Frame	(2) Single-space AAPs	1
Cable Pass-Through Plate	(4) AV cables	1
Retractor Bracket and Pin	(3) Retractors	1

Features

- **Accommodates one Series/2 AC or AC+USB Power Module, plus three Retractors, four AV cables, or two AAP- Architectural Adapter Plates**
- **Patent-pending modular design for fast assembly and serviceability** — AV connectivity can be installed or serviced from the top of the enclosure after it is installed.
- **Retractor, Cable Pass-Through, and AAP brackets included**
- **Retractor Bracket holds three Retractor Series/2 or Retractor Series/2 XL cable retraction modules**
- **Optional Retractor cable retraction system supports most AV and data signal types**
- **AC Power and AC+USB Power Modules are available for US, Europe, and other major world markets** — Most AC Power Modules provide two unswitched AC outlets. AC+USB Power Modules provide one or two AC outlets and two USB power outlets.
- **Available Multi-Region AC outlet is compatible with a variety of AC plug types**
- **UL/c-UL listed and CE compliant**
- **US model includes an attached 9.5' power cord**
- **Integrated side clamps secure enclosure to the furniture surface** — Cable Cubby can be secured in place without additional parts or tools.
- **Top surface is available in a black anodized or brushed aluminum finish**
- **Finish Sample Kit available, part #70-804-01**
- **Installation routing template available, part #70-1048-80**

- **Cable Cubby Builder is available at www.extron.com/cablecubby —** Intuitive online tool for enclosure selection, pricing, and cable and connectivity selection.
- **Dimensions: 6.1" L x 6.1" W (15.6 cm L x 15.6 cm W)**

OPTIONAL ACCESSORIES

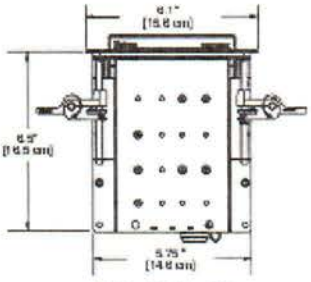
• AC 100 Series Power Modules	AC Power Modules for Cable Cubby Series/2 Enclosures
• AC+USB 200 Series Power Modules	AC+USB Power Modules for Cable Cubby Series/2 Enclosures
• Architectural Products Finish Sample Kit	Finish Swatches for Hideaway Surface Access and Cable Cubby Enclosures
• CableCover	Under-Table Cable Bag for Cable Cubby and Cable Cubby Series/2 Enclosures
• Installation Routing Templates	For Cable Cubby Series/2 Enclosures
• Cable Cubby Series/2 Connectivity Bracket Kits	Supplemental AV Connectivity Brackets for Cable Cubby Series/2 Enclosures
• Retractor Series/2	Cable Retraction System with Speed Control for Cable Cubby Enclosures
• Retractor Series/2 XL	Extended Length Cable Retraction System with Speed Control for Cable Cubby Enclosures
• Retractor	Cable Retraction System for Cable Cubby Enclosures
• Retractor XL	Extended Length Cable Retraction System for Cable Cubby Enclosures
• MLC 62 RS EU	MediaLink Controller - EU Wall Frame for European Junction Boxes
• MLC 62 RS MK	MediaLink Controller - MK Wall Frame for United Kingdom Junction Boxes
• UCM 100	Universal Controller Mount
• Cable Cubby & HSA Certified Cables	

SPECIFICATIONS

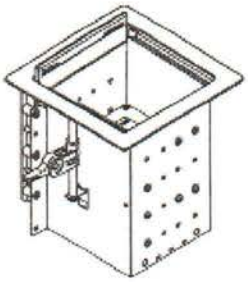
Cable Cubby® 500 and 700

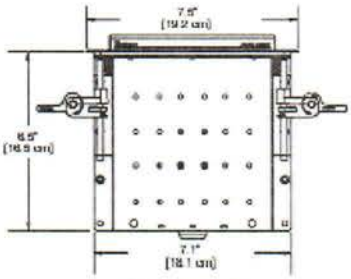
General	
Power supply (optional)	
US AC module	125 VAC, 50-60 Hz, 12 A max total
Non-US AC module	240 VAC, 50-60 Hz, 10 A max total
Mounting	
Furniture mount	Yes
Min./max. table thickness	0.50" to 2.50"
Enclosure type	Metal
Enclosure dimensions	
Cable Cubby 500	
Top plate (outer rim)	6.1" L x 6.1" W (15.6 cm L x 15.6 cm W)
Surface cutout (inside rim)	5.75" L x 5.75" W (14.6 cm L x 14.6 cm W)
Enclosure Depth	6.5" H (16.5 cm H)
Cable Cubby 700	
Top plate (outer rim)	7.5" L x 6.1" W (19.2 cm L x 15.6 cm W)
Surface cutout (inside rim)	7.1" L x 5.75" W (18.1 cm L x 14.6 cm W)
Enclosure Depth	6.5" H (16.5 cm H)

Cable Cubby 500 and 700
Side View

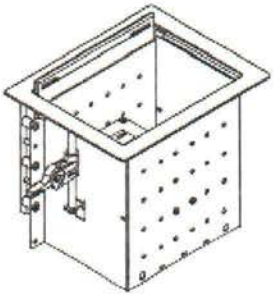


Cable Cubby 500
Front View





Cable Cubby 700
Front View

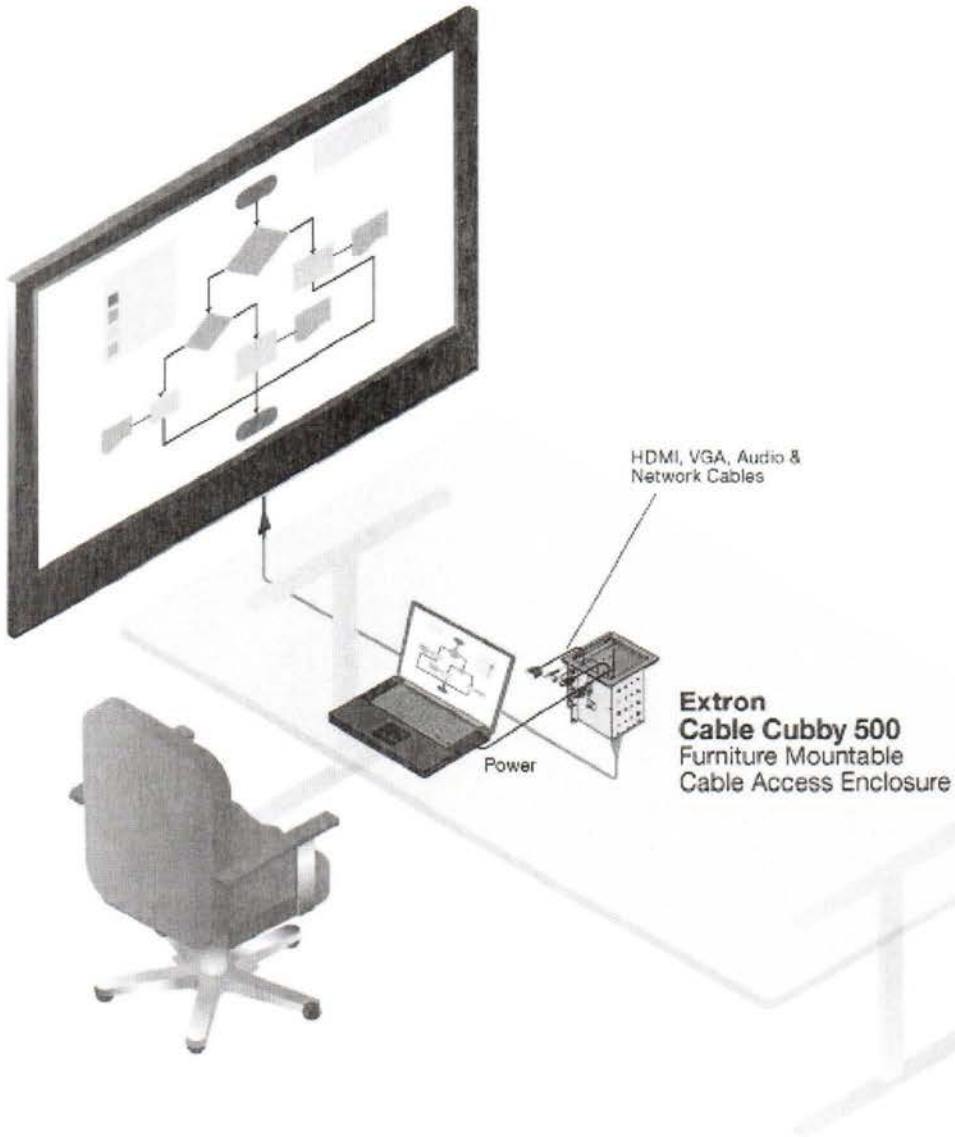


Product weight	
Cable Cubby 500	
Enclosure only	2.2 lbs (1.0 kg)
With AC module	3.8 lbs (1.7 kg)
Cable Cubby 700	
Enclosure only	2.5 lbs (1.1 kg)
With AC modules	4.2 lbs (1.9 kg)
Shipping weight	
Cable Cubby 500	
Enclosure only	4 lbs (2 kg)
With AC module	6 lbs (3 kg)
Cable Cubby 700	
Enclosure only	4 lbs (2 kg)
With AC modules	6 lbs (3 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	UL, c-UL, CE
Environmental	Complies with the appropriate requirements of RoHS, WEEE
Warranty	3 years parts and labor

NOTE *Specifications are subject to change without notice.*

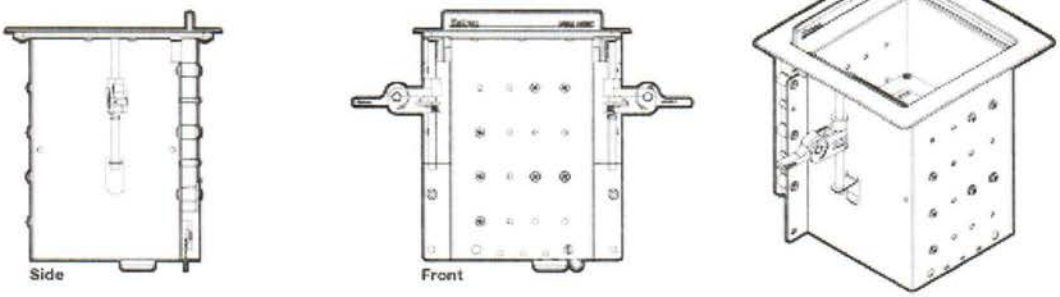
(8.0-011414-D1)

DIAGRAM



PANEL DRAWING

Cable Cubby 500

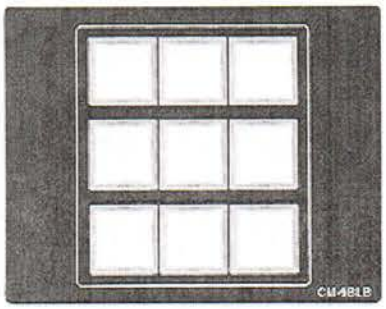


CM-9BLB

Nine-Button, Four Space Control Module AAP - Architectural Adapter Plate

Key Features

- For use with the MLC 104 IP Plus and MLC 226 IP AAP MediaLink Controllers and System 5 IP Switcher
- Tri-color, backlit buttons can be custom-labeled using labels included with the MLCs and System 5 IP
- User-definable buttons can be configured to provide expanded switching control, trigger relays, and issue IR or RS-232 commands
- Available in black or white



Model	Version Description	Part #	Education Contract	MSRP
CM-9BLB	Black	70-494-02	$226.20	$390.00
CM-9BLB	White	70-494-03	$226.20	$390.00
CM-9BLB	RAL9010 White	70-494-05	Retired	

Note: Part number 70-494-05 is retired.

The Extron **CM-9BLB** is a four-space, Control Module AAP - Architectural Adapter Plate designed to work with the MLC 104 IP Plus and MLC 226 IP AAP MediaLink® Controllers and System 5 IP Switcher. It features nine tri-color, backlit buttons that can be custom-labeled.

The CM-9BLB can be configured for additional remote control of input switching via the MediaLink controller or System 5 IP. Each button can also be set up to control any IR-controllable device using IR learning via the controller or switcher. Utilizing the control software, RS-232 codes or relays can be assigned to each button as well. The CM-9BLB fits into any four space AAP mounting frame. It is available in black or white.

Features

- **For use with the MLC 104 IP Plus and MLC 226 IP AAP MediaLink Controllers and System 5 IP Switcher**
- **Tri-color, backlit buttons can be custom-labeled using labels included with the MLCs and System 5 IP**
- **User-definable buttons can be configured to provide expanded switching control, trigger relays, and issue IR or RS-232 commands**
- **Available in black or white**

SPECIFICATIONS

IRCM, ACM, RCM, and CM Series

General

Power CM-3BLB, CM-9BLB, CM-19AC	12 VDC from an Extron MLC 226 IP or MLC 104 IP Plus Series MediaLink™ Controller or System 5 IP Switcher *or* from an optional external power suply
Power input requirements	12 VDC, 0.02 A

All other models	12 VDC from an Extron MediaLink Controller (MLC) or System 5 IP Switcher
Power input requirements	12 VDC, 0.02 A
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Rack mount	Yes, with optional faceplate, and furniture/wall mountable with optional faceplates or AAP wall plates
Enclosure type	Metal
Enclosure dimensions	
IRCM-VCR, IRCM-DVD, IRCM-Tape, ACM-Tone, ACM-Level, RCM-SC, RCM-SCLT, CM-5BB, CM-3BLB	
Faceplate	1.4" H x 3.5" W x 0.1" D (3.5 cm H x 8.9 cm W x 0.3 cm D) (double space AAP plate)
Boards	1.3" H x 2.6" W x 0.9" D (3.3 cm H x 6.6 cm W x 2.3 cm D) (Depth excludes buttons. Allow at least 2.1" (5.3 cm) depth in the wall or furniture.)
IRCM-DVD+, IRCM-DV+, CM-20BB, CM-9BLB, CM-19AC	
Faceplate	2.8" H x 3.5" W x 0.1" D (7.1cm H x 8.9 cm W x 0.3 cm D) (four space AAP plate)
Boards	2.7" H x 2.6" W x 0.9" D (6.9 cm H x 6.6 cm W x 2.3 cm D) (Depth excludes buttons. Allow at least 2.1" (5.3 cm) depth in the wall/furniture.)
Product weight	
IRCM-VCR, IRCM-DVD, IRCM-Tape, ACM-Tone, ACM-Level, RCM-SC, RCM-SCLT, CM-5BB, CM-3BLB	0.1 lbs (<0.1 kg)
IRCM-DVD+, IRCM-DV+, CM-20BB, CM-9BLB, CM-19AC	0.2 lbs (0.1 kg)
Shipping weight	1 lbs (1 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL as components of the MLC 206, or MLC 226 IP, or MLC 104 IP Plus Series MediaLink™ Controller; or System 5 IP Switcher
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES as components of the MLC 206, MLC226IP, or MLC 104 IP Plus Series MediaLink™ Controller; or System 5 IP Switcher
Warranty	3 years parts and labor

NOTE *Specifications are subject to change without notice.*

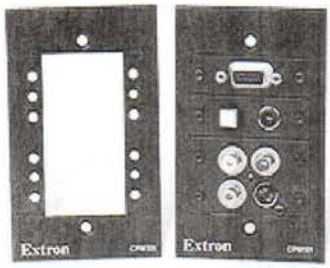
(7.52-053007-D4)

CPM101

One-Gang MAAP Mounting Frame

Key Features

- Accepts up to four single-space MAAP - Mini Architectural Adapter Plates
- Designed for wall, lectern, boardroom table, or other AV presentation furniture
- Custom engraving available
- Available in black or white
- Mud ring included
- Dimensions: 4.5" x 2.75" x 0.1" (11.4 x 7 x 0.25 cm)



Model	Version Description	Part #	Education Contract	MSRP
CPM101	Black	60-583-11	$40.60	$70.00
CPM101	White	60-583-21	$40.60	$70.00
CPM101	RAL9010 White	60-583-51	Retired	

Note: Part number 60-583-51 has been retired.

The Extron **CPM101** is a one-gang, four-space mounting frame with room for up to four single-space MAAP - Mini Architectural Adapter Plates. Available in a black or white finish. Dimensions: 4.5" x 2.75" x 0.1" (11.4 x 7 x 0.25 cm)

Features

- **Accepts up to four single-space MAAP - Mini Architectural Adapter Plates** — Extron MAAPs are designed for easy installation in a wall, lectern, boardroom table, or other AV presentation furniture to maintain a clean and efficient AV system design. MAAPs sold separately.
- **Designed for wall, lectern, boardroom table, or other AV presentation furniture**
- **Custom engraving available** — Allows labeling of individual connector modules. Available at additional charge.
- **Available in black or white**
- **Mounts in standard one-gang junction box**
- **Mud ring included**
- **Dimensions: 4.5" x 2.75" x 0.1" (11.4 x 7 x 0.25 cm)**

OPTIONAL ACCESSORIES

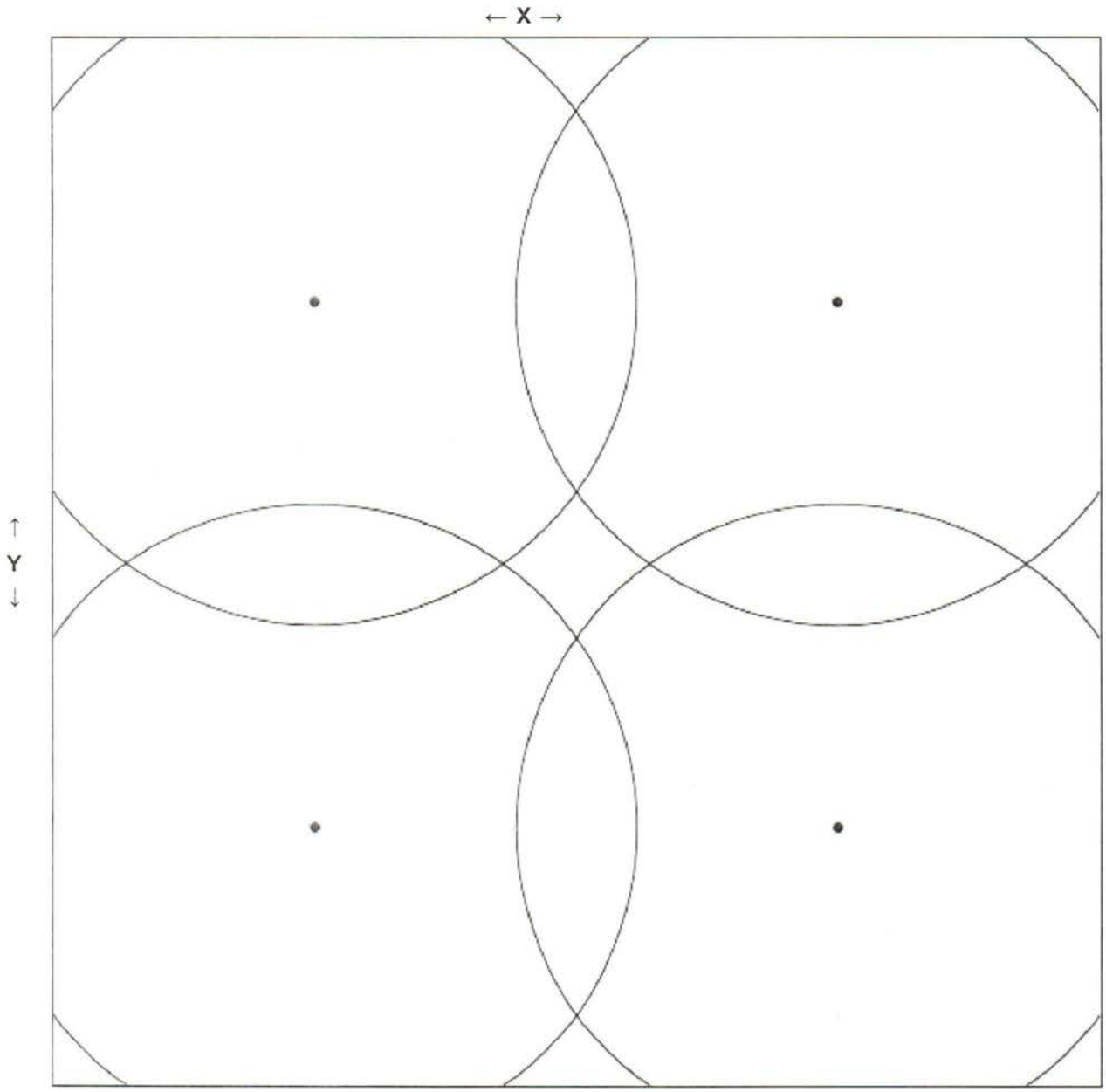
- Captive Cable Kit with Three Split-Ring Holes — Cable Pass-Through MAAP – Mini Architectural Adapter Plate
- IN9350 — Blank Plate - Single
- IN9367D — Blank Plate - Double
- IN9368T — Blank Plate - Triple
- IN9482 — Captive Cable Kit with One Large Cable Hole

PANEL DRAWING

CPM 101

Front

Extron Ceiling Speaker Calculator Coverage Map



• = Speaker

Note: Speaker locations are approximate. Please be aware of tile grid limitations and adjust to fit.

Display Isobars

☐ 3 dB ——— ☐ 6 dB ——— ☑ 9 dB ——— ☐ 12 dB

Speaker Placement Data

Room Width (X) (ft) :	30
Room Length (Y) (ft) :	30
Row Spacing (ft) :	15

Coverage Pattern: Square

Recommended Speaker Quantity :	4
Coverage Area per Speaker :	268 sq. ft

Column Spacing (ft) :	15
Distance Wall to First Row (ft) :	7.5
Distance Wall to Last Row (ft) :	7.5
Distance Wall to First Column (ft) :	7.5
Distance Wall to Last Column (ft) :	7.5

Coverage Calculation Inputs

Room Length (ft) :	30
Room Width (ft) :	30
Speaker Height (ft) :	10
Listener Height (ft) :	4
Force Grid Spacing (ft) :	0
Ambient Noise (dB SPL) :	50
Desired S/N (dB) :	25
Minimum Needed Level (dB SPL) :	75
Maximum Target Level (dB SPL) :	80
Speaker :	FF 220T
Part # :	42-141-03
Content :	Program (10 kHz)
Edge-to-Edge Isobar (Speaker Spacing) :	9 dB (Wide) 9 dB Isobars, Edge to Edge
Coverage Pattern :	Square
Speaker Operation :	70 V

Minimum Needed Power Level

Watts per Speaker (W) :	7.12
Recommended Tap Setting (W) :	8
Min Recommended Amp Power (W) :	40

Maximum Target Power Level

Watts per Speaker (W) :	7.12
Recommended Tap Setting (W) :	8
Min Recommended Amp Power (W) :	40

Radius of Coverage

Distance at 3 dB Down (ft) :	2.19
Distance at 6 dB Down (ft) :	7.16
Distance at 9 dB Down (ft) :	9.24
Distance at 12 dB Down (ft) :	12.87

FF 220T

Full-Range Flat Field® Speakers with Low Profile Enclosure and 70/100 V Transformer

Key Features

- 2' x 2' (61 cm x 61 cm), 7.8 lb (3.5 kg) drop-in ceiling tile speaker designed for US style suspended ceilings
- 600 mm x 600 mm version is designed for metric suspended ceiling grids measuring 600 mm x 1200 mm or 600 mm x 600 mm
- UL 2043 plenum rated enclosure
- Extron patented Flat Field® Technology for consistent sound levels across the listening area, reducing the number of speakers required
- 3" (7.6 cm) horn-loaded, full-range driver provides extended low frequency reproduction
- White perforated grille matches appearance of air conditioning vents

Model	Version Description	Part #	Education Contract	MSRP
FF 220T	Ceiling - 2' x 2' Drop-In, Xfmr, Pair	42-141-03	$290.00	$500.00
FF 220T	Ceiling - 600x600 mm Drop-In, Xfmr, Pair	42-141-23	$290.00	$500.00

Note: Speakers sold in pairs.

The Extron FF 220T is a full-range ceiling tile speaker for 70 volt/100 volt systems. The FF 220T features Extron patented Flat Field Technology which reduces beaming of mid and high frequencies directly under the speaker, delivering consistent sound levels across the listening area. In addition, the FF 220T offers an extraordinarily wide dispersion of 170 degrees, providing a very wide room coverage pattern for rooms with low ceilings. An Extron exclusive, UL 2043 plenum rated enclosure drops into suspended ceilings, providing quicker installations. Two versions are available: a 2' x 2' version for US standard ceilings and a 600 mm x 600 mm version for metric ceilings. Both versions feature a low profile, 3.25" (8.3 cm) enclosure for ceiling installations with tight above-the-ceiling space issues.

Patented Flat Field® Technology

Extron's patented Flat Field Technology makes this speaker truly unique. Flat Field Technology allows the FF 220T to reduce beaming of mid and high frequencies directly under the speaker, delivering consistent sound levels across the listening area.

Extremely Wide Sound Dispersion

The FF 220T offers an extraordinarily wide dispersion of 170 degrees, which provides a very wide room coverage pattern. This is especially important for rooms with low ceilings.

With the combination of Flat Field Technology and wide dispersion, fewer FF 220T speakers are required for a given room, as compared to traditional ceiling speakers.

This speaker is ideal for use in low ceiling installations for maximum room coverage. This coverage optimizes voice intelligibility, which along with low bass response, is the most critical consideration for microphone and program material applications. The FF 220T provides excellent voice clarity without compromising music reproduction.

The FF 220T offers 70 volt or 100 volt operation and provides power taps for 16, 8, 4, 2, and 1 watt. The power taps are accessed via speaker wiring connections inside the rear panel. The transformer can be bypassed for 8 ohm operation.

For easy installation, the FF 220T drops into the same space as a standard US or metric ceiling tile, and includes a T-bar for 2' x 4' ceilings or 600 mm x 1200 mm ceilings. It also provides theft deterrence with a neutral white, perforated steel grille that matches the appearance of standard air conditioning vents and grid ceilings.

Features

- **2' x 2' (61 cm x 61 cm), 7.8 lb (3.5 kg) drop-in ceiling tile speaker designed for US style suspended ceilings**
- **600 mm x 600 mm version is designed for metric suspended ceiling grids measuring 600 mm x 1200 mm or 600 mm x 600 mm**
- **UL 2043 plenum rated enclosure**
- **Extron patented Flat Field® Technology for consistent sound levels across the listening area, reducing the number of speakers required**
- **3" (7.6 cm) horn-loaded, full-range driver provides extended low frequency reproduction**
- **White perforated grille matches appearance of air conditioning vents**
- **8 ohm direct or 70/100 volt operation with 16, 8, 4, 2, and 1 watt selectable power taps accessed via speaker wiring connections inside the rear panel**
- **Frequency range: 68 Hz to 18 kHz**
- **16 watts continuous pink noise, 32 watts continuous program**
- **Wide 170° dispersion**
- **3.25" (8.3 cm) deep low profile enclosure for plenum environments**
- **5 year parts and labor warranty**
- **Designed and manufactured by Extron**

OPTIONAL ACCESSORIES

• SPK 14	14 AWG Speaker Cable
• SPK 16	16 AWG Speaker Cable
• SPK 18	18 AWG Speaker Cable

SPECIFICATIONS

FF 220T

Audio/acoustic and electrical

Speaker type	1-way, full-range, in-ceiling speaker
Frequency range	68 Hz to 18 kHz, -10 dB, half space
Power capacity	16 W (rms) continuous pink noise 32 W (rms) continuous program
Nominal sensitivity	86 dB SPL, 1 watt, 1 m, half space
Nominal coverage angle	170° conical coverage
Nominal impedance	8 ohms per speaker
Driver	(1) 3" (76.2 mm) paper cone
Input connector	(1) 10 mm Euro-style captive screw terminal block, 7 pole
Tap settings	
70 V input	16 W, 8 W, 4 W, 2 W, 1 W, null (bypass 8 ohm direct connection)
100 V input	Null, 16 W, 8 W, 4 W, 2 W, 1 W (bypass 8 ohm direct connection)

General

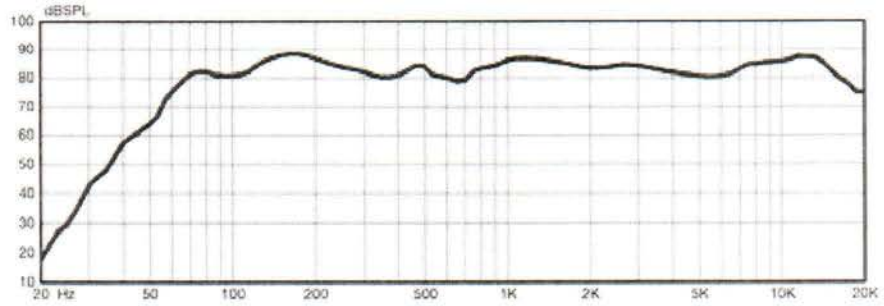
Package	2 speakers (1 pair) with 2' (61 cm) cross bars
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Mounting	
US version	Drops into 2' x 2' (61 cm x 61 cm) or 2' x 4' (61 cm x 122 cm) suspended tile ceilings
Metric version	Drops into 600 mm x 600 mm or 600 mm x 1200 mm suspended tile ceilings
Enclosure type	Composite, square, with metal grille
Enclosure outer dimensions	
US version (2' x 2')	3.25" H x 23.75" W x 23.75" L (8.3 cm H x 60.3 cm W x 60.3 cm L)
Metric version (600 mm x 600 mm)	3.25" H x 23.4" W x 23.4" L (8.3 cm H x 59.4 cm W x 59.4 cm L)
Product weight	Single: 7.8 lbs (3.5 kg)
Shipping weight	Pair: 21 lbs (10 kg) with mounting kit
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, NFPA90A, NFPA70; UL Listed for use in plenum airspaces: meets UL 2043 for heat and smoke release, meets UL 1480 for commercial and professional audio systems
Environmental	Complies with the appropriate requirements of RoHS, and WEEE.
Warranty	5 years parts and labor

NOTE *All nominal levels are at ±10%.*

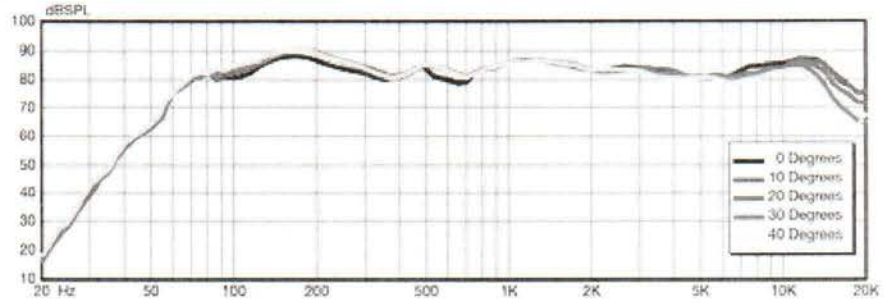
NOTE *Specifications are subject to change without notice.*

FF 220T RESPONSE GRAPHS – FREQUENCY AND IMPEDANCE

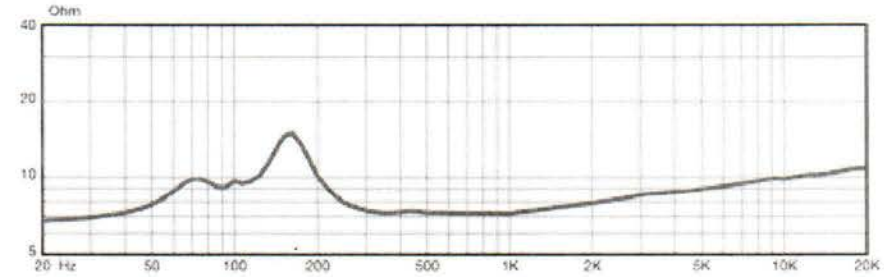
SPL vs. FREQUENCY – 1 WATT @ 1 METER RESPONSE, HALF SPACE (2π)



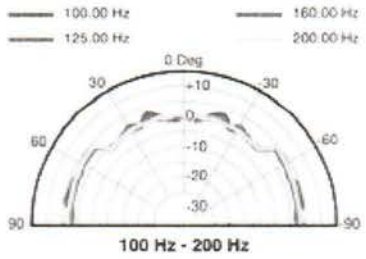
SPL vs. FREQUENCY – HORIZONTAL OFF-AXIS RESPONSE, HALF SPACE (2π)



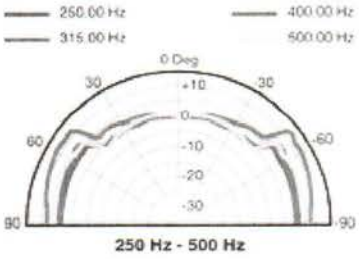
IMPEDANCE vs. FREQUENCY



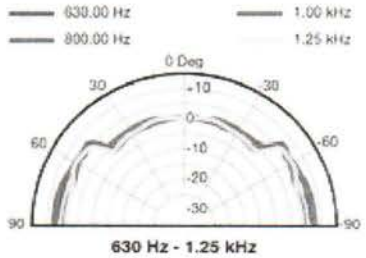
FF 220T POLAR GRAPHS – 1/3 OCTAVE, HORIZONTAL



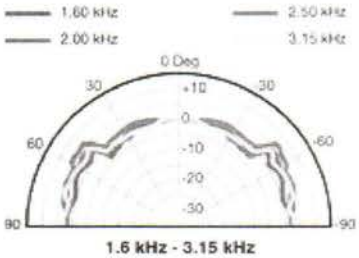
100 Hz - 200 Hz



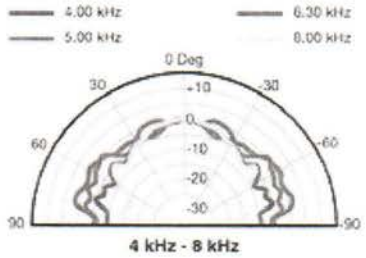
250 Hz - 500 Hz



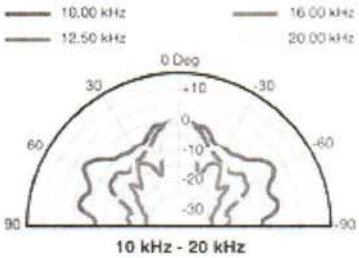
630 Hz - 1.25 kHz



1.6 kHz - 3.15 kHz



4 kHz - 8 kHz



10 kHz - 20 kHz

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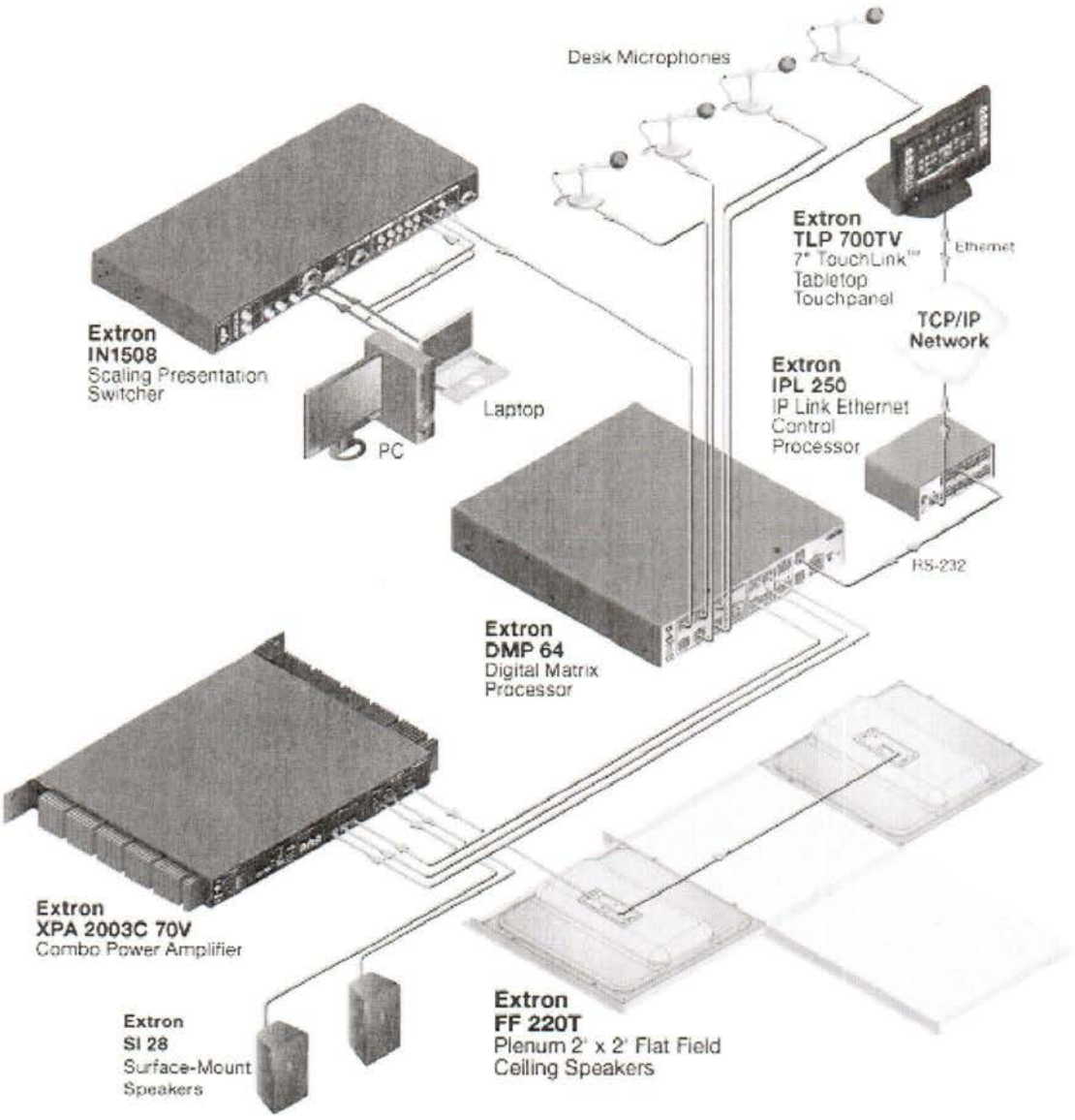
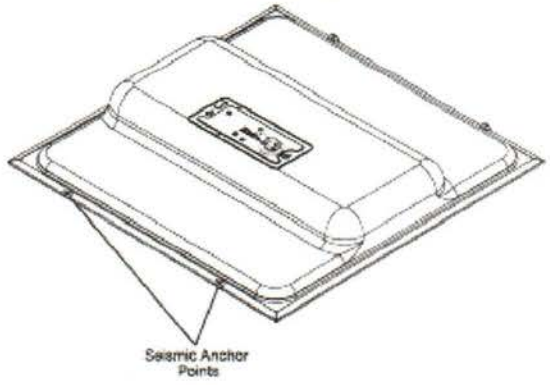
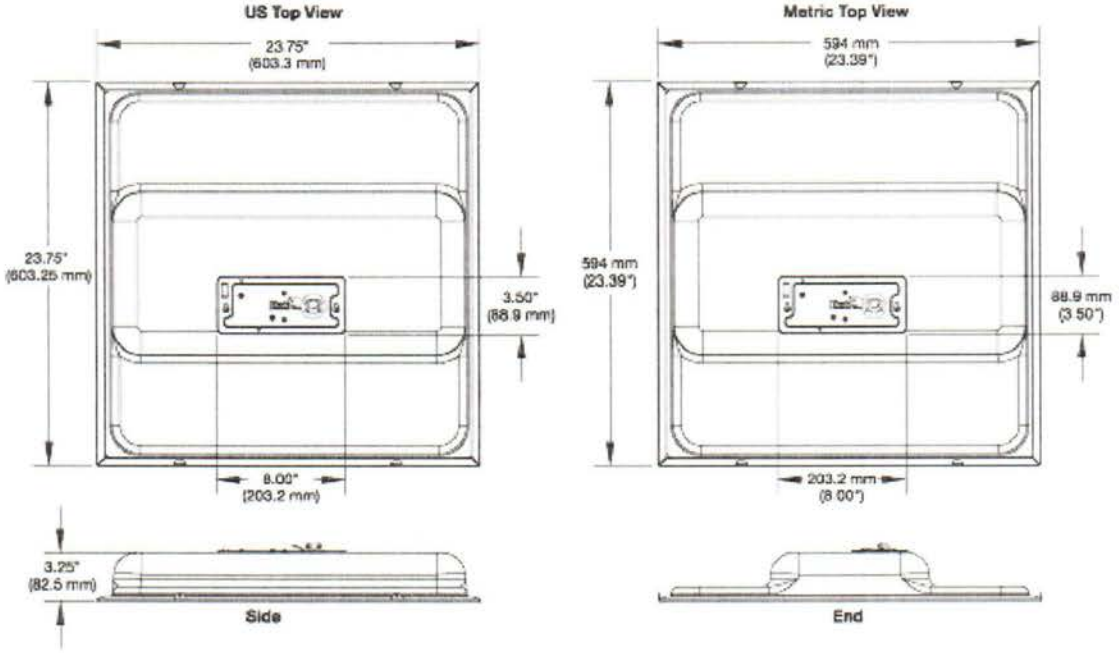
DIAGRAM



PANEL DRAWING

FF 220T





IN1606

Six Input HDCP-Compliant Scaling Presentation Switcher

Key Features

- Integrates HDMI, analog video, and audio sources into presentation systems
- Four HDMI inputs and two universal analog video inputs
- Two simultaneous HDMI outputs
- Two mic/line inputs with 48 volt phantom power
- HDMI audio embedding
- HDMI audio de-embedding

Model	Version Description	Part #	Education Contract	MSRP
IN1606	HDCP-Compliant Scaling Switcher	60-1081-01	$1,386.20	$2,390.00

The Extron **IN1606** is a six input, HDCP-compliant video scaler that includes four HDMI inputs, two universal analog video inputs, and two simultaneous HDMI outputs. The IN1606 accepts a wide variety of video formats including HDMI, HDTV, RGB, and standard definition video. It features an advanced video scaling engine with 1080i deinterlacing and Deep Color processing with support for up to 1920x1200 and 2K output resolutions. Enhanced audio features include six stereo inputs, two variable stereo outputs, two mic/line inputs with ducking, plus HDMI audio embedding and de-embedding. Designed for professional AV integration, the IN1606 offers flexible control options including Ethernet, RS-232, and USB. The IN1606 provides a complete AV switching system in one rack-mountable enclosure.

Six Input Multi-Format Video Switcher

To accommodate a variety of sources, the IN1606 features four HDMI inputs plus two universal analog video inputs that can process RGB computer video, HDTV, component video, S-video, and composite video. The IN1606 provides the capability to integrate digital and analog devices, with HDCP compliance to enable integration of Blu-ray Disc players and other sources of protected content.

Built to Handle Digital Video

To enhance and simplify integration of HDMI sources and displays, the IN1606 features two exclusive Extron technologies: EDID Minder® and Key Minder®. EDID Minder manages EDID communication between the display devices and input sources. For HDMI signals with protected content, Key Minder authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching.

When receiving an HDCP-encrypted HDMI input source, the IN1606 outputs a full-screen green signal on any video output connected to a non-HDCP compliant display. This provides immediate visual confirmation that the protected content cannot be viewed on this display. Additionally, the IN1606 provides real-time verification of the HDCP status for each HDMI input and output, offering valuable feedback to system operators and helpdesk support staff. The IN1606 also features SpeedSwitch® Technology that delivers exceptional switching speed for HDCP-encrypted content.

High Performance Video Processing

The IN1606 features an advanced scaling engine with the ability to scale HDMI, RGB, component, and standard definition video signals to a common high resolution output. It provides high performance deinterlacing of 1080i and Deep Color processing to deliver optimal image quality. Additionally, the color space and chroma subsampling of the HDMI output

can be automatically set to ensure compatibility with a connected DVI or HDMI display. Automatic 3:2 and 2:2 pulldown detection maximizes the image quality for content sources originating from film. The IN1606 also uses a digital 3D adaptive comb filter that optimizes decoding of NTSC, PAL, and SECAM sources for integration into systems worldwide.

The IN1606 accepts and outputs signals up to 1920x1200, including HDTV 1080p/60 and 2K. It provides two simultaneous HDMI outputs so that two displays can be driven simultaneously, without the need for additional equipment. Selectable FILL and FOLLOW modes are available to ensure the proper aspect ratio of the output. FILL mode provides full screen output, while FOLLOW mode preserves the original aspect ratio of the input signal.

Advanced Audio Capabilities

The IN1606 features sophisticated audio functionality, including HDMI audio embedding and de-embedding. To suit the needs of the application, the IN1606 can embed analog input audio signals onto the HDMI outputs or extract embedded HDMI audio. Audio breakaway enables separation of analog audio channels from the corresponding video signals, so that the analog audio channels can operate as an independent switcher. To support integration into presentation environments, the IN1606 features two mic/line mixing inputs with ducking and 48 V phantom power. The scaler includes two variable stereo audio outputs, one of which can be configured as dual mono for integration flexibility. The IN1606 also provides full control of advanced audio configuration settings through an intuitive Graphical User Interface. Using this GUI, users can easily adjust audio input and output gain, attenuation, mixing, and ducking parameters.

Multiple Options for Control and Operation

The IN1606 features front panel controls and intuitive on-screen menus for quick access to functions. Remote configuration and control are available via USB, RS-232, and Ethernet. Housed in a 1U, full rack width metal enclosure, the IN1606 can easily be integrated into many environments. The IN1606 is ideal in boardrooms where superior performance is essential, video routing applications where automatic features help simplify system design and keep costs down, and instructional environments for complete integration of digital and analog AV sources and displays.

Features

- **Integrates HDMI, analog video, and audio sources into presentation systems** — The IN1606 provides centralized switching for a wide range of AV sources.
- **Inputs: Four HDMI; two universal 15-pin HD inputs for RGB, component video, S-video, or composite video; stereo balanced/unbalanced audio for each input on captive screw; two mic/line audio inputs on captive screw**
- **Outputs: Two simultaneous HDMI outputs; one variable stereo audio output on captive screw; one variable stereo audio output configurable as dual mono on captive screw**
- **Four HDMI inputs and two universal analog video inputs** — The IN1606 allows for switching between HDMI and analog video sources. Two universal analog inputs accept all standard analog video formats, including RGB, HD component video, S-video, and composite video signals.
- **Two simultaneous HDMI outputs** — Simultaneous HDMI outputs are available for driving two displays.
- **Two mic/line inputs with 48 volt phantom power** — Two mic or line level audio sources can be independently mixed with program audio and embedded onto the HDMI output. Selectable 48 volt phantom power allows the use of condenser microphones.
- **Mic ducking** — Automatically reduces program audio when a microphone signal is detected, replacing the need for a separate audio ducking processor.
- **Auto-switching between inputs** — Auto-switching allows for simple, unmanaged installation in locations such as in a lectern or under a conference table. When multiple inputs are active, the switching priority is configurable.
- **HDMI audio embedding** — Analog input audio signals can be embedded onto the HDMI output signal.
- **HDMI audio de-embedding** — Embedded HDMI two-channel PCM audio can be extracted to the analog outputs, or bitstream formats can be passed to the HDMI outputs.

- **Selectable output rates from 640x480 to 1920x1200, including HDTV 1080p/60 and 2K** — Available output rates include computer video up to 1920x1200, HDTV rates up to 1080p/60, and 2K.
- **Advanced scaling engine with 30-bit processing and 1080i deinterlacing** — Image scaling and video format conversion are performed at 30-bit precision for enhanced color accuracy and picture detail. High performance deinterlacing for 1080i signals from HD sources delivers optimized image quality.
- **HDCP compliant** — Fully supports HDCP-encrypted sources, with selectable authorization for unencrypted content.
- **Supported HDMI specification features include data rates up to 6.75 Gbps, Deep Color, and HD lossless audio formats**
- **Key Minder® continuously verifies HDCP compliance for quick, reliable switching** — Key Minder authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching in professional AV environments, while enabling simultaneous distribution of a single source signal to one or more displays.
- **EDID Minder® automatically manages EDID communication between connected devices** — EDID Minder ensures that all sources power up properly and reliably output content for display.
- **SpeedSwitch® Technology provides exceptional switching speed for HDCP-encrypted content**
- **Output muting control** — Provides the capability to mute one or all outputs at any time. This allows content to be viewed on a local monitor prior to appearing on the main presentation display.
- **Aspect ratio control** — The aspect ratio of the video output can be controlled by selecting a FILL mode, which provides a full screen output, or a FOLLOW mode, which preserves the original aspect ratio of the input signal.
- **HDCP authentication and signal presence confirmation** — Provides real-time verification of HDCP status for each digital video input and output. This allows for simple, quick, and easy signal and HDCP verification through front panel LEDs, RS-232, USB, or Ethernet, providing valuable feedback to a system operator or helpdesk support staff.
- **HDCP Visual Confirmation provides a green signal when encrypted content is sent to a non-compliant display** — A full-screen green signal is sent when HDCP-encrypted content is transmitted to a non-HDCP compliant display, providing immediate visual confirmation that protected content cannot be viewed on the display.
- **HDMI to DVI Interface Format Correction** — Automatically enables or disables embedded audio and InfoFrames, and sets the correct color space for proper connection to HDMI and DVI displays.
- **Seamless switching** — Seamless cut through black and fade through black transition effects are available to enhance presentations by eliminating distractions during switching.
- **Image freeze control** — A live image can be frozen using RS-232 serial control, USB, or Ethernet control.
- **Auto-Image™ setup** — When activated, the unit automatically optimizes the image by analyzing and adjusting to the video input signal. This can save time and effort in setting up a newly connected source, particularly in presentation environments where different guest presenter laptops with various output resolutions will be connected.
- **Auto Input Memory** — When activated, the unit automatically stores size, position, and picture settings based on the incoming signal. When the same signal is detected again, these image settings are automatically recalled from memory.
- **On-screen menus** — Intuitive on-screen menus allow for easy system setup using the front panel controls. Key parameters such as input and output video formats and resolutions are conveniently grouped on the initial Quick Setup screen, while additional screens provide full control over the unit's other functions and settings.
- **Output Standby Mode** — The unit can be set to automatically mute video and sync output to the display device when no active input signal is detected. This allows the projector or flat-panel display to automatically enter into standby mode to save energy and enhance lamp or panel life.
- **Power Save Mode** — The unit can be placed in a low power standby state to conserve energy when not in use.
- **Picture controls for brightness, contrast, color, tint, and detail, as well as horizontal and vertical positioning, and sizing**

- **Automatic 3:2 and 2:2 pulldown detection** — Advanced film mode processing techniques that help maximize image quality for NTSC, PAL, and HDTV 1080i sources that originated from film.
- **Quad standard video decoding** — A temporal, 3D adaptive comb filter provides advanced decoding of composite NTSC 3.58, NTSC 4.43, PAL, and SECAM for integration into systems worldwide.
- **User presets** — Memory presets are available for each input to store and recall optimized image settings.
- **Internal video test patterns and pink noise generator for calibration and setup** — The unit offers several video test patterns and audio pink noise to facilitate proper system setup and calibration of display devices.
- **Output volume control** — Provides volume control for the audio outputs. Analog audio outputs can be balanced or unbalanced and are available as stereo or independently mixed mono.
- **Audio input gain and attenuation** — Gain or attenuation can be adjusted for each analog input to eliminate noticeable differences when switching between sources.
- **Audio breakaway** — Provides the capability to break an analog audio signal away from its corresponding video signal and route to the audio outputs, allowing the analog audio channels to be operated as a separate switcher.
- **Audio switching transitions** — The audio output level automatically ramps down and then ramps up to match the video during switching transitions.
- **Integrated audio delay** — The audio output is automatically delayed to compensate for latency introduced by the video processing.
- **Automatic clip limiter** — Detects onset of clipping, automatically reducing gain to eliminate clipping and thereby protecting speakers and amplifiers from distortion.
- **Advanced audio configuration** — The IN1606 offers complete control of audio input and output gain, attenuation, mixing, and ducking parameters via a user-friendly GUI.
- **Front panel security lockout** — This feature locks out all front panel functions except for input selection; all functions however, are available through Ethernet, USB, or RS-232 control.
- **Ethernet monitoring and control** — Enables control and proactive monitoring over a LAN, WAN, or the Internet. An intuitive Web interface is included for full configuration of the unit.
- **Built-in Web pages** — Enables the use of a standard browser for full control and troubleshooting over an intuitive Web interface.
- **RS-232 control port** — Enables the use of serial commands for integration into a control system. Extron products use the SIS™ - Simple Instruction Set command protocol, a set of basic ASCII commands that allow for quick and easy programming.
- **Front panel USB configuration port** — Enables easy configuration without having to access the rear panel.
- **Easy setup and commissioning with Extron's PCS - Product Configuration Software** — Conveniently configure multiple products using a single software application.
- **Rack-mountable 1U, full rack width metal enclosure**
- **Includes LockIt® HDMI cable lacing brackets**
- **Highly reliable, energy-efficient internal universal power supply** — The 100-240 VAC, 50/60 Hz, international power supply provides worldwide power compatibility with high demonstrated reliability (/company/article.aspx?id=eps_ga).

INCLUDED ACCESSORIES

• MBD 149	1U, Full Rack Width, Rack Mount and Through-Desk Kit for Four-Piece Enclosure	70-077-03

OPTIONAL ACCESSORIES

• CSR 6	Captive Screw to RCA Female Audio Adapter
• DPM-HDMIF	DisplayPort Male to HDMI Female Active Adapter - 6" Pigtail
• HDMI Micro Series	MicroDigital™ Ultra-Flexible HDMI Cables
• HDMI Pro Series	High Speed and Standard Speed HDMI Cables
• HDMI Ultra Series	Ultra Flexible High Speed HDMI Cables
• SYM BNCF	15-pin HD Male to BNC Female Mini High Resolution Cables
• UTM 100 Series	Under Table Mounts for 1U and 2U Full Rack Width Products

SPECIFICATIONS

IN1606

Video input

Number/signal type	2 RGB, RGBcvS, component video (YUVi or YUVp/HDTV), S-video, composite video 4 HDMI digital video (HDCP compliant)
Connectors	2 female 15-pin HD 4 female HDMI
Equalization	Automatic
Input cable length	Up to 75' (22.9 m) for all supported input rates
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.3 Vp-p for C of S-video
Minimum/maximum levels	Analog: 0.0 V to 1.0 Vp-p with no offset at unity gain
Impedance	75 ohms
Horizontal frequency	15 kHz to 100 kHz
Vertical frequency	24 Hz to 75 Hz
Resolution range	640x480 to 1600x1200 and 1920x1200* NTSC, PAL, SECAM, 480i, 480p, 576i, 576p, 720p, 1080i, 1080p, and 2k *reduced blanking
Return loss	>30 dB @ 5 MHz
DC offset (max. allowable)	1.5 V

Video processing

Decoder	12 bit digital (3D-adaptive comb filter)
Analog sampling	12 bits per color; 13.5 MHz standard (video) 170 MHz standard (RGB)
Digital pixel data bit depth	8, 10, or 12 bits per channel; 165 MHz pixel clock (HDMI)
Colors	1 billion (10 bit processing)

Video output

Number/signal type	2 HDMI (HDCP)
Connectors	2 female HDMI
HDMI peripheral device power	200 mA per output
Scaled resolution	640x480[6,8,9], 800x600[6,8,9], 852x480[6,8,9], 1024x768[6,8,9], 1024x852[6,8,9], 1024x1024[6,8,9],1280x768[6,8,9], 1280x800[6,8,9], 1280x1024[6,8,9], 1360x765[6,8,9], 1360x768[6,8,9], 1365x768[6,8,9], 1365x1024[6,8,9], 1366x768[6,8,9],1400x1050[6,8], 1440x900[6,8,9], 1600x900[6,8], 1600x1200[6,8], 1680x1050[6,8], 1920x1200[6,8] HDTV 480p[7,8], 576p[6], 720p[3,4,5,6,7,8], 1080i[6,7,8], 1080p[1,2,3,4,5,6,7,8], 2048x1080[1,2,3,4,5,6,7,8] [1] = at 23.98 Hz, [2] = at 24 Hz, [3] = at 25 Hz,[4] = at 29.97 Hz, [5] = 30 Hz, [6] = at 50 Hz, [7] = at 59.94 Hz, [8] = at 60 Hz, [9] = at 75 Hz

Sync

Input type	RGBHV, RGBS, RGsB, RGBcvS, bi-level or tri-level component video
Input standards	NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level	2.75 V to 5.0 Vp-p for RGBHV or RGBS 0.6 Vp-p for component video with tri-level sync 0.3 Vp-p for component video with bi-level sync or RGsB

Input impedance	Horizontal: 510 ohms Vertical: 510 ohms
Max. input voltage	5.0 Vp-p

Audio

Gain	Unbalanced output: -6 dB; balanced output: 0 dB
Frequency response	20 Hz to 20k Hz, ±0.5 dB
THD + Noise	<0.1%, 20 Hz to 20k Hz at nominal level
S/N	>90 dB at maximum balanced output (unweighted)
Crosstalk	≤-80 dB @ 1 kHz, fully loaded
Stereo channel separation	>80 dB @ 1 kHz
Bass	+12 dB to -24 dB @ 100 Hz
Treble	+12 dB to -24 dB @ 8 kHz

Audio input

Number/signal type	6 stereo line balanced or unbalanced 2 mono mic/line balanced or unbalanced (with available phantom power) 4 stereo, de-embedded from HDMI (PCM only)
Connectors	(6) 3.5 mm, 5 pole captive screw connectors for Line (2) 3.5 mm, 3 pole captive screw connector for Mic/Line 4 female HDMI type A
Impedance	>10k ohms unbalanced, >20k ohms balanced
Nominal level	Line inputs: +4 dBu, -10 dBV, adjustable Mic/line inputs: -60 dBV, +4 dBu, -10 dBV, adjustable
Maximum level	+21 dBu at rated THD+N when input gain is set to 0 dB
CMRR	>80 dB @ 1 kHz
Input gain adjustment	Line inputs: -18 dB to +24 dB, 0.1 dB steps, adjustable per input Mic/line inputs: -18 dB to +60 dB, 0.1 dB steps, adjustable per input
DC phantom power	+48 VDC ±10% (can be switched on or off per Mic/line input)

Audio output

Number/signal type	1 balanced or unbalanced stereo (variable) 1 balanced or unbalanced stereo; can be configured as stereo or two independently mixed mono channels 2 HDMI embedded
Connectors	(2) 3.5 mm captive screw connectors, 5 pole 2 female HDMI
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.5 dB channel to channel
Maximum level (Hi-Z)	>+21 dBu, balanced; >+15 dBu, unbalanced
Output volume range	0 to -100 dB in 0.1 dB steps

Control/remote

Serial control port	1 bidirectional RS-232: 1 rear panel 3.5 mm captive screw connector, 3 pole
Baud rate and protocol	9600, 8 data bits, 1 stop bit, no parity (default)
USB control ports	1 front panel female mini USB B
USB standards	USB 2.0, high speed
Ethernet control port	1 female RJ-45 connector
Ethernet data rate	10/100Base-T, half/full duplex with autodetect
Ethernet protocol	ARP, ICMP (ping), IP, TCP, DHCP, HTTP, Telnet
Program control	Extron control/configuration program for Windows®
	Extron Simple Instruction Set (SIS™)
	Microsoft® Internet Explorer®, Telnet

General

Power supply	Internal Input: 100-240 VAC, 50-60 Hz
Power consumption	
Full load	26 watts
Power save mode	<14 watts
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Passive, side and top vents

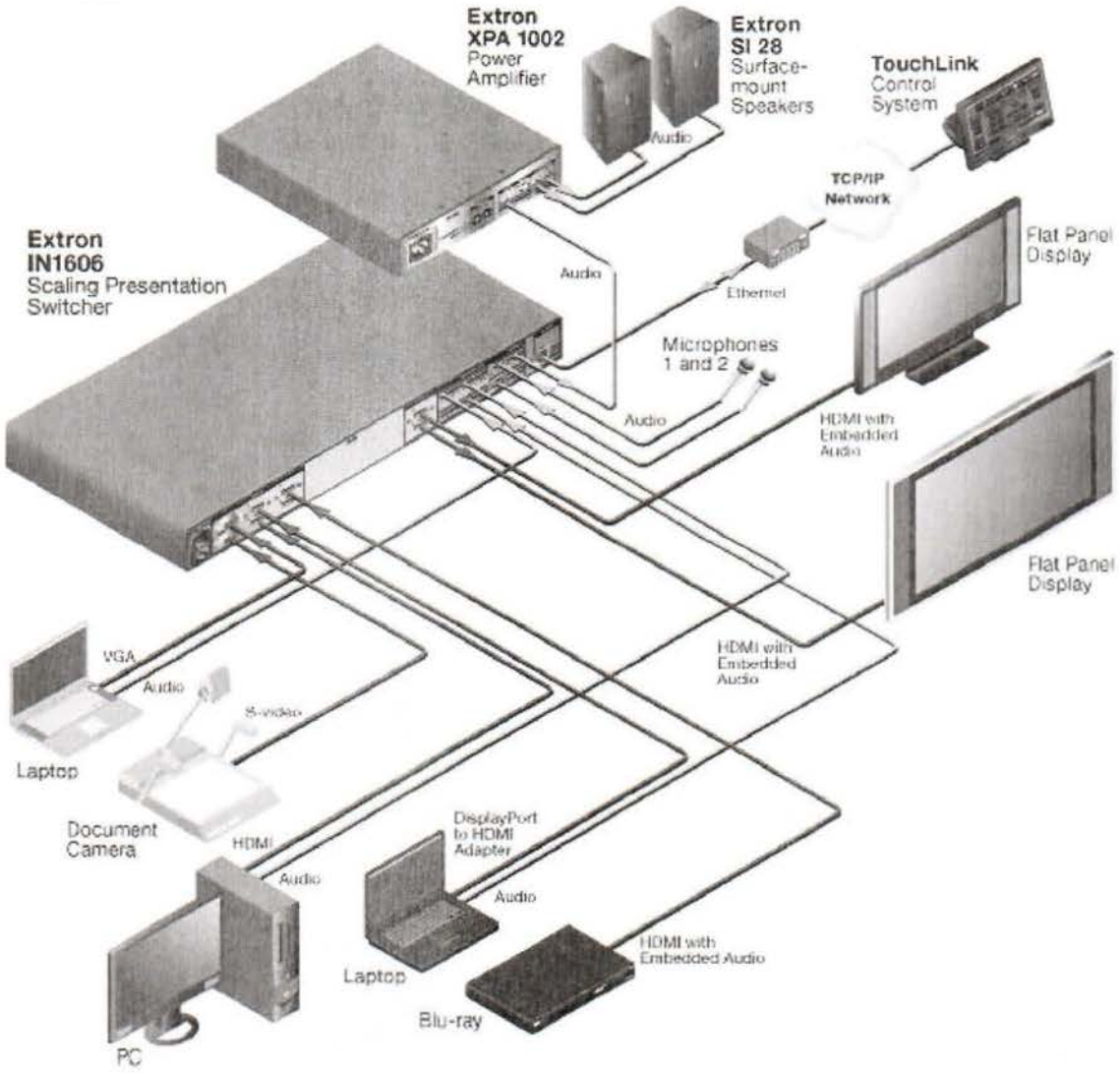
Thermal dissipation	
Full load	68.7 BTU/hr
Power save mode	45.4 BTU/hr
Mounting	
Rack mount	Yes, with included, pre-installed brackets
Enclosure type	Metal
Enclosure dimensions	1.75" H x 17.5" W x 9.5" D (1U high, full rack wide) (4.4 cm H x 44.4 cm W x 24.1 cm D) (Depth excludes connectors and knobs. Width excludes rack ears.)
Product weight	4.9 lbs (2.2 kg)
Shipping weight	6.7 lbs (3.0 kg)
DIM weight	7.1 lbs (3.2 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI
Environmental	Complies with the appropriate requirements of RoHS, WEEE.
Warranty	3 years parts and labor

NOTE *All nominal levels are at ±10%.*

NOTE *Specifications are subject to change without notice.*

(8.1-011515-D8)

DIAGRAM



PANEL DRAWING

IN1606

Front

Rear

IN9350

Blank Plate - Single

Version Description	Part #	Education Contract	MSRP
Black	70-315-11	$11.60	$20.00
White	70-315-21	$11.60	$20.00
Inline White	70-315-41	Retired	
RAL9010 White	70-315-51	Retired	

Extron MAAP - Mini Architectural Adapter Plates feature pass-through AV connectors or active modules on mountable metal plates that fit into select Extron interfaces, MAAP mounting frames and other products that accept MAAPs.

Size: Single Space

The Right Connectivity Right Where You Need It

Extron offers a wide selection of passive MAAPs with audio, video, phone, data, power, and control connectors. Active modules are available for audio buffering, video line driving, twisted pair transmission, control and power output. An assortment of MAAP mounting products are available that let you place the connectivity and control points in the optimum locations whether that is in a wall, table, podium, floor box, or equipment rack.

Modular Connectivity and Control

Since MAAPs are modular components, they fit together in a variety of combinations, making it easy to provide the exact connectivity needed for each audiovisual installation. MAAPs can be quickly added or removed, providing the flexibility to meet changing AV system requirements.

Custom Engraving

For an additional charge, MAAPs can be custom engraved to clearly indicate the function of each connector or button. Click here (/company/article.aspx?id=engraving) for more information on custom engraving services.

IN9374

One 9-pin D Female to Female Gender Changer

Version Description	Part #	Education Contract	MSRP
Black	70-310-11	$23.20	$40.00
White	70-310-21	$23.20	$40.00
Inline White	70-310-41	Retired	
RAL9010 White	70-310-51	Retired	

Extron MAAP - Mini Architectural Adapter Plates feature pass-through AV connectors or active modules on mountable metal plates that fit into select Extron interfaces, MAAP mounting frames and other products that accept MAAPs.

Type: Barrel/Adapter
Size: Single Space

The Right Connectivity Right Where You Need It

Extron offers a wide selection of passive MAAPs with audio, video, phone, data, power, and control connectors. Active modules are available for audio buffering, video line driving, twisted pair transmission, control and power output. An assortment of MAAP mounting products are available that let you place the connectivity and control points in the optimum locations whether that is in a wall, table, podium, floor box, or equipment rack.

Modular Connectivity and Control

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Custom Engraving

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MVGA M-M

Male to Male Micro VGA Cables

Key Features

- Certified for use with Cable Cubby and HSA surface access enclosures
- Thin, flexible cable with low profile VGA connectors
- Pin 9 is passed through from end to end
- Designed for transmission of computer video and ID bit signals
- Terminated with high quality molded VGA connectors
- AWM 20276 rated

Model	Version Description	Part #	Education Contract	MSRP
MVGA M-M/3	3' (90 cm)	26-567-01	$26.68	$46.00
MVGA M-M/6	6' (1.8 m)	26-567-02	$26.68	$46.00
MVGA M-M/12	12' (3.6 m)	26-567-03	$33.64	$58.00
MVGA M-M/25	25' (7.6 m)	26-567-04	$49.88	$86.00

Note: Cables up to 3 feet (90 cm) in length are measured neck-to-neck, between the strain reliefs. Cables longer than 3 feet (90 cm) are measured tip-to-tip, including connectors.

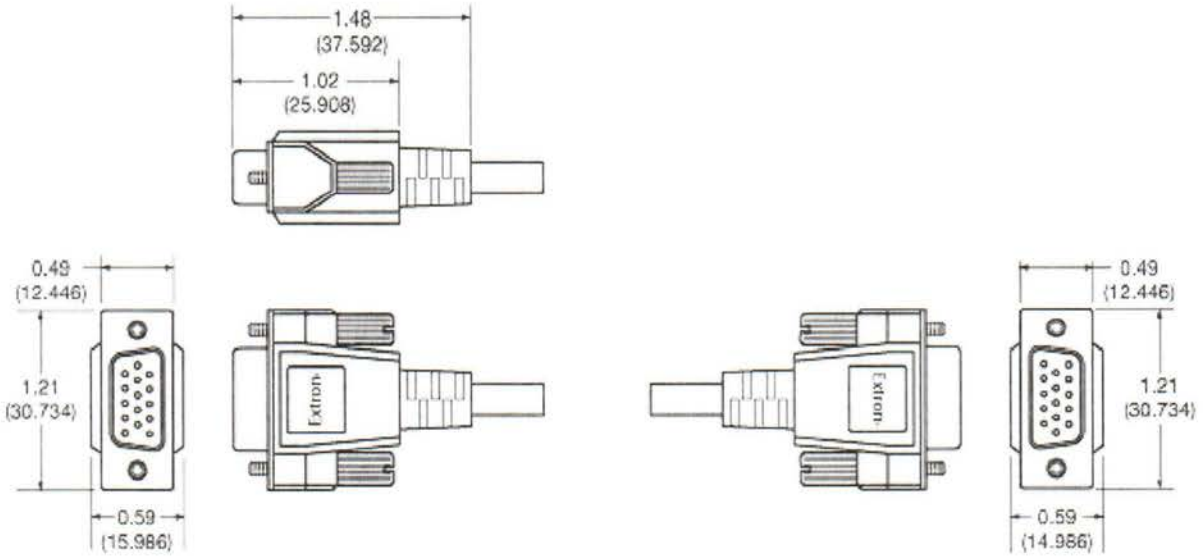
The Extron Micro VGA Cable utilizes five micro high resolution coaxial cables and 11 conductors with 15-pin HD connectors on either end. All ID bits are passed through the cable and pin 9 of the male connector effectively becomes a +5VDC power source, provided the computer has a graphic card that complies with VESA DDC standard, version 3. This cable is extremely thin and flexible making it ideal for use with Extron HSA and Cable Cubby® products.

Features

- **Certified for use with Cable Cubby and HSA surface access enclosures**
- **Thin, flexible cable with low profile VGA connectors**
- **Pin 9 is passed through from end to end**
- **Designed for transmission of computer video and ID bit signals**
- **Terminated with high quality molded VGA connectors**
- **VGA shell grounded for ESD electrostatic discharge protection**
- **Injection mold with overall foil shield for improved EMI - electromagnetic interference isolation**
- **AWM 20276 rated**

PANEL DRAWING

MVGA M-M Series



Mini Audio Cables

3.5 mm Male to Male Stereo Audio Cables

Key Features

- Certified for use with Cable Cubby® and HSA surface access enclosures
- Fully shielded, flexible and durable stereo audio cable providing excellent performance
- Ideal for direct connection of audio from a laptop or computer to any product with a 3.5 mm connection
- Terminated with 3.5 mm male mini plugs on each end

Model	Version Description	Part #	Education Contract	MSRP
A Mini/2	2' (60 cm)	26-571-01	$2.32	$4.00
A Mini/6	6' (1.8 m)	26-571-03	$3.48	$6.00
A Mini/12	12' (3.6 m)	26-571-06	$4.64	$8.00
A Mini/25	25' (7.6 m)	26-571-07	$6.96	$12.00
A Mini/10	10' (3.0 m)	26-571-05	Retired	

Note: Part numbers 26-571-02, 26-571-04 and 26-571-05 have been retired. Cables up to 6 feet (1.8 m) in length are measured neck-to-neck, between the strain reliefs. Cables longer than 6 feet (1.8 m) are measured tip-to-tip, including connectors.

The **Mini Audio Cables** are ideal for direct connection of audio from a laptop or computer to any of the Extron products with a 3.5 mm connection, such as the Hideaway® Surface Access enclosures or AV switchers. This cable is fully shielded and terminated with molded connectors. It is available in a variety of lengths to meet the needs of any application.

Features

- **Certified for use with Cable Cubby® and HSA surface access enclosures**
- **Fully shielded, flexible and durable stereo audio cable providing excellent performance**
- **Ideal for direct connection of audio from a laptop or computer to any product with a 3.5 mm connection**
- **Terminated with 3.5 mm male mini plugs on each end**

PMP Series

Projector Mounting Poles

Key Features

- Extends distance between ceiling mount and projector mount
- Used with Extron UPB 25, PCM 240, ACMP 100, FCMP Series, and other accessories to create individualized installations
- Cable cutout provides convenient cable access - except for 2" length
- 1.5" NPT pipe in fixed lengths of 2" (5 cm), 4" (10 cm), 6" (15 cm), 10" (25 cm), 12" (30 cm), 18" (45 cm) and 24" (60 cm), threaded at each end
- Available in black or white

Model	Version Description	Part #	Education Contract	MSRP
PMP 2	2"/5 cm, 1.5 NPT, Black	70-511-52	$13.92	$24.00
PMP 2	2"/5 cm, 1.5 NPT, White	70-511-53	$13.92	$24.00
PMP 4	4"/10 cm, 1.5 NPT, Black	70-511-02	$16.24	$28.00
PMP 4	4"/10 cm, 1.5 NPT, White	70-511-03	$16.24	$28.00
PMP 6	6"/15 cm, 1.5 NPT, Black	70-511-12	$18.56	$32.00
PMP 6	6"/15 cm, 1.5 NPT, White	70-511-13	$18.56	$32.00
PMP 10	10"/25 cm, 1.5 NPT, Black	70-511-22	$20.88	$36.00
PMP 10	10"/25 cm, 1.5 NPT, White	70-511-23	$20.88	$36.00
PMP 12	12"/30 cm, 1.5 NPT, Black	70-511-32	$23.20	$40.00
PMP 12	12"/30 cm, 1.5 NPT, White	70-511-33	$23.20	$40.00
PMP 18	18"/45 cm, 1.5 NPT, Black	70-511-42	$27.84	$48.00
PMP 18	18"/45 cm, 1.5 NPT, White	70-511-43	$27.84	$48.00
PMP 24	24"/60 cm, 1.5 NPT, Black	70-511-62	$30.16	$52.00
PMP 24	24"/60 cm, 1.5 NPT, White	70-511-63	$30.16	$52.00

length TBD.

The **PMP Series** Projector Mounting Poles are available in fixed lengths of 2" (5 cm), 4" (10 cm), 6" (15 cm), 10" (25 cm), 12" (30 cm), 18" (45 cm), and 24" (60 cm). The PMP Series Projector Mounting Poles are used with the UPB 25 Universal Projector Mounting Bracket, PCM 240 Projector Drop Ceiling Mount (/product/product.aspx?id=pcm240&s=5), and ACMP 100 (/product/product.aspx?id=acmp100&s=5) or FCMP Series Ceiling Mounting Plates (/product/product.aspx?id=fcmpseries&s=5) to create individualized installations. The Projector Mounting Poles, except for the 2" model, include a 1.6" W x 1.75" H (4 cm W x 4.4 cm H) cutout that provides convenient cable access. Available in black or white.

Features

- **Extends distance between ceiling mount and projector mount**
- **Used with Extron UPB 25, PCM 240, ACMP 100, FCMP Series, and other accessories to create individualized installations**
- **Cable cutout provides convenient cable access - except for 2" length**

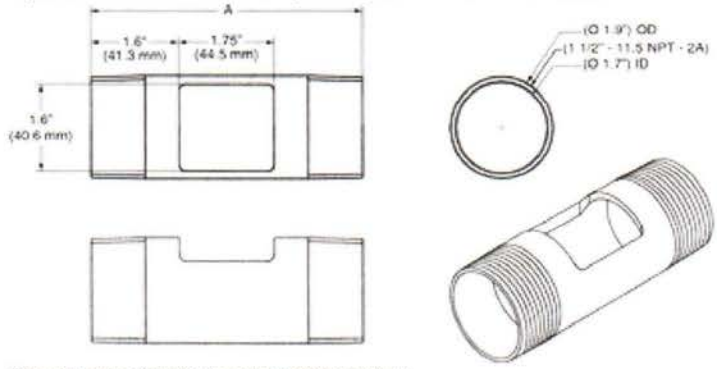
- **1.5" NPT pipe in fixed lengths of 2" (5 cm), 4" (10 cm), 6" (15 cm), 10" (25 cm), 12" (30 cm), 18" (45 cm) and 24" (60 cm), threaded at each end**
- **Available in black or white**

SPECIFICATIONS

PMP Series

General

Maximum load capacity	200 lbs
Material	Steel
Pipe diameter	1.5" (3.8 mm) o.d., 11.5 NPT threads



Pipe lengths ("A" in the above illustration)

PMP 2	2.0" (51 mm)
PMP 4	4.0" (102 mm)
PMP 6	6.0" (152 mm)
PMP 10	10.0" (254 mm)
PMP 12	12.0" (305 mm)
PMP 18	18.0" (457 mm)
PMP 24	24.0" (610 mm)

Product weights

PMP 2	0.3 lbs (0.1 kg)
PMP 4	0.7 lbs (0.3 kg)
PMP 6	1.0 lbs (0.5 kg)
PMP 10	2.1 lbs (0.9 kg)
PMP 12	2.3 lbs (1.0 kg)
PMP 18	3.6 lbs (1.6 kg)
PMP 24	4.6 lbs (2.1 kg)

Shipping weights

PMP 2	1 lb (1 kg)
PMP 4	1 lb (1 kg)
PMP 6	2 lbs (1 kg)
PMP 10	3 lbs (2 kg)
PMP 12	3 lbs (2 kg)
PMP 18	5 lbs (2 kg)
PMP 24	6 lbs (3 kg)

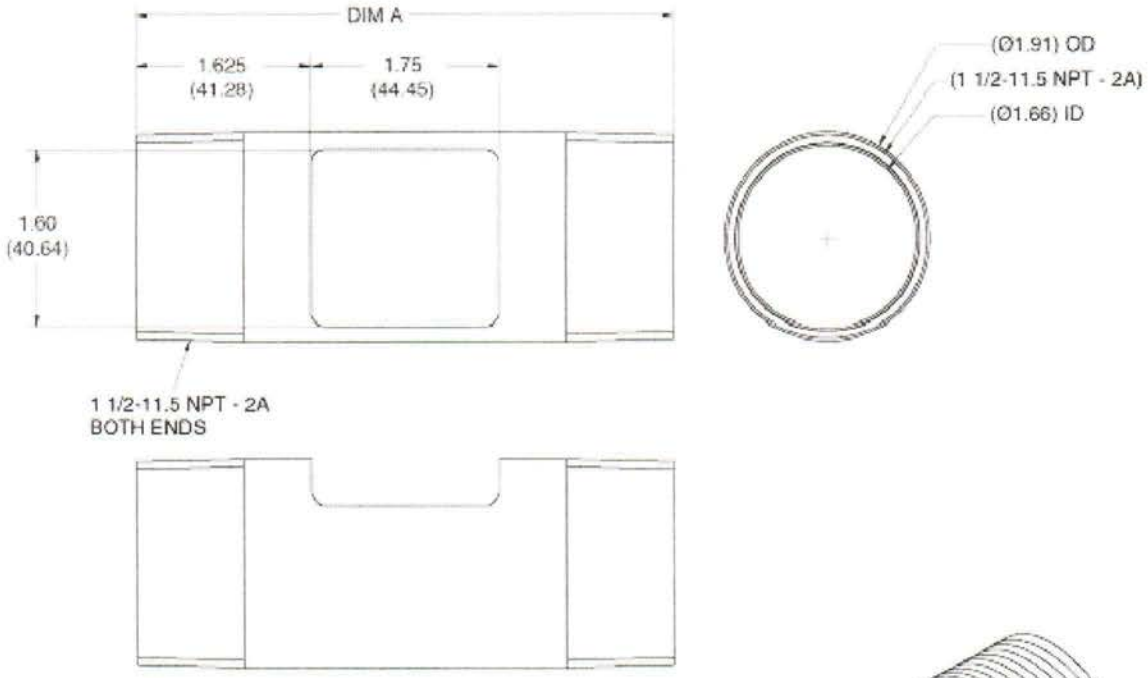
Vibration	ISTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Compliances	CE
Warranty	3 years parts and labor

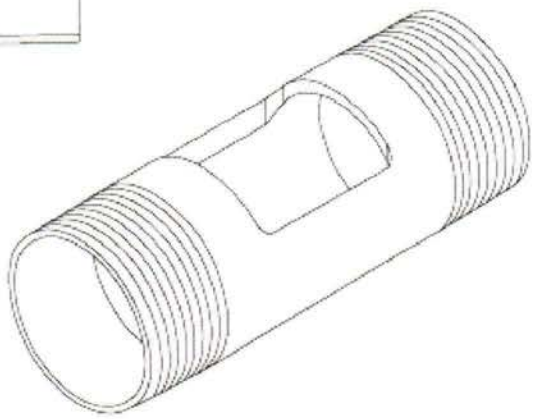
NOTE *Specifications are subject to change without notice.*

(7.53-101907-D2)

PANEL DRAWING

PMP Series





DASH (XX)	DIM A
70-511-62/-63	24.0 (609.6)
70-511-52/-53	2.0 (50.8)
70-511-42/-43	18.0 (457.2)
70-511-32/-33	12.0 (304.8)
70-511-22/-23	10.0 (254.0)
70-511-12/-13	6.0 (152.4)
70-511-02/-03	4.0 (101.6)

TABULATION TABLE

PoleVault Digital Systems

Complete AV Switching and Control Systems for Digital Sources

Key Features

- Complete, centralized HDMI/VGA switching and control systems with stereo audio amplification
- Securely mounts and conceals switching and audio amplification components above the projector
- Switching wallplates transmit audio and video signals over a single CATx shielded twisted pair cable
- ENERGY STAR® qualified switcher designed to lower energy usage and reduce operating costs
- Extron exclusive patented Flat Field® speakers deliver consistent sound levels across the listening area
- Powerful 50 watt rms audio amplifier

Model	Version Description	Part #	Education Contract	MSRP
PVS 200D	Two Input Digital PoleVault	42-207-03	Call	Call
PVS 400D	Four Input Digital PoleVault	42-208-03	Call	Call

Extron PoleVault® Digital Systems are complete, easy-to-use AV switching and control systems that seamlessly integrate digital and analog video sources. Each system uses economical twisted pair cable for transmitting signals and includes network connectivity for Web-based AV resource management, monitoring, and control. These standard two and four input systems include all the necessary audio and video switching, audio amplification, system control, source connectivity, speakers, mounting hardware, and cabling for a complete classroom AV solution. All that remains is to add the display device and sources.

True Digital and Analog Video Support

Extron PoleVault Digital Systems provide dual input switching wallplates for connection to common classroom sources including laptop, tablet, Apple TV, Blu-ray, document camera, and more. The PVT SW HDMI D supports two HDMI inputs and the PVT SW HDMI RGB D supports one HDMI and one VGA input. Standard two input systems offer connectivity for one HDMI and one VGA source while standard four input systems offer three HDMI and one VGA.

Twisted Pair Transmission

PoleVault Digital Systems provide high reliability and maximum performance on an economical and easily installed cable infrastructure. Input wallplates use Extron twisted pair technology to transmit high resolution digital audio and video signals to the switcher over a single CATx shielded twisted pair cable. CATx cable offers lower cost and easier installation than standard coaxial cable. It is lighter, smaller and more flexible, so it is easier to route through walls and small conduit. CATx cable connectors are also easier to terminate and don't require highly skilled and costly technicians for installation.

Easy-to-use AV Room Control

The MLC 104 IP Plus MediaLink® Controller included in standard PoleVault Digital Systems is designed to simplify operation of the AV system. With large, backlit buttons and a basic volume control knob, the controller is almost as easy to use as a light switch. Presenters with little or no training can learn to operate the system in a few minutes. It replaces traditional handheld IR remotes that are so easily lost or stolen, and eliminates the need for battery replacement.

Network Connectivity
PoleVault Digital Systems feature network integration technology specifically engineered to meet the needs of professional AV environments. This enables administrators and support personnel to manage, monitor, troubleshoot, and control systems over the network. These networked systems can also track and report usage, providing valuable information for future component purchases. They also include an integrated three port network switch allowing two additional devices within the classroom to share a single network drop.

Energy Efficiency
As an ENERGY STAR® qualified AV product, the switcher includes two Extron-exclusive power saving modes designed to lower energy usage and reduce operating costs. Auto Power Save Mode automatically turns off the audio amplifier after 25 minutes if no audio is present. Network Standby Power Save Mode turns off the amplifier, wallplates, VoiceLift receiver, and network switch, and can be scheduled at specific times when the system is not in use or activated by monitoring for when the projector is shut down.

Advanced Audio Capabilities
At the heart of each system is a switcher/amplifier that offers sophisticated audio capabilities. The integrated 50 watt stereo audio amplifier is able to drive up to four Extron speakers and filling the room with full, rich sound. The VoiceLift® Receiver input simplifies VoiceLift Microphone installation. Switched and auxiliary line-level inputs support audio only sources such as music players or public address systems. A line level output allows system audio to be used for podcasting or assistive listening.

Equipment Mounting
PoleVault Digital Systems are ideal for classrooms with a ceiling mounted projector. The unique PMK 560 Pole Mount Kit securely mounts and conceals system components above the projector. A projector drop ceiling mount is included with adjustable pole and universal projector bracket.

Features

- **Complete, centralized HDMI/VGA switching and control systems with stereo audio amplification**
- **Securely mounts and conceals switching and audio amplification components above the projector**
- **Switching wallplates transmit audio and video signals over a single CATx shielded twisted pair cable**
- **ENERGY STAR® qualified switcher designed to lower energy usage and reduce operating costs**
- **Extron exclusive patented Flat Field® speakers deliver consistent sound levels across the listening area**
- **Powerful 50 watt rms audio amplifier**
- **Three port network switch allows two additional devices to share a single network drop**
- **Network connectivity for Web-based monitoring and rapid problem resolution**
- **Easy-to-use MediaLink controller included**
- **Simplifies setup; no programming required**
- **VoiceLift Microphone option allows the teacher's voice to be evenly distributed throughout the room**

OPTIONAL ACCESSORIES

• PPS 35	Priority Page Sensor for PoleVault Digital Systems
• VoiceLift Microphone	Infrared Wireless Microphone For Use With PoleVault® and WallVault® Systems

SPECIFICATIONS

PVS 200D and PVS 400D Digital Systems

Overall system

STP transmission	Up to 150' (46 m) Standard included cable length is 35' (11 m)
Shipping weight	
PVS 200D System	53 lbs (24 kg)
PVS 400D System	55 lbs (25 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Warranty	3 years parts and labor

PVS 405D Switcher/Power Amplifier

Video — digital	
Maximum data rate	6.75 Gbps (2.2 Gbps per color)
Maximum pixel clock	165 MHz
Resolution range	Up to 2048x1080 or 1080p @ 60Hz
Formats	RGB and YCbCr digital video
Standards	DVI 1.0, HDMI, HDCP 1.1

NOTE *Appropriate HDMI to DVI-D cables or adapters are required for DVI signal input/output.*

Video input	
Number/signal type	Inputs 1 - 4: HDMI (or DVI) digital video
Connectors	2 female RJ-45 (See the user guide for pin configurations.)
Video output	
Number/signal type	1 single link HDMI (or DVI-D)
Connectors	1 female HDMI type A
Audio input (see the PVT series wallplates audio specifications)	
Number/signal type	2 proprietary signals from Extron PVT Series wallplates and transmitters 1 stereo, balanced/unbalanced (input 5)
Connectors	2 female RJ-45 1 female 3.5 mm captive screw connector, 5 pole (input 5)
VoiceLift receiver input	1 female RJ-45, -10 dBV (316 mVrms) nominal level
Aux input	1 female 3.5 mm captive screw connector, 5 pole
Audio output	
Number/signal type	1 line output, stereo/mono, balanced/unbalanced, fixed/variable 1 power amplifier, stereo or dual mono (default), 2 channels total
Connectors	(1) 3.5 mm captive screw connector, 5 pole (1) 5.0 mm captive screw connector, 4 pole

NOTE *Unbalanced wired outputs produce 6 dB of attenuation. Balanced output has unity gain/attenuation.*

Power amplifier	
Amplifier type	Class D
Impedance	4/8 ohms (single channel) 4/8 ohms (stereo)
Output power	25 watts (rms) per channel (1 watt tolerance) at 4/8 ohms, 20 Hz to 20 kHz, 1% THD
Ethernet control interface	
Switch type	Unmanaged
Ethernet ports	3 female RJ-45 with built-in link/speed and activity LEDs
Ethernet data rate	10/100Base-T (10/100 Mbps) with autodetect
General	
Power supply	External Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 4 A, 48 watts
Power input requirements	12 VDC, 4 A
Mounting	
Pole mount	Yes, with optional pole mounting kit
Enclosure dimensions	1.9" H x 13.5" W x 3.5" D (4.8 cm H x 34.3 cm W x 8.9 cm D)
Product weight	2.9 lbs (1.3 kg), including power supply (1.1 lbs [0.5 kg])
Regulatory compliance	
Safety	CE, c-UL, UL UL listed for use in plenum airspaces: meets UL 2043 for heat and smoke release, excluding the power supply; meets UL 60065 for safety.

EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI
Environmental	Complies with the appropriate requirements of RoHS, WEEE

PVT SW HDMI RGB D and PVT SW HDMI D Wallplates

NOTE *These transmitters are compatible only with an Extron PoleVault® Digital Switcher (PVS 405D). They are not compatible with other models of twisted pair receivers.*

Video — digital	
Maximum data rate	6.75 Gbps (2.2 Gbps per color)
Maximum pixel clock	165 MHz
Resolution range	Up to 2048x1080 or 1080p @ 60Hz, 8/10/12 bit color depth.
Formats	RGB and YCbCr digital video
Standards	DVI 1.0, HDMI, HDCP 1.1
Video input and loop-through	
Number/signal type	
PVT SW HDMI RGB D	1 VGA-UXGA RGBHV, RGBS 1 buffered RGBHV, RGBS local monitor loop-through 1 single link HDMI (or DVI-D)
PVT SW HDMI D	2 single link HDMI (or DVI-D)
Connectors	
PVT SW HDMI RGB D	2 female 15-pin HD (1 for input, 1 for loop-through) 1 female HDMI type A
PVT SW HDMI D	2 female HDMI type A
Video output	
Number/signal type	1 digital proprietary signal
Connectors	1 female RJ-45
Audio input	
Number/signal type	
PVT SW HDMI RGB D	2 analog stereo, unbalanced or 1 digital audio, embedded on the HDMI signal 1 analog pass-through
PVT SW HDMI D	2 analog stereo, unbalanced, or 2 digital audio embedded on the HDMI signal
Connectors	
PVT SW HDMI RGB D	(2) 3.5 mm stereo mini audio jacks (tip, ring, sleeve) 1 female HDMI type A (embedded on the HDMI signal) (1) 3-pole captive screw connector
PVT SW HDMI D	(2) 3.5 mm stereo mini audio jacks (tip, ring, sleeve) 2 female HDMI type A (embedded on the HDMI signal)
Audio output to a PoleVault switcher	
Number/signal type	1 digital proprietary signal
Connector	1 female RJ-45
Audio ouput, pass-through — PVT SW HDMI RGB D only	
Number/signal type	1 stereo, unbalanced
Connector	(1) 3.5 mm mini audio jack (tip, ring, sleeve)
General	
Power	Supplied by the PoleVault Digital switcher
Power input requirements	12.0 VDC, 1.0 A
Mounting	
Furniture or wall mount	Yes, with the included Decora® wall plate
Enclosure dimensions	
Faceplate	2.6" H x 3.2" W x 0.2" D (6.6 cm H x 8.1 cm W x 0.6 cm D) (Fits the openings in a 2 gang Decora® plate.)
Device	2.7" H* x 3.6" W x 2.0" D (6.9 cm H* x 9.1 cm W x 5.1 cm D) (Depth excludes connectors.) *Height excludes mounting tabs.
Product weight	0.6 lbs (0.3 kg)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	**CE, C-tick, FCC Class A**, ICES, VCCI

NOTE ***CE and FCC testing is conducted with STP (shielded twisted pair) cable.*

Interconnection between PVT wallplates and PVS switcher

Connector	1 female RJ-45 per wallplate
Termination standard	TIA/EIA T568A or T568B
Signal transmission distance	2048x1080 or 1080p @ 60Hz, 8/10/12 bit color depth 720p/1080i or 1024x768 @ 60Hz Up to 150' (45.7 m) using Extron DTP26 cable or Extron STP201 cable

NOTE *Extron shielded twisted pair cable is strongly recommended for optimal performance.*

MLC 104 IP Plus

Control — host ports	
Serial host port	1 bidirectional RS-232 front panel 2.5 mm mini stereo jack
Baud rate and protocol	38400, 8 data bits, 1 stop bit, no parity
Ethernet host port	1 RJ-45 female
Ethernet data rate	10/100Base-T, half/full duplex with autodetect
Ethernet protocol	ARP, ICMP (ping), IP, TCP, DHCP, HTTP, SMTP, Telnet
Web server	Up to 200 simultaneous sessions 7.25 MB nonvolatile user memory
Secondary control panel (SCP)	(1) 3.5 mm 5-pole direct insertion captive screw connector
Control — serial ports	
Display control port	(1) 3.5 mm direct insertion captive screw connector, 3 pole, for bidirectional RS-232 control (±5 V)
Switcher control port	(1) 3.5 mm direct insertion captive screw connector, 3 pole, for bidirectional RS-232 control (±5 V)
Control — IR port	
IR control port	(1) 3.5 mm direct insertion captive screw connector, 2 pole TTL level (0 to 5 V) infrared control up to 1 MHz
Digital I/O control	
Number/type	3 digital input/output (configurable)
Connector	(1) 3.5 mm direct insertion captive screw connector, 4 pole
General	
Power	Supplied by the PVS 405D twisted pair receiver/switcher
Power input requirements	12 VDC, 0.285 A (0.305 A if used with an optional IRCM-DV+)
Mounting	Wall and furniture mountable
Enclosure type	High-impact plastic faceplate, metal rear enclosure
Enclosure dimensions	Faceplate: 4.5" H x 4.6" W x 0.1" D (11.4 cm H x 11.7 cm W x 0.3 cm D) (2 gang) Device: 2.7" H x 3.4" W x 1.8" D (6.9 cm H x 8.6 cm W x 4.6 cm D) (Depth excludes knob and buttons. Fits some 2 gang boxes. Allow at least 1.9" [4.8 cm] depth in the wall or furniture.)
Product weight	0.6 lbs (0.3 kg)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, KC mark, VCCI
Accessibility	Complies with the appropriate requirements of Section 508 of the Rehabilitation Act (29U.S.C.794d).

PCM 340

Mounting	Drop ceiling mountable
Maximum load capacity	50.0 lbs (22.7 kg)
Material	Baseplate and pipe: aluminum Tie wire: steel, 14 AWG, 70,000 psi tensile strength
Dimensions	
Base plate	1.2" H x 26.4" W x 8.0" D (3.0 cm H x 67.1 cm W x 20.3 cm D)
Pipe	25" length, 1.5"-11.5 NPT
Adjustment ranges	1.5" - 23.0" drop, 21.5" adjustability in 0.5" steps. Drop distances are measured from the bottom of the hanger plate.
Product weight	4.5 lbs (2.1 kg)

Regulatory compliance	
Safety	CE, c-UL, UL, OSHPD anchorage pre-approval

PMK 560

Mounting	
Pole mount	Mountable to round projector mount poles, either standard 1.5" (3.8 cm) NPT pipes or pipes with an outer diameter of 1.85" to 1.95" (4.7 cm to 5.0 cm) using included hardware
Maximum load capacity	15 lbs (6.8 kg)
Material	
Base plate	Aluminum
Plate covers	High impact plastic
Dimensions	3.0" H x 15.4" W x 11.9" D (7.6 cm H x 39.1 cm W x 30.2 cm D)
Product weight	2.4 lbs (1.1 kg)
Regulatory compliance	
Safety	CE, c-UL, UL as an accessory for use with a UL listed mount and projector

UPB 25

Adjustment ranges	The UPB 25 can be angled within the following ranges to level the projector: ±4° roll ±25° pitch 360° yaw, 10° if flush mounted
Maximum load capacity	25 lbs (11.3 kg)
Enclosure type	Steel
Projector bracket dimensions	2.2" H x 6.25" W x 5.7" D (5.6 cm H x 15.9 cm W x 14.5 cm D) (Dimensions exclude legs/feet.)
Product weight	3.7 lbs (1.7 kg)
Regulatory compliance	
Safety	CE, c-UL, UL

FF 120 Flat Field® Speakers

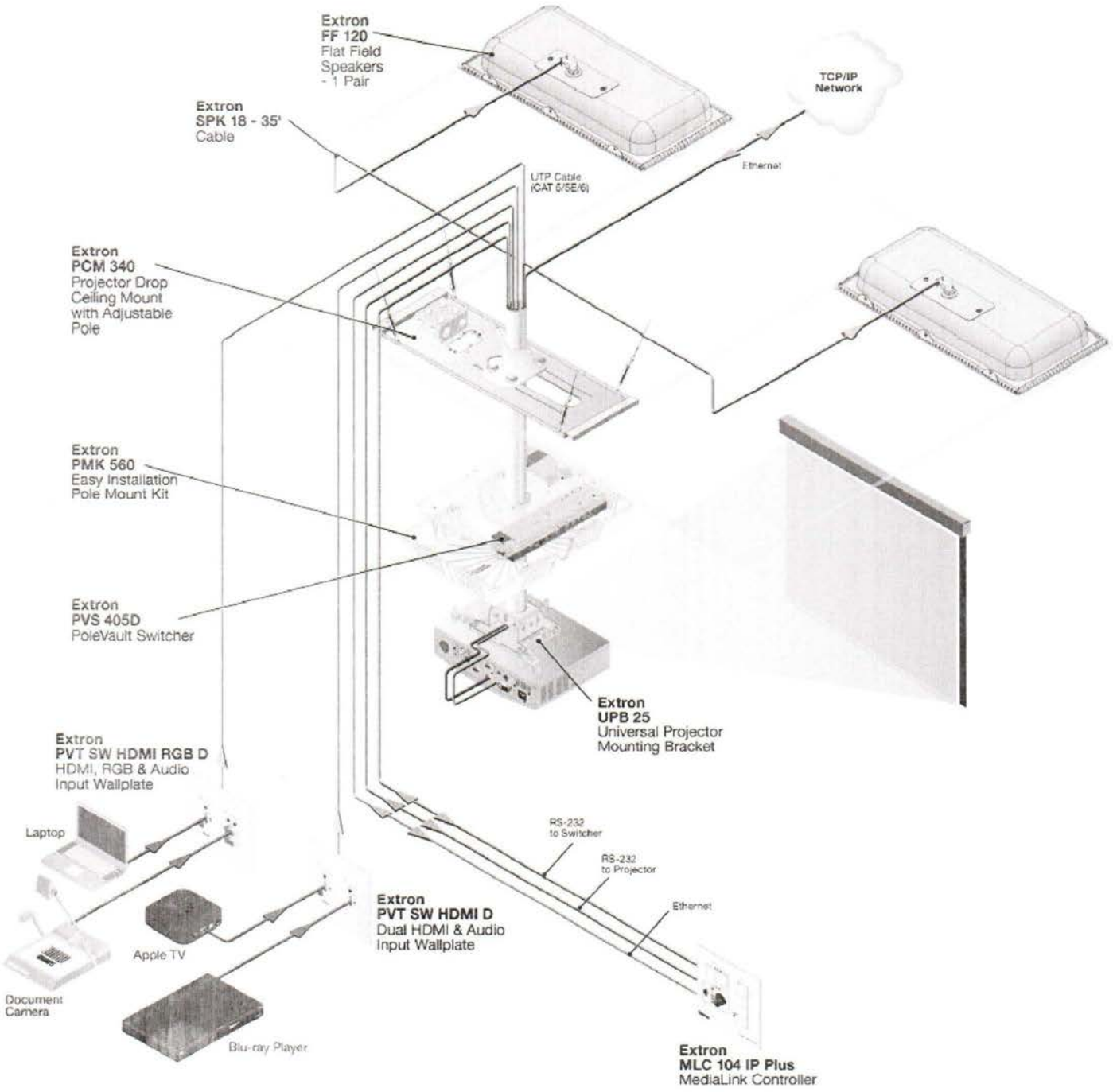
Power capacity	16 W (rms) continuous pink noise 32 W (rms) continuous program
Nominal coverage angle	170° conical coverage
Nominal impedance	8 ohms per speaker
Mounting	Drops into a 2' x 2' (61 cm x 61 cm) or 2' x 4' (61 cm x 122 cm) suspended tile
Enclosure outer dimensions	3.25" H x 23.75" W x 11.75" D (8.3 cm H x 60.3 cm W x 29.9 cm D)
Product weight	Single: 4.7 lbs (2.1 kg)
Regulatory compliance	
Safety	NFPA90A, NFPA70; UL listed for use in plenum airspaces: meets UL 2043 for heat and smoke release; meets UL 1480 for commercial and professional audio systems.

NOTE *All nominal levels are at ±10%.*

NOTE *Specifications are subject to change without notice.*

(8.0-102213-D1)

DIAGRAM



RSU 129

Universal Rack Shelf Kit for 9.5" Deep Products

Key Features

- Holds combinations of eighth-rack, quarter-rack, or half-rack width Extron products
- Includes mounting holes for 3", 6", and 9.5" deep products
- Includes three false faceplates: one eighth-rack width, one quarter-rack width, and one half-rack width
- Underside of products mount to the shelf using the included hardware
- Available in a gray powder coat finish

Model	Version Description	Part #	Education Contract	MSRP
RSU 129	1U 9.5" Deep Universal Rack Shelf, Gray	60-190-01	$75.40	$130.00

The Extron **RSU 129** Universal Rack Shelf Kit for 9.5" Deep Products holds two 1U high, half-rack width products or up to eight eighth-rack width Extron products side by side. This 19 inch 1U 9.5" deep rack shelf includes three front false faceplates: one eighth-rack, one quarter-rack width and one half-rack width. The false faceplate can hide any open slot on the shelf. The kit is available in powder coat gray. The underside of products mount to the shelf using the included hardware.

Features

- **Holds combinations of eighth-rack, quarter-rack, or half-rack width Extron products**
- **Includes mounting holes for 3", 6", and 9.5" deep products**
- **Includes three false faceplates: one eighth-rack width, one quarter-rack width, and one half-rack width**
- **Underside of products mount to the shelf using the included hardware**
- **Available in a gray powder coat finish**

SPK 14

14 AWG Speaker Cable

Key Features

- Two 14 AWG conductors
- High performance cable for audio signals
- Plenum & Non-Plenum rated versions available
- SuperFlex jacket with sequential numbering
- Spools of 1,000 feet (305 m) in self-dispensing box

Model	Version Description	Part #	Education Contract	MSRP
SPK14/1000	Non-Plenum 1000' (305 m) spool	22-152-03	$400.20	$690.00
SPK14P/1000	Plenum 1000' (305 m) spool	22-155-03	$440.80	$760.00
SPK 14 (500' / 152 m)		22-152-02	Retired	
SPK 14 Plenum	Plenum 500' (152 m) spool	22-155-02	Retired	

The Extron **SPK 14 Speaker Cable** is high performance cable designed for connecting speakers to amplifiers in a wide variety of applications. Extron SPK 14 cable offers a higher conductor strand count than comparable cables in its class, providing more flexibility and ease of installation. This cable is available in non-plenum and plenum-rated versions, and comprises one pair, 14 AWG bare copper conductors.

Features

- **Two 14 AWG conductors —** This high performance speaker cable features a single color-coded pair, 14 AWG bare copper conductors.
- **High performance cable for audio signals —** Offering higher strand count than comparable cables in its class, and providing more flexibility and ease of installation, this high performance speaker cable is ideally suited for connecting speakers to amplifiers in a wide variety of AV installations.
- **Plenum & Non-Plenum rated versions available —** Extron SPK 14 cable is available with a non-plenum (NEC-CM) or plenum-rated (NEC-CMP) SuperFlex jacket. Plenum-rated cable is for use in open air spaces without conduit (thereby reducing installation cost) where National Electric Code CMP cable must be installed.
- **SuperFlex jacket with sequential numbering —** Extron SPK 14 cable features the smooth SuperFlex jacket with sequential numbering that enables quick calculation of the cable used and remaining on the spool.
- **Spools of 1,000 feet (305 m) in self-dispensing box**

SPECIFICATIONS

Specifications — SPK Series Cable

Extron.

Description Part No. (length) Model	UL NEC/ C(UL) CEC Rt. AWM Temp.	No. of Cond.	Standard Lengths ft.	Standard Lengths m	Shipping Weights Lbs.	Shipping Weights kg	Conductor (stranding) Diameter Nom. DCR	Nominal Core OD inch	Nominal Core OD mm	Nominal OD inch	Nominal OD mm
(1 pair) 18, 16, or 14 AWG Twisted Pairs											
Nonplenum Cable • PVC Inner Jackets • PVC Outer Jacket											
22-150-03 (1000') SPK18 	MP CM C(UL) 60°C	1 twisted pair	1000	304.8	30	13.6	18 AWG (16/30) 0.048" 1.21 mm Cu 6.2 ohms/1k ft 20 ohms/1 km	0.068	1.75	Single ind. Black Overall 0.185	Single ind. Black Overall 4.70 white
22-151-03 (1000') SPK16 	MP CM C(UL) 60°C	1 twisted pair	1000	304.8	38	17.2	16 AWG (65/34) 0.058" 1.35 mm Cu 4.2 ohms/1k ft 13.8 ohms/1 km	0.073	1.86	Single ind. Black Overall 0.198	Single ind. Black Overall 5.03 white
22-152-03 (1000') SPK14 	MP CM C(UL) 60°C	1 twisted pair	1000	304.8	51	23.1	14 AWG (41/30) 0.067" 1.70 mm Cu 2.7 ohms/1k ft 8.9 ohms/1 km	0.080	2.04	Single ind. Black Overall 0.244	Single ind. Black Overall 6.20 white
Plenum Cable • PVC Insulation • Blue Fire-resistant PVC Outer Jacket											
22-153-03 (1000') SPK18P 	MP CMP C(UL) NFPA 262 60°C	1 twisted pair	1000	304.8	18	8.2	18 AWG (16/30) 0.048" 1.21 mm Cu 6.2 ohms/1k ft 20 ohms/1 km	0.062	1.58	Single ind. Black Overall 0.141	Single ind. Black Overall 3.58 blue
22-154-03 (1000') SPK16P 	MP CMP C(UL) NFPA 262 60°C	1 twisted pair	1000	304.8	29	13.2	16 AWG (65/34) 0.058" 1.35 mm Cu 4.2 ohms/1k ft 13.8 ohms/1 km	0.067	1.71	Single ind. Black Overall 0.159	Single ind. Black Overall 4.04 blue
22-155-03 (1000') SPK14P 	MP CMP C(UL) NFPA 262 60°C	1 twisted pair	1000	304.8	41	18.6	14 AWG (41/30) 0.067" 1.70 mm Cu 2.7 ohms/1k ft 8.9 ohms/1 km	0.087	2.22	Single ind. Black Overall 0.196	Single ind. Black Overall 4.98 blue

Extron system equivalent to the features of a pole vault system

Note: All the following gear, wiring, and part numbers are for a standard room that has a dual output computer, document camera, laptop connections, mic system, ceiling speakers, possibly a DVD/VCR combo and/or a Blu-ray player and based on the following:

- Distance from floor box to display device is less than 50'
- There is a spectrum instructor station cart that interconnects with a floor box or wall plates
- There are up to two displays in the room (just need to add a couple of cables and wall plates)
- There is no other specialized AV interconnected to this system

Extron IN1606 six input HDCP-Compliant scaling presentation switcher #60-1081-01

- This goes in the spectrum cart
- All the audiovisual devices plug into this
- The HDMI output of this goes to the projector
- The audio output of this goes to the Extron amplifier
- Has a 2nd audio output that could connect to an assistive listening device of some type

Extron MLC 226 IP AAP medialink controller with Ethernet control and AAP opening #60-600-12

- This goes in the overbridge of the spectrum cart

Extron CM-9BLB nine button, four space AAP control module #70-494-02

- This adds programmable buttons to the MLC226

Extron XPA 2001 mono 70V 200 watts amplifier #60-850-01

- This goes in the spectrum cart
- This connects to the speakers
- Some type of TBD interconnect wall plate is needed for this in the floor box.

Extron RSU 129 universal rack shelf kit for 9.5" deep products #60-190-01

Extron FF 220T full range flat field speakers with 70V transformer (2 pairs) #42-141-03

- This is based on a standard 30'x30' room. A larger room may need more speakers.

Extron WPD 110 A pass-through wall plate Decora for HDMI #70-726-63

- This goes in the floor box
- This is the interconnect point for the HDMI signal from the IN1606 to the projector.

Extron CPM101 one-gang MAAP mounting frame in white #60-583-21

- This goes in the floor box

Extron IN9374 9-pin D female to Female gender changer in white (need 2) #70-310-21

- These go in the CPM101
- One is for the rs-232 signal between the MLC226 and the projector
- One is for the signal between the MLC226 and the SCB board on the screen

Extron IN9350 blank plate-single in white (need 2) #70-315-21

- These go in the CPM101

Extron cable cubby 500 enclosure for AV connectivity and power #60-1404-02

- This goes in the overbridge of the spectrum cart

Extron MVGA M-M male to male micro VGA cable 6’ #26-567-02
- This goes in the cable cubby 500

Extron mini audio cable 3.5mm male to male stereo audio cable 6’ #26-571-03
- This goes in the cable cubby 500

Extron universal projector control cable 50’ #26-518-01
- This goes from the Extron IN9374 (floor box) to the projector

Extron PMP series projector mounting pole, length TBD based on ceiling height, and screen location.

Extron SPK 14 14 AWG speaker cable plenum 1000’ #22-155-03 or equivalent
- About 150’ per room would be needed

HDMI M-M cable with redmere 50’
- Brands: monoprice, vanco, pearstone
- This goes from WPD110A in the floor box to the projector or LCD.

Chief speed-connect above tile suspended ceiling kit with security hardware #CMS440

Chief universal custom & custom ceiling projector mounts with security hardware #RPAU

Other HDMI, displayport to HDMI, dvi to HDMI cables, cat6 some TBD.
- 8 outlet surge protector strip with 10’ power cord
- From IN1606 to floor box – HDMI to HDMI 10’.
- From computer to IN1606 – audio and may be DVI to HDMI or DP to HDMI, TBD.
- From doc cam to IN1606 – may be DVI to HDMI, HDMI to HDMI, or VGA – VGA, TBD.
- From cable cubby to IN1606 for a laptop – HDMI
- From cable cubby to network in floor box – cat6 14’ cable in white
- From computer to network in floor box – cat6 10’ cable in blue
- From MLC226 to network in floor box – cat6 10’ cable in red
- From QLX-D wireless mic receiver to network in floor box – cat6 10’ cable in red
- Interconnect cable from IN1606 to XPA 2001 amplifier
- Interconnect cable from QLX-D wireless receiver to IN1606
- RS-232 cable from MLC226 to IN9374 in floor box for projector control
- RS-232 cable from MLC226 to IN9374 in floor box for screen control
- Speaker cable from XPA 2001 amp to TBD wall plate in floor box for speaker signal
- If we put in a DVD/VCR combo then a composite to RGB cable is needed
- If we put in a Blu-ray player then a 5’ HDMI cable is needed

Shure QLX-D digital wireless system with bodypack transmitter and lavalier mic.
- Wireless band TBD before purchase

Techflex Flexo F6 1½” flexible semi-rigid wrappable split braided tub in black #F6N1.50BLK
- This is used to protect the cables going from the floor box to the cart ~6’

Universal Projector Control Cables

Female 9-pin D Connector to Unterminated - Captive Screw Ready

Key Features

- Designed for universal projector control communications between the Extron System 7SC switcher or MediaLink® controllers and most RS-232 controllable displays
- Terminated with a female 9-pin D connector; unterminated end is ready for captive screw connection
- Available in lengths of 50 feet (15.24 m) and 100 feet (30.48 m)

Model	Version Description	Part #	Education Contract	MSRP
UC50' (50' / 15 m)	Universal Projector Control 50' (15.2 m)	26-518-01	$32.48	$56.00
UC100' (100' / 30 m)	Univ. Projector Control 100' (30.4 m)	26-518-02	$64.96	$112.00

Note: Part number 26-518-03 is retired.

Extron UC Cables are designed for universal projector control communications between the System 5 IP or System 7SC system switchers, as well as many MediaLink® Controllers, and most RS-232 controllable displays. The display end of the cable is terminated with a female 9-pin D connector. The other end is not terminated, so it is ready for captive screw connection to the System 7SC or MediaLink Controller's projector control port. The UC Cable is available in 50' (15 m) and 100' (30 m) lengths.

Features

- **Designed for universal projector control communications between the Extron System 7SC switcher or MediaLink® controllers and most RS-232 controllable displays**
- **Terminated with a female 9-pin D connector; unterminated end is ready for captive screw connection**
- **Available in lengths of 50 feet (15.24 m) and 100 feet (30.48 m)**

WPD 110 A

Pass-Through Wallplate - Decora® for HDMI, Stereo Audio, and Control

Key Features

- HDMI Female to HDMI Female connector on 10" pigtail
- Computer audio: 3.5 mm stereo mini jack to captive screw
- Signals passed through unprocessed
- IR or RS-232 pass-through on captive screw for easy termination
- Includes a matching white single-gang Decora®-style wallplate

Model	Version Description	Part #	Education Contract	MSRP
WPD 110 A	HDMI w/Audio Captive Screw and Control	70-726-63	$58.00	$100.00
WPD 110 A	HDMI w/Audio	70-726-03	Retired	
WPD 110 A	HDMI w/Audio Solder Cup and Control	70-726-13	Retired	

The Extron **WPD 110 A** is a pass-through, Decora®-style wallplate for HDMI, stereo audio, and control. It features a pass-through HDMI Female to HDMI Female connector on 10" pigtail along with a 3.5 mm stereo mini jack to captive screw adapter, providing a simple and elegant integration solution. The audio port can be covered when not in use. A convenient pass-through port for IR or RS-232 signals provides for control of DVD players, displays, switchers or other RS-232 or IR controllable devices. The WPD 110 A includes a matching white single-gang Decora-style wallplate and audio port cover, and fits a standard US one-gang size junction box.

Features

- **HDMI Female to HDMI Female connector on 10" pigtail**
- **Computer audio: 3.5 mm stereo mini jack to captive screw**
- **Signals passed through unprocessed**
- **IR or RS-232 pass-through on captive screw for easy termination**
- **Mud ring included**
- **Includes a matching white single-gang Decora®-style wallplate**

OPTIONAL ACCESSORIES

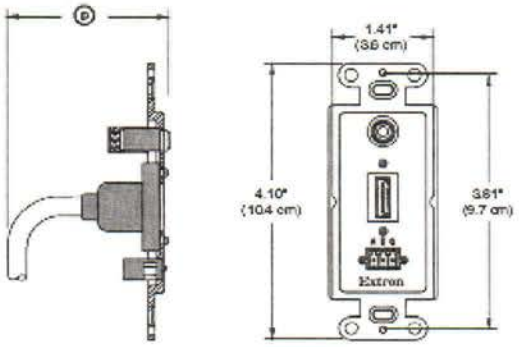
• AAP 314	Three-Gang Mounting Frame for Decora Modules and AAP - Architectural Adapter Plates
• AAP 424	Four-Gang Mounting Frame for Decora Modules and AAP - Architectural Adapter Plates

SPECIFICATIONS

WPD 110 A, WPD 120 A, WPD 130 A, WPD 140 A Series

General

Mounting	
Furniture or wall mount	Yes, with standard Decora®-style wall plate
Enclosure type	Plastic
Connector type	
WPD 110 A	1 female HDMI to 1 female HDMI on a pigtail cable 1 female 3.5 mm audio TRS jack to 3.5 mm captive screw connector, 3 pole (1) 3.5 mm captive screw connector, 3 pole to 3.5 mm captive screw connector, 3 pole
WPD 120 A	1 female DisplayPort to 1 female DisplayPort on a pigtail cable 1 female 3.5 mm audio TRS jack to 3.5 mm captive screw connector, 3 pole (1) 3.5 mm captive screw connector, 3 pole to 3.5 mm captive screw connector, 3 pole
WPD 130 A	1 female DVI to 1 female DVI on a pigtail cable 1 female 3.5 mm audio TRS jack to 3.5 mm captive screw connector, 3 pole (1) 3.5 mm captive screw connector, 3 pole to 3.5 mm captive screw connector, 3 pole
WPD 140 A	1 female 15-pin HD on a pigtail cable 1 female 3.5 mm audio TRS jack to 3.5 mm captive screw connector, 3 pole (1) 3.5 mm captive screw connector, 3 pole to 3.5 mm captive screw connector, 3 pole
Enclosure dimensions	All models
Faceplate	2.6" H x 1.3" W x 0.3" D (6.6 cm H* x 3.3 cm W x 0.6 cm D) (Depth excludes connectors. Fits the opening in a 1 gang Decora®-style wallplate.) *Overall height is 4.1" (10.4 cm) including mounting tabs. Mounting holes are 3.8" (9.5 cm) apart on center.
Enclosure/connector	0.5" H x 0.8" W x 12.75 ±0.5" L (1.2 cm H x 2.0 cm W x 32.4 ±1.3 cm L) (Length excludes front screws but includes connectors and cable.) For the WPD 110 A, allow at least 2.0" (5.1 cm) depth for connector and cable bend radius. For the WPD 120 A, WPD 130 A, and WPD 140 A, allow at least 2.4" (6.1 cm) depth for connector and cable bend radius.



Ⓟ **Depths, including Bend Radius:**
WPD 110 A: 1.99" (5.1 cm)
WPD 120 A: 2.40" (6.1 cm)
WPD 130 A: 2.40" (6.1 cm)
WPD 140 A: 2.40" (6.1 cm)

WPD 110 A

CAUTION *Do not bend cable beyond the recommended depth.*

Product weight	0.1 lb (<0.1 kg)
Shipping weight	1 lb (1 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Environmental	Complies with the appropriate requirements of RoHS, WEEE
Warranty	3 years parts and labor

NOTE *Specifications are subject to change without notice.*

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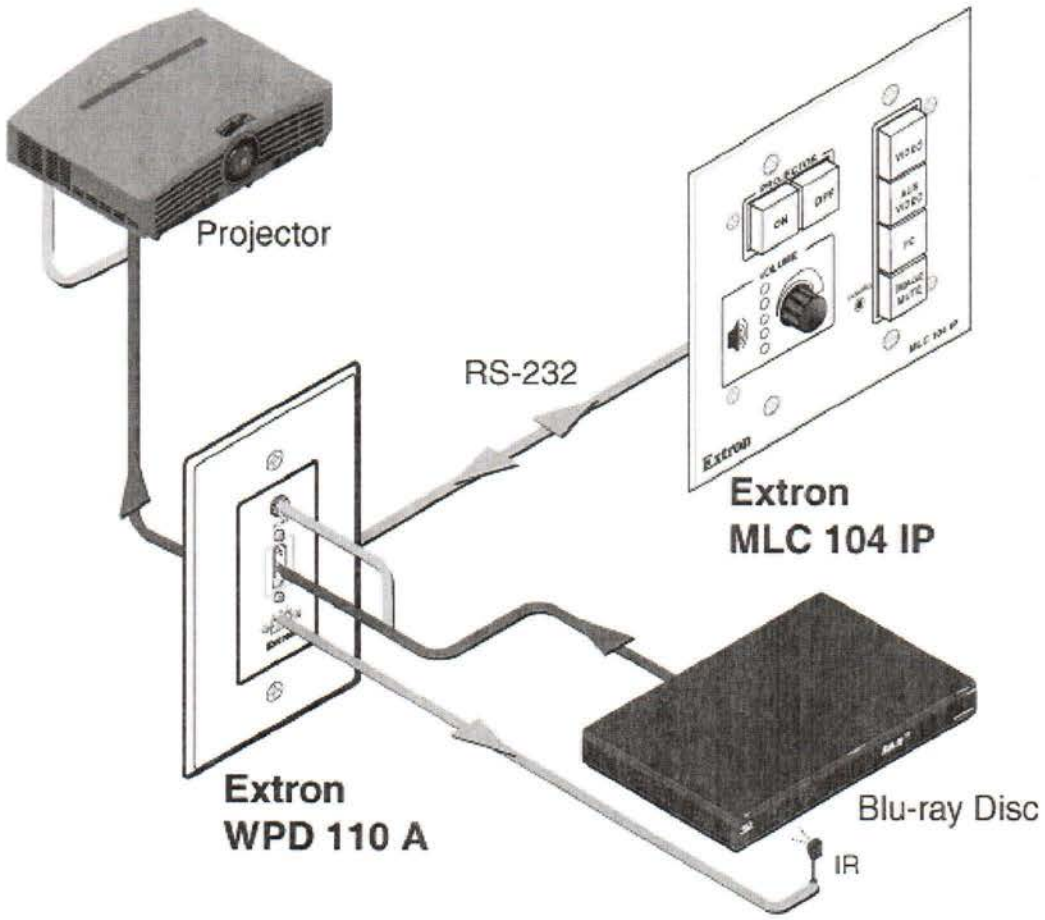
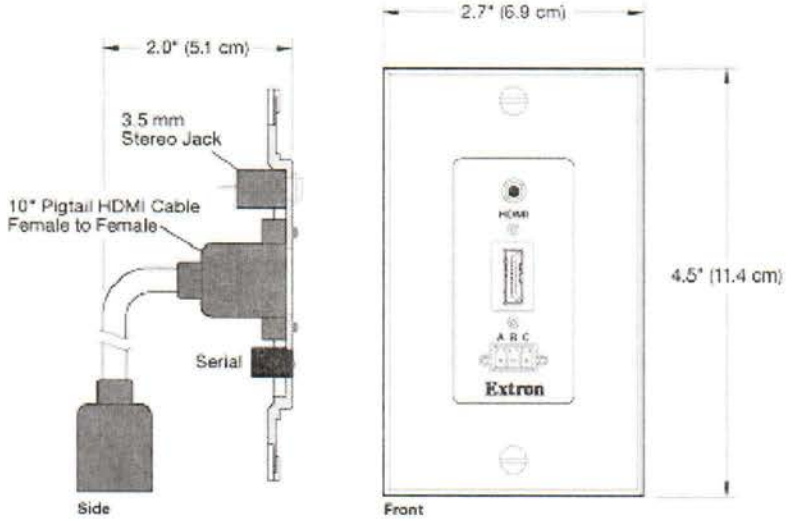
DIAGRAM



PANEL DRAWING

WPD 110 A



XPA 2001

Mono 70/100 V Amplifier - 200 Watts

Key Features

- 200 watts rms output power:
  XPA 2001-70V - 1 x 200 watts @ 70 volts
  XPA 2001-100V - 1 x 200 watts @ 100 volts
- ENERGY STAR® qualified amplifier
- Professional grade signal-to-noise and THD+N performance
- Extron Patented CDRS™ - Class D Ripple Suppression
- Convection cooled, fanless operation
- Ultra low inrush current - no need for power sequencing

Model	Version Description	Part #	Education Contract	MSRP
XPA 2001-70V	70 V Mono Amp - 200 Watts	60-850-01	$400.20	$690.00
XPA 2001-100V	100 V Mono Amp - 200 Watts	60-850-11	$400.20	$690.00

The Extron XTRA™ Series **XPA 2001** is a half rack 1U, convection cooled power amplifier delivering 200 watts into a 70 volt or 100 volt line. This professional grade amplifier features a 100 dB signal-to-noise ratio with less than 0.1% THD+N. The XPA 2001 is an ENERGY STAR® qualified amplifier with an Extron exclusive, highly efficient, advanced Class D amplifier design. It also features patented CDRS™ - Class D Ripple Suppression technology that provides a smooth, clean audio waveform and an improvement in signal fidelity over conventional Class D amplifiers. The XPA 2001 is housed in a half rack width metal enclosure, conserving rack space and weighing only 2.5 lbs (1.1 kg). The Extron exclusive, high efficiency design generates very little heat and allows the amplifier to be convection cooled.

Energy Efficient Amplifier with Auto Power-Down

The XPA 2001 ENERGY STAR qualified amplifier is an energy efficient product that conserves energy and reduces costs. With an auto power-down feature that automatically places the amplifier into standby after 25 minutes of inactivity, it consumes just 10 watts when idle and less than 1 watt in standby mode.

The XPA 2001 is housed in a compact 1U, half rack width enclosure. This amplifier is UL 2043 plenum rated when used with the optional Flexible Conduit Adapter Kit, allowing for a concealed installation above a drop ceiling to prevent theft while providing convenient placement of AV equipment.

The XPA 2001 delivers 200 watts rms for high impedance speaker systems in voice reinforcement and distributed audio applications. The XPA 2001 is available in 70 volt and 100 volt models.

The XPA 2001 accepts balanced and unbalanced input signals and includes recessed, detented level controls located on the rear panel to prevent tampering. These controls allow for adjusting audio system gain structure, or setting individual levels for each zone. For applications requiring volume adjustment and muting control from a location other than the amplifier, remote control capability is available using the optional Extron VCM 100 or VCM 200 analog volume and mute controller or VC 50 analog volume controller. Additionally, the XPA 2001 includes multiple protection circuits that momentarily activate when an abnormal condition, such as overheating, is detected. An advanced, automatic clip limiter protects speakers from clipping distortion.

Features

- **Inputs: Balanced or unbalanced stereo or mono on a 3.5 mm, 5-pole captive screw connector**
- **Speaker Outputs: Screw-lock, 5 mm, 2-pole captive screw connector**
- **200 watts rms output power:**
  XPA 2001-70V - 1 x 200 watts @ 70 volts
  XPA 2001-100V - 1 x 200 watts @ 100 volts — The XPA 2001 provides ample power output for larger rooms.
- **ENERGY STAR® qualified amplifier** — The XPA 2001 is an ENERGY STAR qualified amplifier and energy efficient product that conserves energy and reduces costs.
- **Professional grade signal-to-noise and THD+N performance** — The XPA 2001 delivers professional grade performance with 100 dB signal-to-noise ratio and THD+N of less than 0.1%.
- **Extron Patented CDRS™ - Class D Ripple Suppression** — CDRS is an Extron Patented technology that provides a smooth, clean audio waveform and an improvement in signal fidelity over conventional Class D amplifier designs. CDRS eliminates the high frequency switching ripple characteristic of Class D amplifiers, a source of RF emissions which can interfere with sensitive AV equipment such as wireless microphones.
- **Convection cooled, fanless operation** — The XPA 2001 does not require internal fans or vents for cooling, ensuring quiet, reliable operation. It generates substantially less heat than conventional power amplifiers, making it ideal for rack-mount applications.
- **Ultra low inrush current - no need for power sequencing** — Allows multiple XTRA Series amplifiers to be powered on simultaneously without overloading power circuits. This eliminates the need for power sequencing.
- **Power factor correction - removes harmonic content on AC line** — The XPA 2001 features power factor correction technology that smoothes out the high peak currents of the amplifier's current draw, thus minimizing the presence of high frequency harmonics on the AC power line, and therefore preventing audible artifacts from being transmitted to other audio equipment in the system.
- **Rack-mountable 1U, half rack width enclosure** — The XPA 2001 reduces rack space requirements for many installations.
- **UL 2043 plenum rated when used with optional Flexible Conduit Adapter Kit** — The XPA 2001 meets UL 2043 for smoke and heat release for installation within a plenum airspace above a drop ceiling when used with the optional Flexible Conduit Adapter Kit, part # 70-228-02. Above-the-ceiling placement conceals the amplifier to prevent theft, and is convenient for installing equipment when space inside the room is limited.
- **Auto power-down with fast power-up** — The XPA 2001 meets ENERGY STAR qualification requirements with an auto power-down feature that automatically places the amplifier into standby after 25 minutes of inactivity, dramatically reducing power consumption. It quickly returns to full power status in less than one second upon signal detection.
- **Rear panel recessed, detented level control** — Provides attenuation of input signals for adjusting audio system gain staging. It is located on the rear panel to prevent users from tampering with level adjustments.
- **Automatic clip limiter** — Detects actual onset of clipping by comparing input and output waveforms. Gain is automatically reduced without audible artifacts to protect speakers from clipping distortion.
- **Multiple protection circuits** — Activate during output shorts, thermal overload, or DC faults to prevent damage to the amplifier and speakers.
- **Remote standby port** — Enables the XPA 2001 to be remotely powered down when not in use, reducing operating cost.
- **Remote volume and mute control port** — In basic installations without control systems, this port allows the XPA 2001 to be remotely controlled using the optional Extron VCM 100 or VCM 200 analog volume and mute controller or VC 50 analog volume controller.
- **Input summing** — Actively sums incoming left and right channel signals for mono amplification.
- **High pass filter** — This switch selectable filter rolls off frequencies below 80 Hz to prevent saturation of speaker transformers.

- **5 mm screw-lock captive screw speaker connectors** — Enable simple, secure connections with 22 to 12 AWG speaker cables.
- **Front and rear-mounted signal and protection indication LEDs** — Provide convenient indication of input signal presence and protection circuit activation from both sides of an equipment rack.
- **Front panel over-temperature LED** — Provides visual indication that the enclosure temperature has exceeded the optimal value, well in advance of the onset of thermal protection circuitry.
- **Highly reliable, energy-efficient internal universal power supply** — The 100-240 VAC, 50/60 Hz, international power supply provides worldwide power compatibility with high demonstrated reliability (/company/article.aspx?id=eps_ga).

OPTIONAL ACCESSORIES

• UTS 100 Series	Under Table Shelf System
• MLA VC10 Plus	Volume Control Module
• Flexible Conduit Adapter Kit	Flexible Conduit Adapter Kit for PS 124 & Select XTRA™ Series Amplifiers
• SPK 18	Pre-cut Speaker Cable
• PPC 25	Priority Page Controller
• RSB 129	Basic Rack Shelf for 9.5" Deep Products
• RSU 129	Universal Rack Shelf Kit for 9.5" Deep Products
• SF 228T	Two-Way SoundField® Ceiling Tile Speakers with 8" Woofer and 70/100 V Transformer
• SI 26CT	Two-Way Ceiling Speakers with 8" Back Can and 70/100 V Transformer
• SI 3CT LP	Full-Range Ceiling Speakers with 4" Low Profile Back Can and 70/100 V Transformer
• VC 50	Volume Control Wallplate
• VCM 100 AAP	Volume and Mute Controller - AAP Version
• VCM 100 MAAP	Volume and Mute Controller - MAAP Version
• VCM 200 D	Volume and Mute Controller - Decora® Wallplate
• VCM 200 EU	Volume and Mute Controller - EU Wall Frame for European Junction Boxes
• VCM 200 MK	Volume and Mute Controller - MK Wall Frame for United Kingdom Junction Boxes

SPECIFICATIONS

XPA 2001 Series

Audio

Voltage gain	
XPA 2001-70V	57x (35 dB)
XPA 2001-100V	81x (38 dB)
Stereo channel separation	>75 dB @ 1 kHz
CMRR	75 dB @ 1 kHz (typical)

Audio input

Number/signal type	1 stereo or 2 mono, balanced/unbalanced
Connectors	(1) 3.5 mm captive screw connector, 5 pole
Impedance	>10k ohms unbalanced/balanced, DC coupled
Nominal level	+4 dBu (1.23 Vrms), balanced
Maximum level	+20 dBu (7.75 Vrms), balanced

Input sensitivity	+4 dBu (1.23 Vrms) if driven by one input -2 dBu (0.615 Vrms) if both inputs are summed
Input signal detection threshold	-40 dBu ±3 dB, balanced

NOTE *0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu*

Audio output

Number/signal type	
XPA 2001-70V	1 mono, 70 V line
XPA 2001-100V	1 mono, 100 V line
Connectors	(1) 5 mm screw lock captive screw connector, 2 pole

NOTE *These connectors accept wires of 22 AWG to 12 AWG.*

Load impedance	
XPA 2001-70V	25 ohms minimum
XPA 2001-100V	50 ohms minimum
Amplifier type	Class D
Output power	
XPA 2001-70V	200 watts rms, 70 V, 1 kHz, <0.1% THD
XPA 2001-100V	200 watts rms, 100 V, 1 kHz, <0.1% THD
Frequency response	20 Hz to 20 kHz, ±1 dB
THD + Noise	<0.1% @ 1 kHz at 3 dB below clipping
S/N	100 dB, 20 Hz - 20 kHz, unweighted
Damping factor	
XPA 2001-70V	>100 @ 25 ohms
XPA 2001-100V	>100 @ 50 ohms
High pass filter	80 Hz, 12 dB per octave rolloff (switch selectable)

Control/remote — amplifier

Control port	(1) 3.5 mm captive screw connector, 5 pole
Pin configurations	
DC volume control (analog)	Pin 1 = +10 VDC, 50 mA (max.), pin 2 = volume/mute (variable voltage), pin 3 = GND
Volume control voltage range	0 V (mute) to 10 V (maximum volume)
Standby power control (contact closure)	Pin 4 = GND, pin 5 = standby

General

Power supply	Internal Input: 100-240 VAC, 50-60 Hz
Power consumption	
Typical (1/8 power)	
XPA 2001-70V	70 V (x1): 45 watts
XPA 2001-100V	100 V (x1): 45 watts
Quiescent	12 watts
Standby	<1 watt (triggered by contact closure or after 25 minutes [± 5 minutes] with no signal)
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, no vents, with internal heat sinks
Thermal dissipation	
Standby	<1 watt (3 BTU/hr)
Idle	12 watts (41 BTU/hr)
1/8 power (pink noise)	
XPA 2001-70V	70 V (x1): 21 watts (71 BTU/hr)
XPA 2001-100V	100 V (x1): 20 watts (69 BTU/hr)
Protection	Clip limiting, thermal, short circuit, DC output
Indication	Limiter/Protect LED indicates the onset of clip limiting, thermal cycling, or a short circuit
Mounting	
Rack mount	Yes, with optional 1U rack shelf
Enclosure type	Metal
Enclosure dimensions	1.7" H x 8.7" W x 9.5" D (1U high, half rack wide) (4.3 cm H x 22.1 cm W x 24.1 cm D)
Product weight	2.5 lbs (1.1 kg)
Shipping weight	5 lbs (3 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)

Regulatory compliance	
Safety	BSMI, CCC, CE, c-UL, GS, KC Mark, PSE, S Mark, UL UL rated for use in plenum airspaces: meets UL 2043 for heat and smoke release; meets UL 60065, IEC 60065, and BSEN 60065 for AV equipment.
EMI/EMC	CE, CISPR 22 Class B, C-tick, FCC Class B, ICES, KCC, VCCI Class B
Environmental	Complies with the appropriate requirements of ENERGY STAR® (ENERGY STAR qualified amplifier), EU code of conduct, RoHS, WEEE
Warranty	3 years parts and labor

NOTE *All nominal levels are at ±10%.*

NOTE *Specifications are subject to change without notice.*

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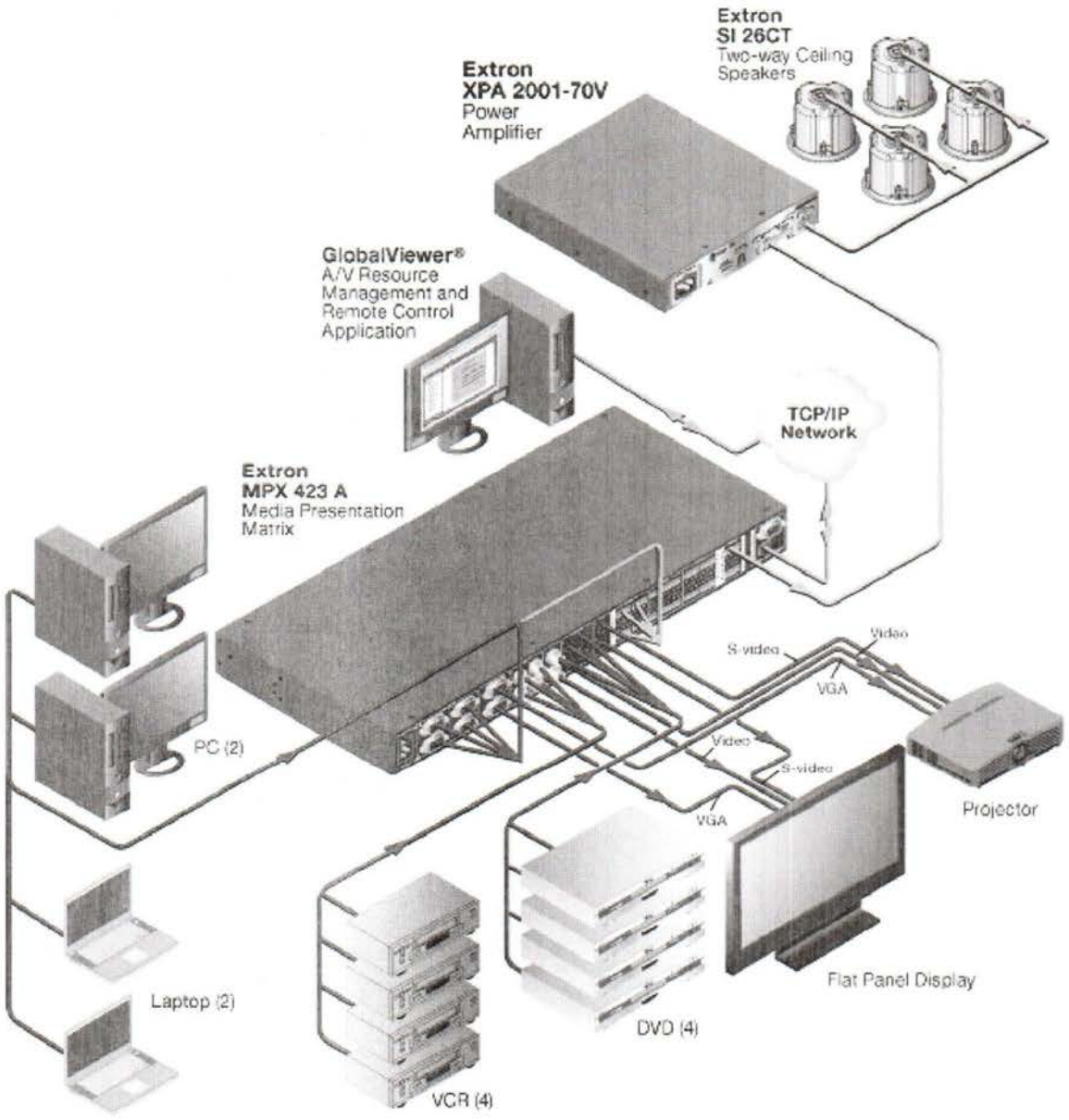
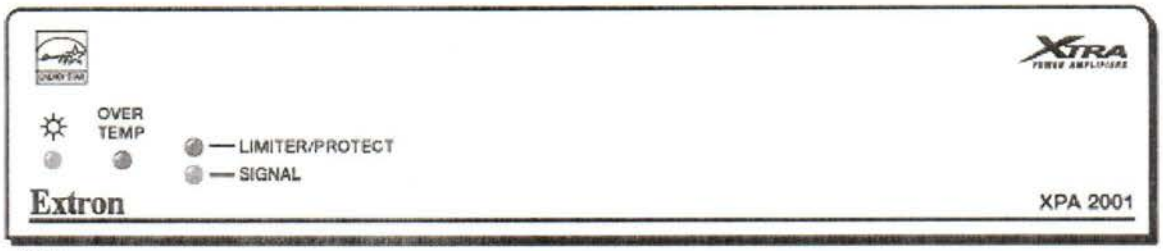
DIAGRAM

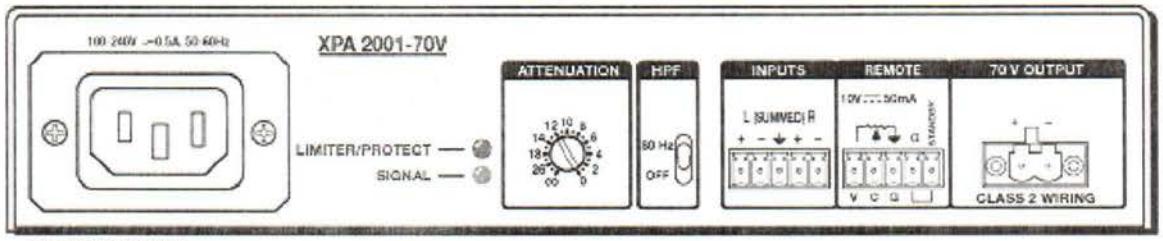


PANEL DRAWING

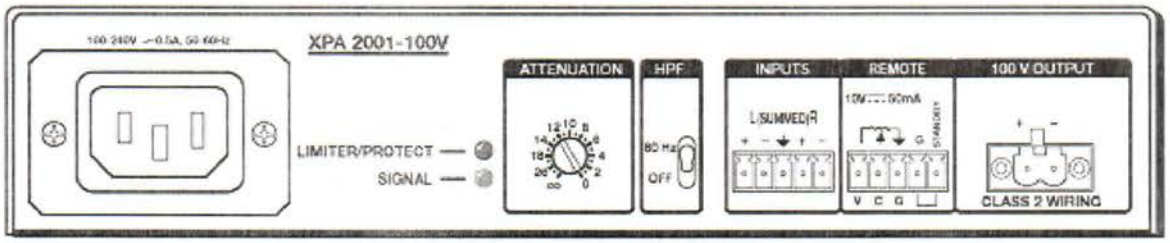
XPA 2001 Series



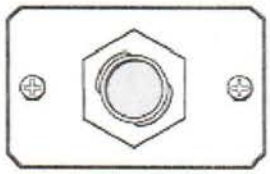
Front



Rear (XPA 2001-70V)



Rear (XPA 2001-100V)



Flexible Conduit Adapter Kit

GENERAL PURPOSE
Technical Data Sheet

FLEXO® F6

- Easy, Cost And Labor Effective Installation
- More Flexible Than Split Convoluted Or Spiral Wrap
- 25% Edge Overlap
- Soft And Quiet In High Vibration Uses
- Cut And Abrasion Resistant
- Chemically Inert
- Haloge Free

Cut Cleanly
Hot Knife

Material
Polyethylene Terepthalate

Grade
F6N

Monofilament Diameter
.008" - .015"

Drawing Number
TF001F6-WD

				Put-Ups				
Nominal Size	Part #	Wall Thickness	Monofilament Diameter	Bulk Box	Box A	Box B	Available Colors	Lbs/ 100′
1/8″	F6N0.13	.024″	.008″	10,000′	400′	100′	4	0.20
1/4″	F6N0.25	.025″	.010″	3,000′	200′	100′	4	0.60
3/8″	F6N0.38	.025″	.010″	1,500′	150′	75′	4	1.20
1/2″	F6N0.50	.025″	.010″	1,200′	150′	75′	4	1.40
3/4″	F6N0.75	.025″	.010″	500′	100′	50′	4	1.60
1″	F6N1.00	.038″	.015″	400′	100′	50′	4	2.00
1 1/4″	F6N1.25	.038″	.015″	250′	75′	25′	4	2.40
1 1/2″	F6N1.50BK	.038″	.015″	250′	75′	25′	BK	2.70
1 1/2″	F6N1.50	.038″	.015″	200′	75′	25′	OR, PG, CW	2.70
2″	F6N2.00	.038″	.015″	200′	50′	25′	4	3.60

Flexible, Semi-Rigid Wrappable Split Braided Tube

F6's unique split, semi-rigid braided construction makes it the ideal solution for situations where ease of installation is of primary importance. The lateral split allows the tube to open up to accommodate a wide variety of bundling requirements, and the semi-rigid braid configuration simply closes around the entire installation without the need for any additional fasteners (velcro, tape, etc.)

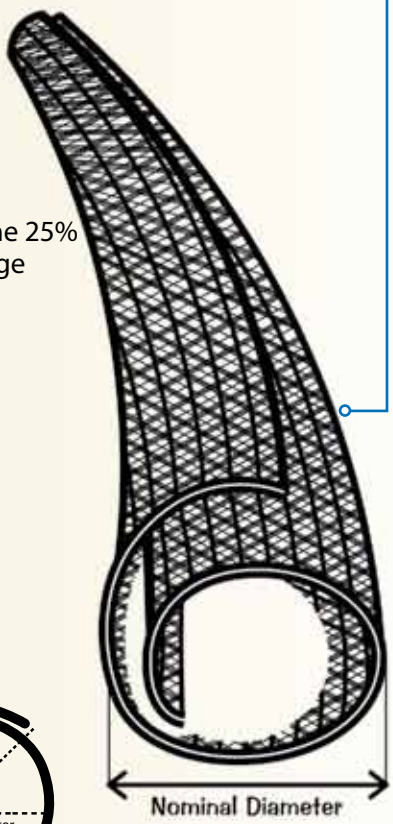
The PET braid is lightweight, quiet and flexible. The 25% edge overlap (at nominal diameter) allows coverage around inline plugs, connectors and splices.

F6 will bend to a tight radius without distorting or splitting open and, unlike full rigid tubing, will not impair or affect the flexibility of harnesses.

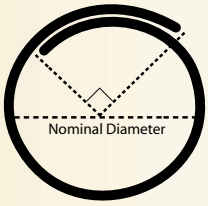
Colors Available:

Black (BK), Orange (OR), Platinum Gray (PG) & Clear/White (CW).

Colors Available:
4= BK, OR, PG, CW.



The large overlap allows easy installation over splices and incline connectors without exposing wires and cables.



TECHFLEX
Braided Sleeving Products
www.techflex.com
800.323.5140 • 973.300.9242 • fax: 973.300.9409
104 Demarest Road • Sparta, NJ 07871

GENERAL PURPOSE
Technical Data Sheet

FLEXO® F6

ABRASION

Abrasion Resistance
Medium

Abrasion Test Machine
Taber 5150

Abrasion Test Wheel
Calibrase H-18

Abrasion Test Load
500g

Room Temperature
80°F

Humidity
74%

Some Scuffing Visible
500 Test Cycles

Significant Wear Is Visible With Several Braid Filaments Broken
1,200 Test Cycles

Material Destroyed
1,950 Test Cycles

Pre-Test Weight
5,365.1 mg

Post-Test Weight
4,850 mg

Test End Loss Of Mass Point Of Destruction
515.1 mg

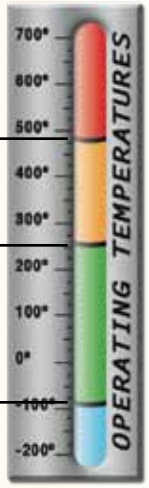
FLAMMABILITY

Rating _____ *UL94VO*

Melt Point
ASTM D-2117
482°F (250°C)

Maximum Continuous
Mil-I-23053
257°F (125°C)

Minimum Continuous
-94°F (-70°C)



Chemical Resistance

1=No Effect **4**=More Affected
2=Little Effect **5**=Severely Affected
3=Affected

Aromatic Solvents	2
Aliphatic Solvents	1
Chlorinated Solvents	3
Weak Bases	1
Salts	1
Strong Bases	2
Salt Water 0-S-1926	1
Hydraulic Fluid MIL-H-5606	1
Lube Oil MIL-L-7808	1
De-Icing Fluid MIL-A-8243	1
Strong Acids	3
Strong Oxidants	2
Esters/Keytones	1
UV Light	1
Petroleum	1
Fungus ASTM G-21	1
Halogen Free	Yes
RoHS	Yes
SVHC	None

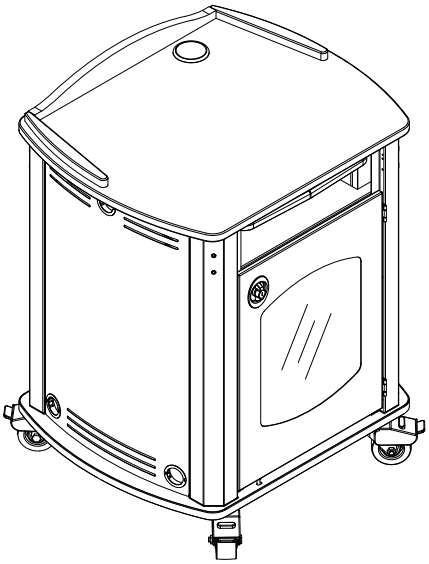
PHYSICAL PROPERTIES

Monofilament Diameter *ASTM D-204*	.008-.015
Flammability Rating	UL94
Recommended Cutting	Hot Knife
Colors	4
Wall Thickness	.024-.038
Tensile Strength (Yarn) *ASTM D-2256 Lbs*	6-10
Specific Gravity ASTM D-792	1.38
Moisture Absorption *% ASTM D-570*	.1-.2
Hard Vacuum Data ASTM E-595	
TML	19
CVCM	.00
WVR	.16
Smoke D-Max *ASTM E-662*	56
Outgassing	Med
Oxygen Index *ASTM D-2863*	21

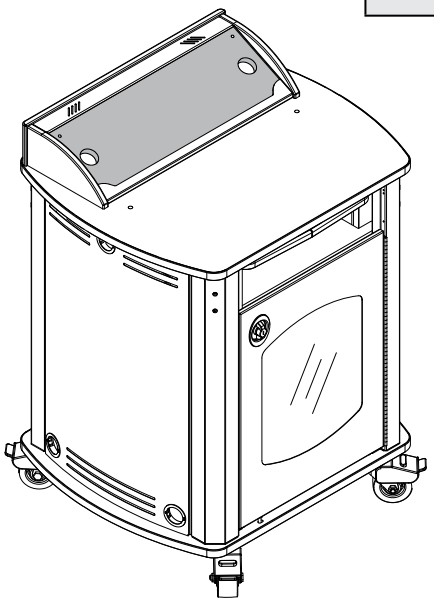
www.techflex.com

Technical Specifications

36”H	42”H	
55117	55116	with surround
55283	55284	with Overbridge Control Console™ *(also requires 96504 insert panel)*



42” LINK Lectern
55116



42” LINK Lectern
with Overbridge Control Console
55284
shown with insert panel (shaded)

Size Options
36”H or 42”H

Base Options
TW - 5” Twin-wheel casters
HD - 4” Heavy Duty casters
TK - Toe Kick

Options
Page 9

For a compact classroom podium with so many integration possibilities, the LINK Lectern adds a unique charm to the classroom. The LINK’s shape and style are very exclusive, retaining a contemporary lectern character with a modern touch. Looks aren’t everything though – the LINK Lectern’s performance is outstanding. It can be integrated for high-powered presentations, but is still small enough for the lecturer to easily step away and personally interact with students. And when you link technology with personal communication, a real connection with your audience is made.

Features and Benefits

- Durable powder coated steel chassis
- Overbridge console version allows custom cutouts and installation of presentation controllers and control panels
- Scratch and impact-resistant 1.063” high-pressure laminate worksurface and base panel
- Cable grommets on worksurface or overbridge provide cable access
- Rack-rail simplifies equipment installation, while providing enough storage space for an internal CPU
- Four 5” TW casters or 4” HD casters roll easily and quietly on uneven surfaces
- Toe kick (TK) version available when mobility is not necessary or desired
- Double-bolt, keyed locking instructor-side and audience-side doors provide security and easy-access
- Blank overbridge console version allows custom cutouts and installation of presentation controllers
- Removable acrylic viewing/access panel on the front door provides easy monitoring of internal equipment
- Worksurface surround provides privacy and styling (surround version only)
- Pre-drilled left and right monitor arm mounting holes allow easy installation of a monitor arm (overbridge version only)
- Ventilated side panels help keep equipment cool
- 3.25” worksurface grommet on the worksurface provides cable access (surround version only)
- Cable grommets throughout unit keep wires and cords organized
- Pull-out keyboard tray
- Optional flip-up shelf provides a convenient additional worksurface
- Wide variety of additional options and accessories allow unit to be configured to most situations
- Warranted to be free of all defects in materials and workmanship with a 10-year warranty

Color Options

Standard laminate / color combinations

Wild Cherry / Black (CHB)

Indigo Organix / Black (IB)

Indigo Organix / Dark Gray (ID)

Fusion Maple / Black (FMB)

Standard color combination refers to the quickest deliverable product color combination. Custom laminates and color combinations are available-additional lead-times and up-charges may apply. Call 1-800-235-1262 for further information.

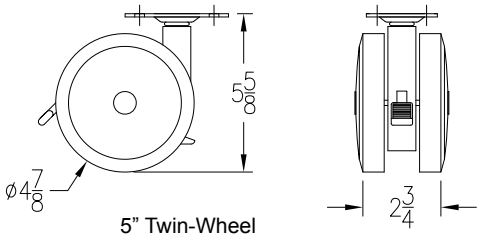
Construction

- The worksurface and base panel is constructed from 1.063” thick NAUF (no added urea formaldehyde) composite board with .030” high-pressure laminate on one face, and a balancing phenolic backer on the opposing face
- Metal components consist of 16-gauge and 20-gauge steel
- 16-gauge steel doors
- Solid wood worksurface surround
- Worksurface edges are covered with 3mm vinyl
- All metal components are finished with a scratch-resistant powder coat epoxy
- Each LINK Lectern is factory-assembled with casters or toe kick, packaged, and shipped on its own skid

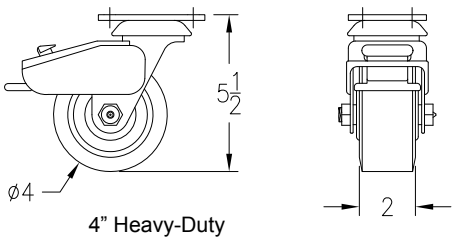
Specifications

Total internal area	26.5”W x 23.5”D x 26.5”H (36”H) 26.5”W x 23.5”D x 32.5”H (42”H)	
Standard rack rail	12RU (36”H) 15RU (42”H)	
5” twin-wheel casters	weight capacity 180 lbs each	
4” heavy-duty casters	weight capacity 300 lbs each	
Optional flip-up shelf	22.75”W x 26.25”D, 50 lbs max capacity, adjusts 3” vertically in 1” increments	
Shipping weights (nominal)	LINK Lectern: 218 lbs - 55116 (HD) 42” 236 lbs - 55116 (TK) 42” 211 lbs - 55116 (TW) 42” 192 lbs - 55117 (HD) 36” 221 lbs - 55117 (TK) 36” 221 lbs - 55117 (TW) 36”	LINK Lectern with OCC: 208 lbs - 55283 (HD) 36” 221 lbs - 55283 (TK) 36” 221 lbs - 55283 (TW) 36” 206 lbs - 55284 (HD) 42” 236 lbs - 55284 (TK) 42” 216 lbs - 55284 (TW) 42”
Meets or exceeds all applicable ANSI-BIFMA test standards		

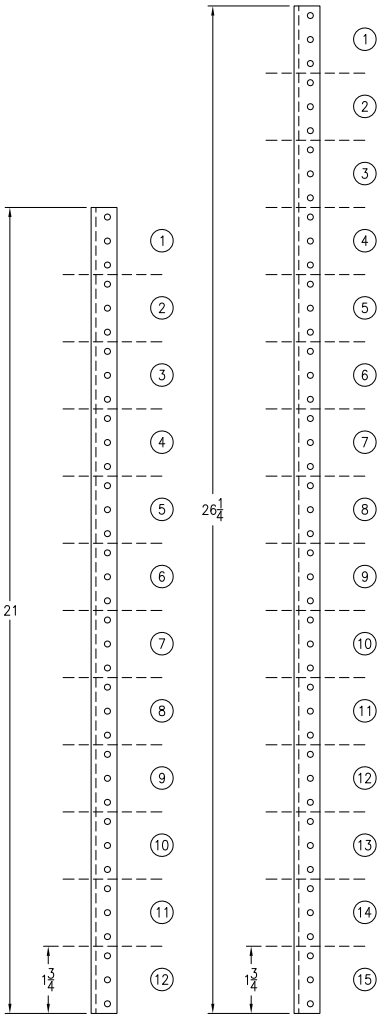
Specifications subject to change without notice



5” Twin-Wheel
(TW) caster



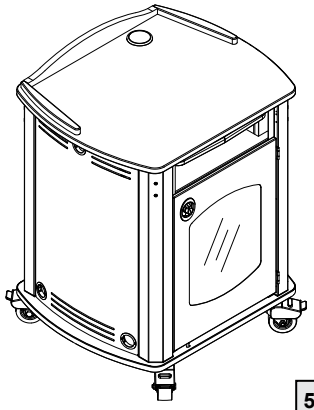
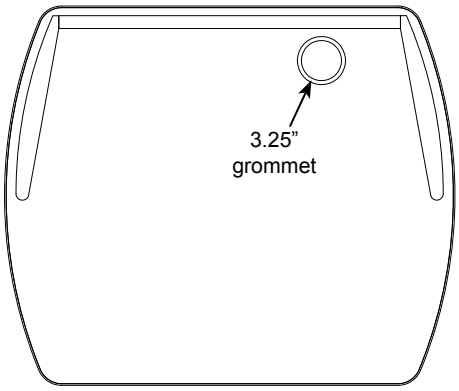
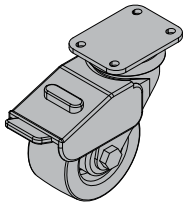
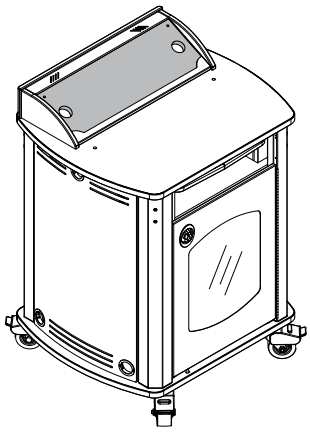
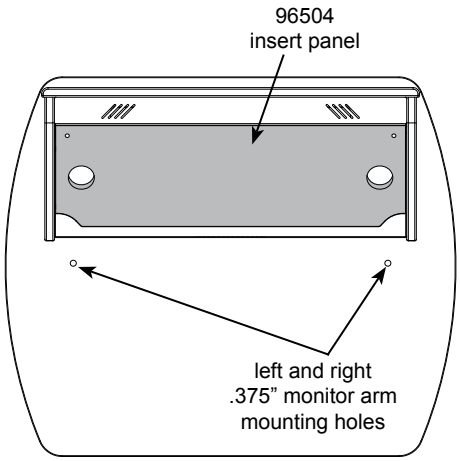
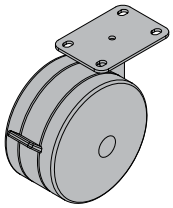
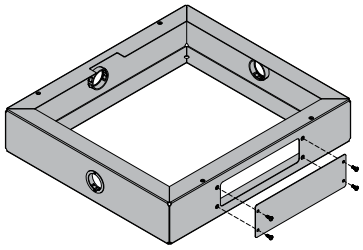
4” Heavy-Duty
(HD) caster



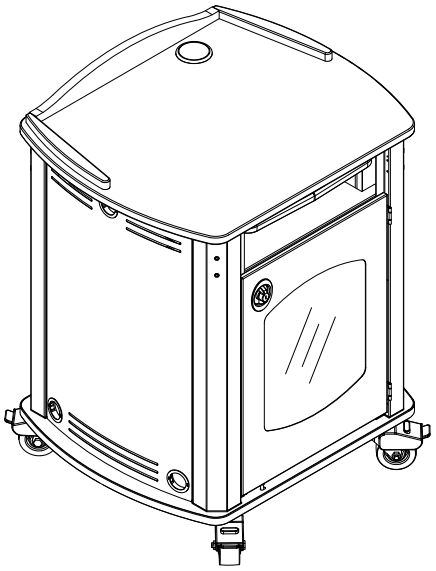
36”H
12RU available
(instructor-side)

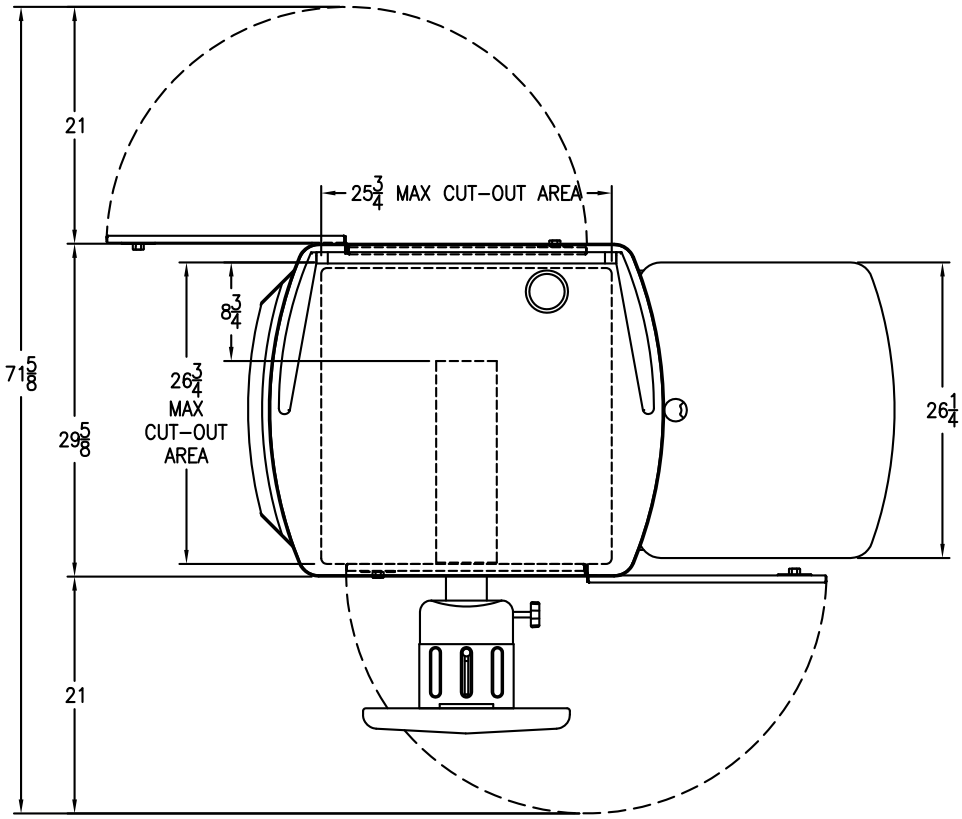
42”H
15RU available
(instructor-side)

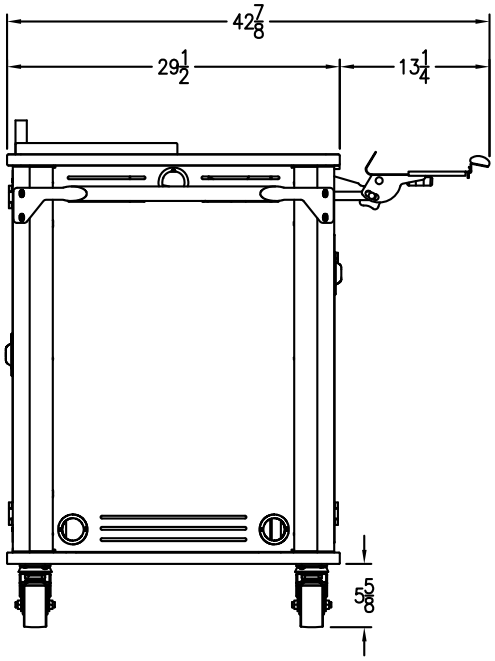
Models

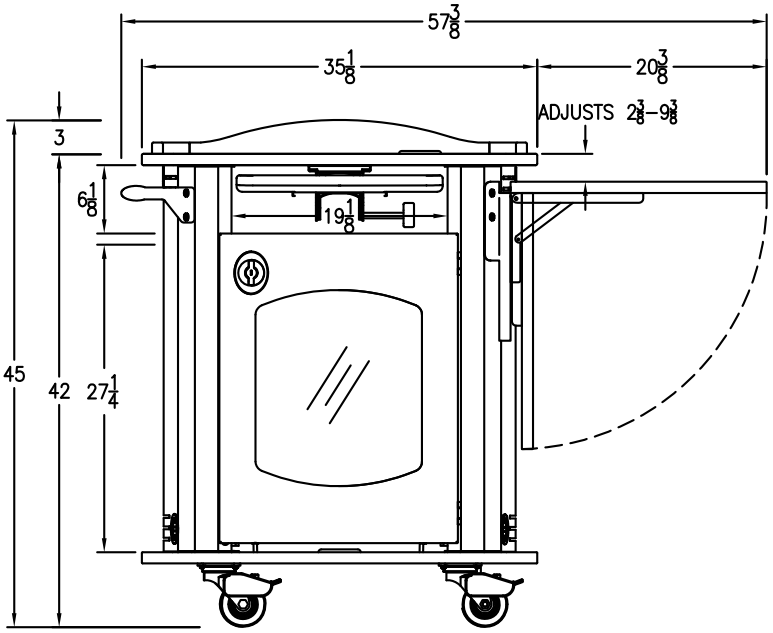
	Worksurface:	Base Options:
Standard LINK Lectern  **55116 - 42”H** **55117 - 36”H**	 Surround with one 3.25” grommet in worksurface.	 X 4 **HD** 4” Heavy-Duty locking casters
LINK Lectern with Overbridge Control Console  Note: The insert panel shown *(shaded)* is not included with the lectern or overbridge. This option needs to be ordered separately to complete the overbridge. **55284 - 42”H** **55283 - 36”H**	 Overbridge with blank insert panel for custom cutouts (see p.8 for dimensions). Overbridge is not available separately. Includes two 2” grommet holes with covers. Worksurface in front of overbridge includes two .375” holes with plugs for optional monitor arm mounting.	 X 4 **TW** 5” Twin-Wheel locking casters  **TK** Toe Kick

42” LINK Lectern
with HD casters
(shown with optional steel handle and flip-up shelf)

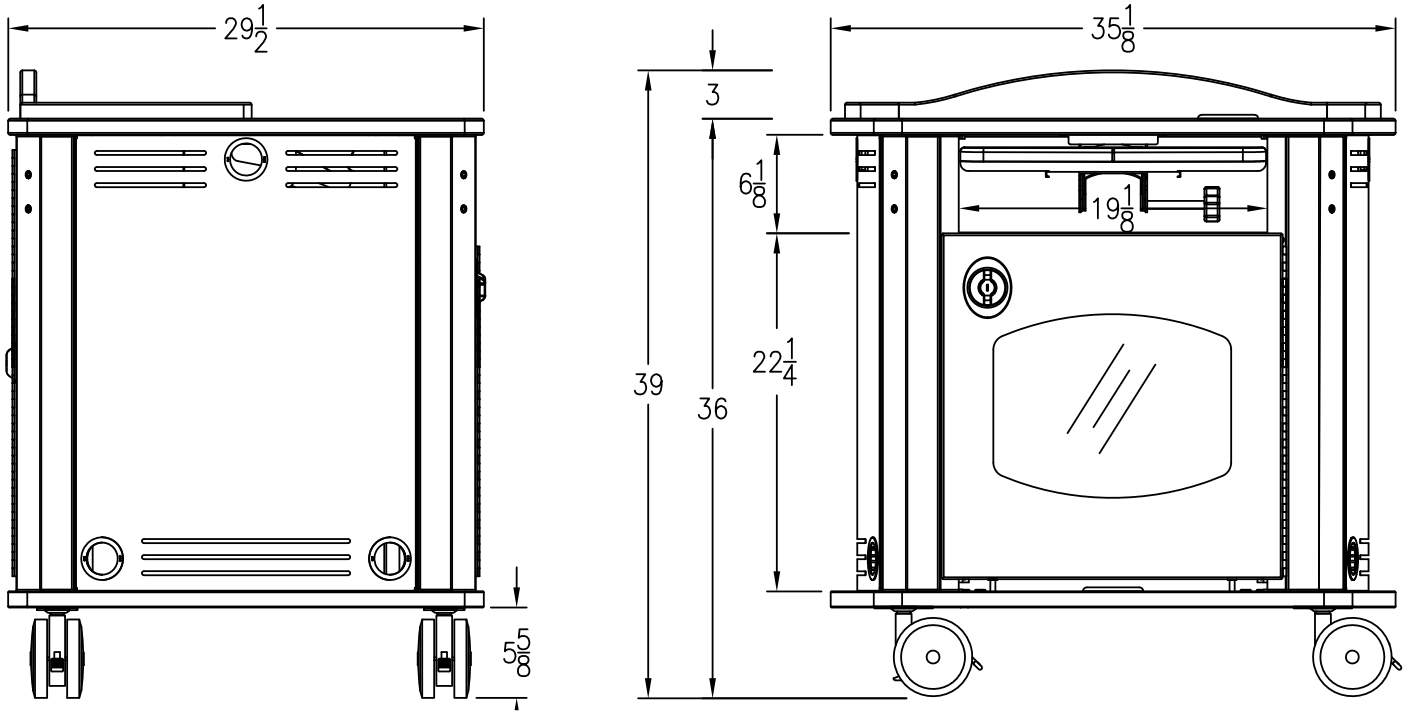




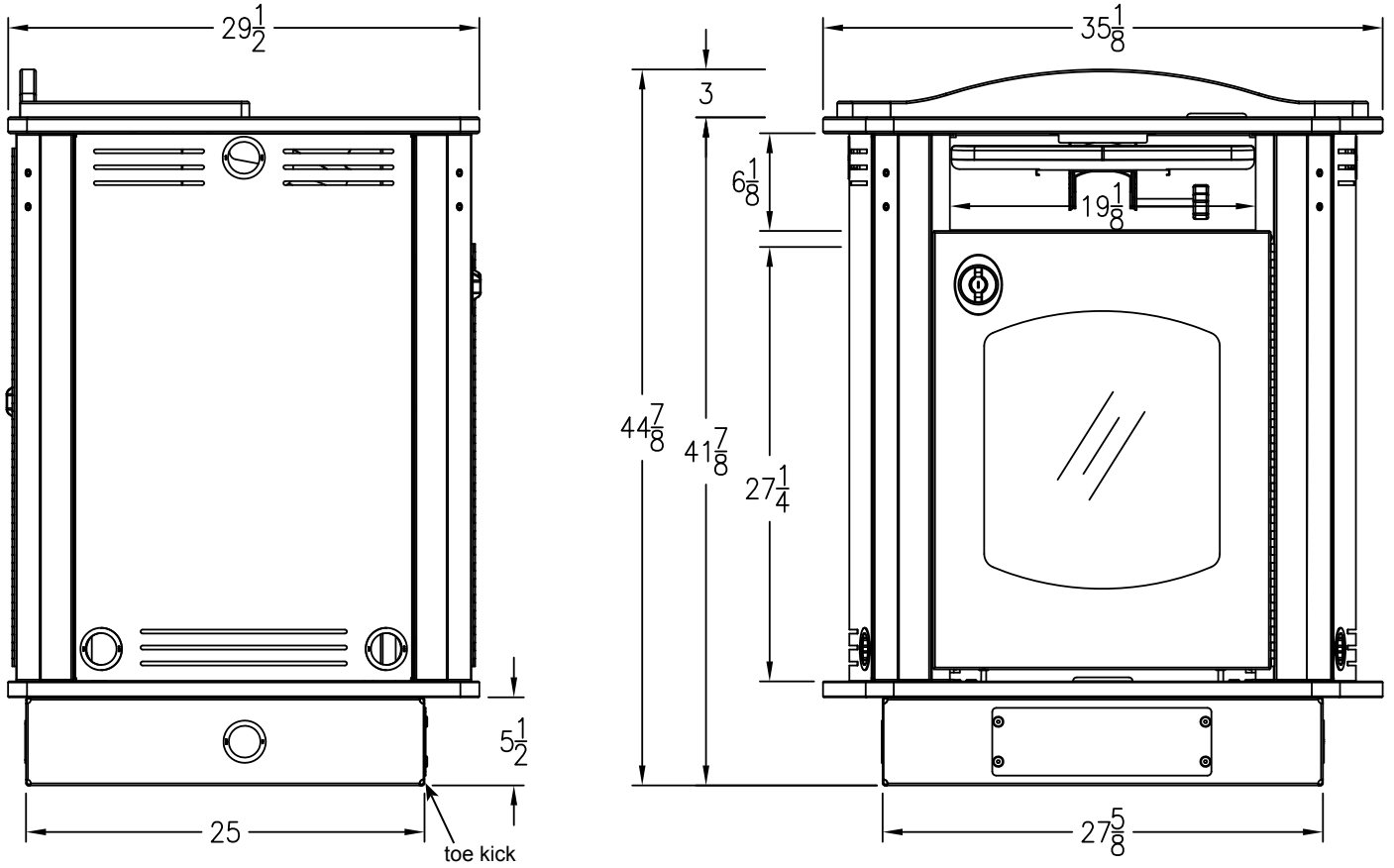




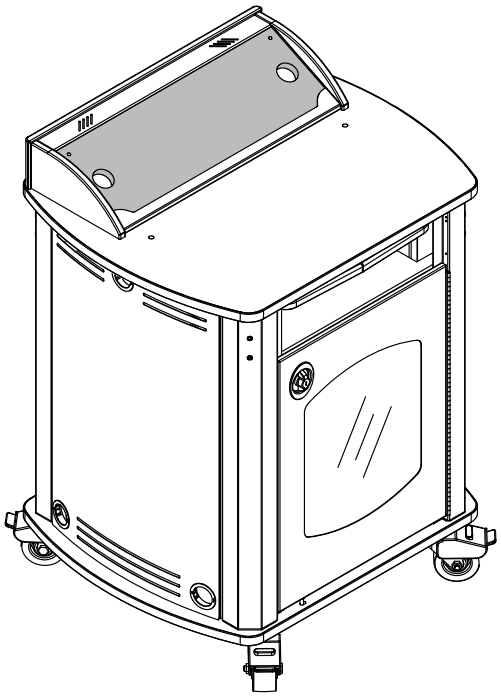
36” LINK Lectern
with TW casters

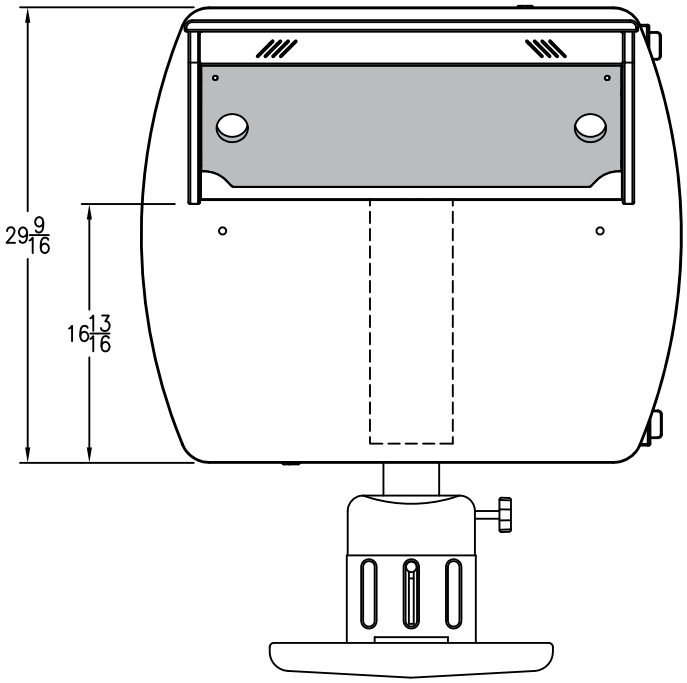


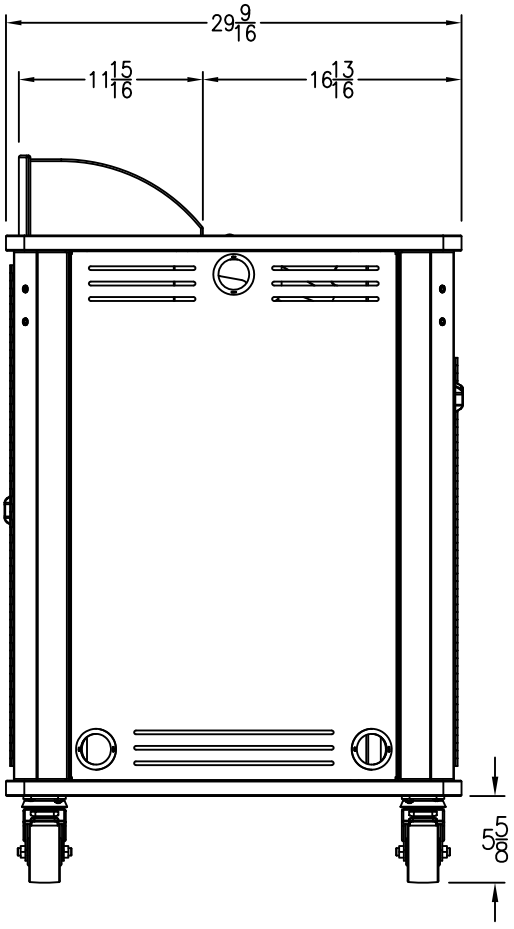
42” LINK Lectern
with Toe Kick

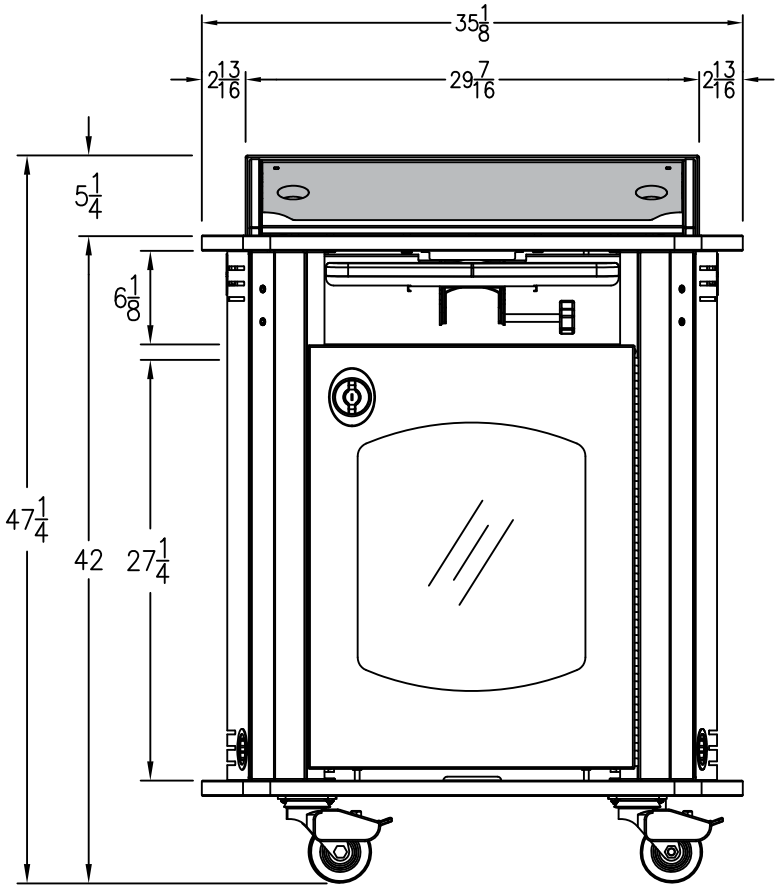


42” LINK Lectern
with Overbridge Control Console and HD casters

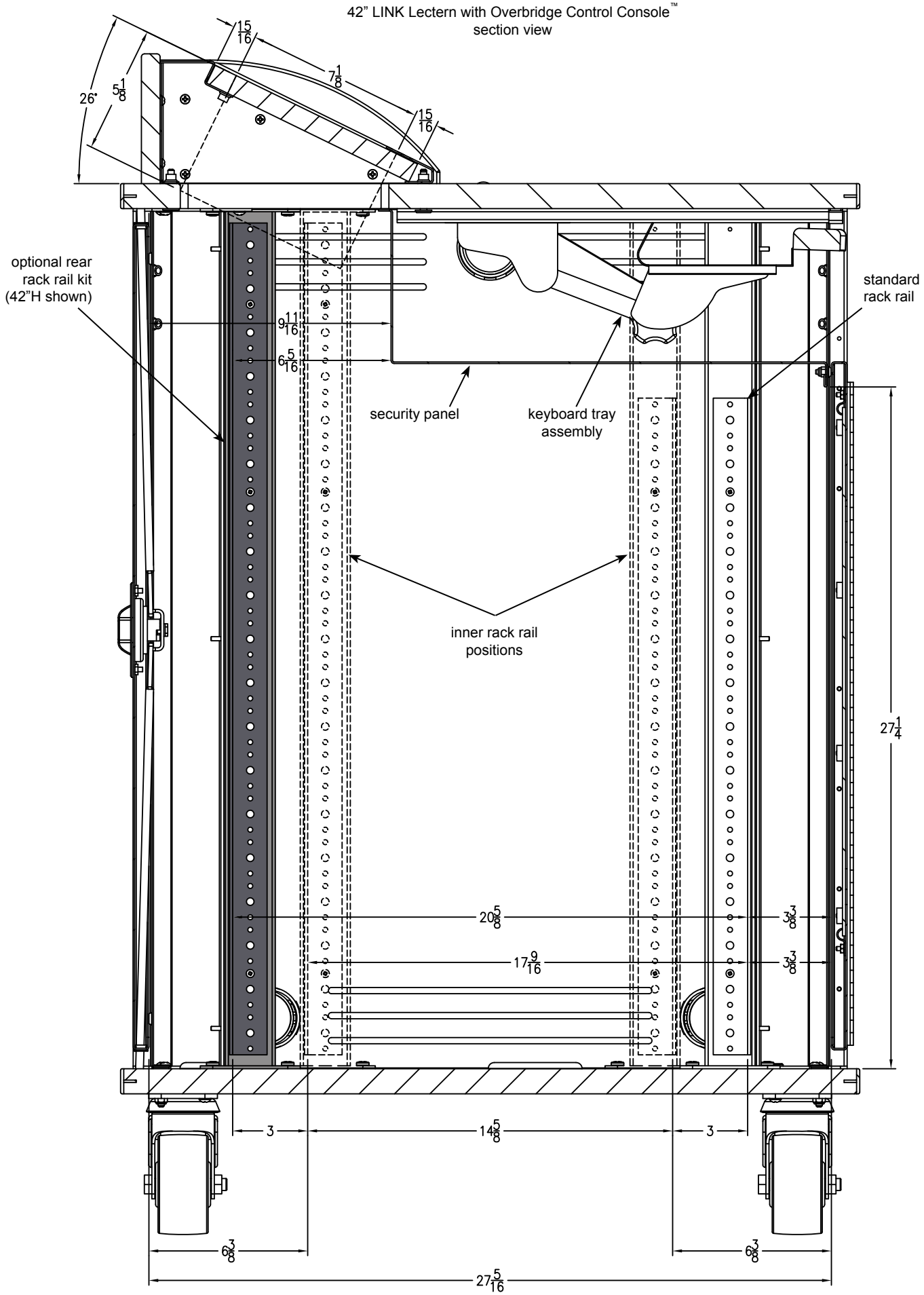




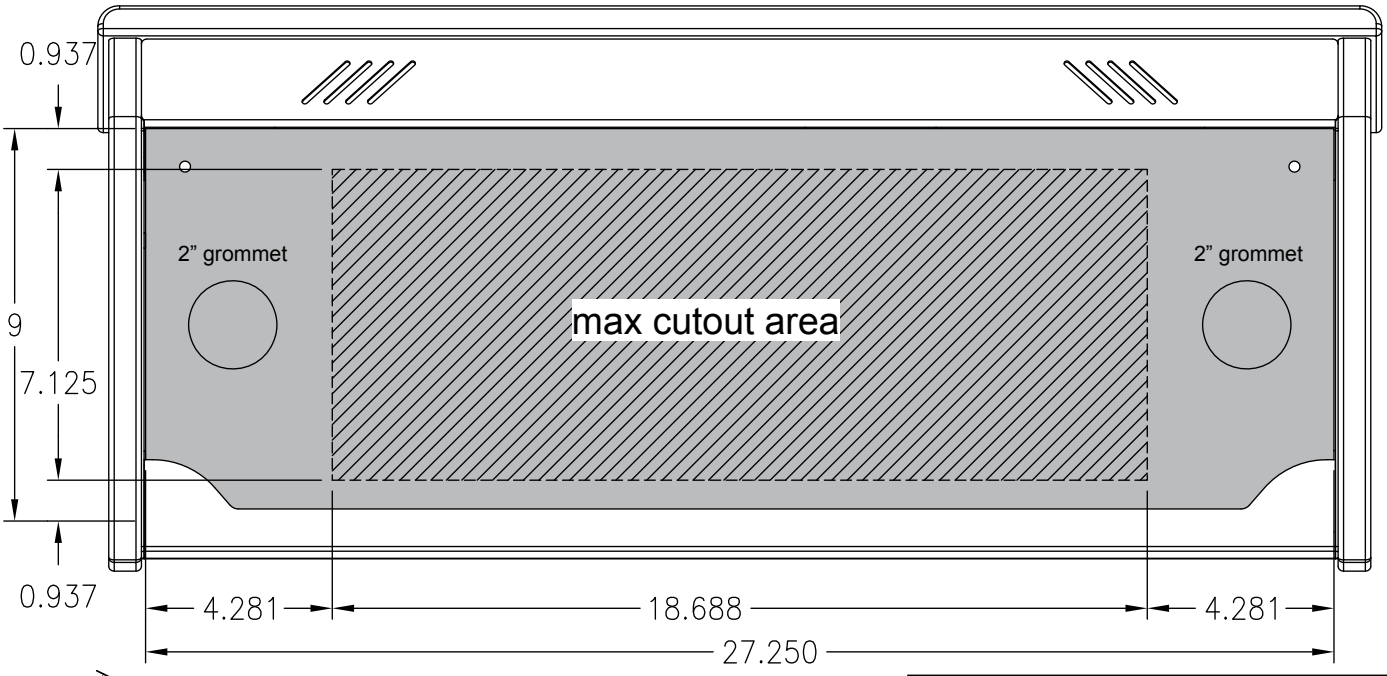




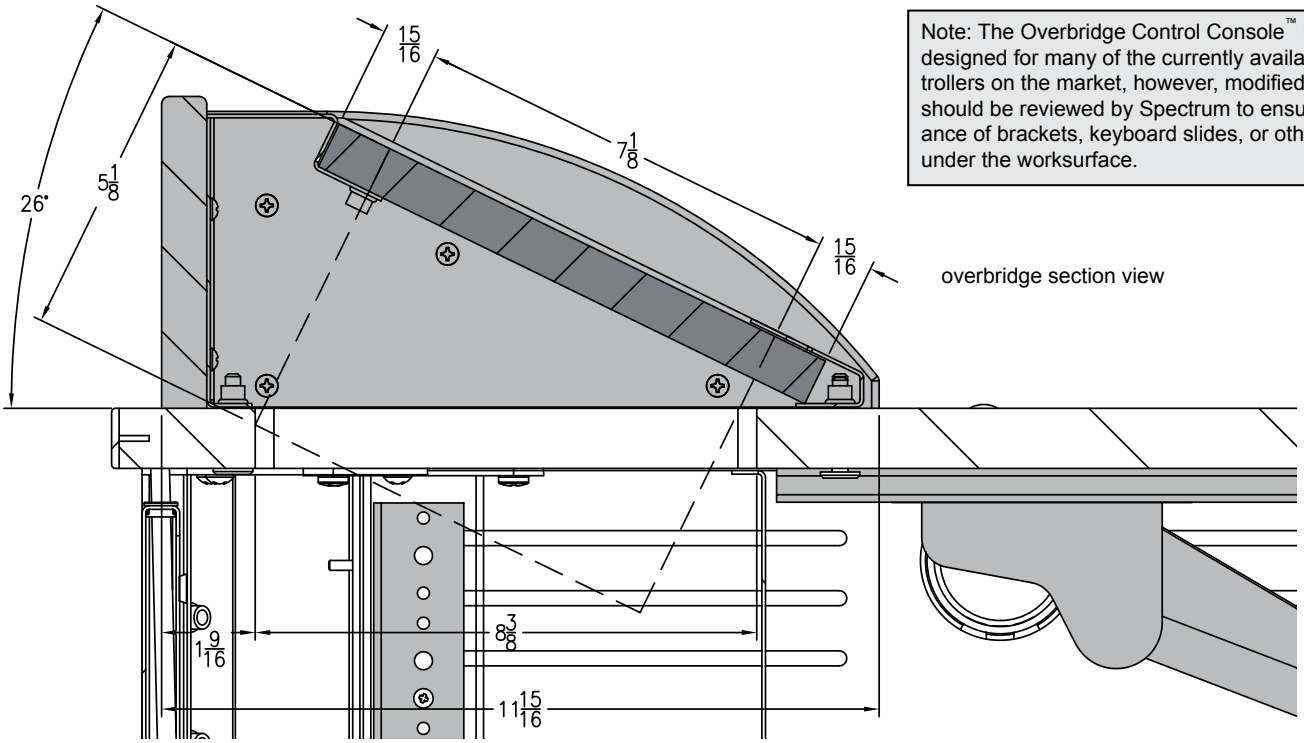
42” LINK Lectern with Overbridge Control Console™
section view



LINK Lectern overbridge panel blank
(flat view)

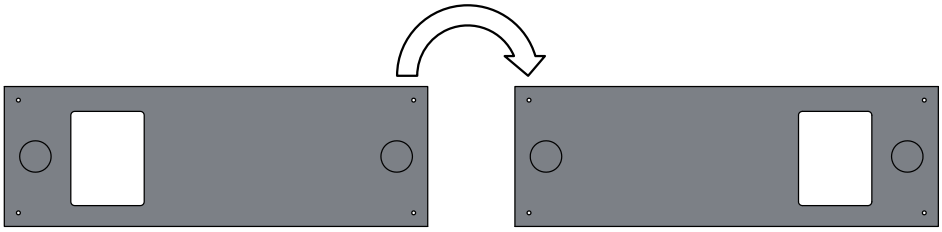


Note: The Overbridge Control Console™ has been designed for many of the currently available controllers on the market, however, modified cutouts should be reviewed by Spectrum to ensure clearance of brackets, keyboard slides, or other objects under the worksurface.

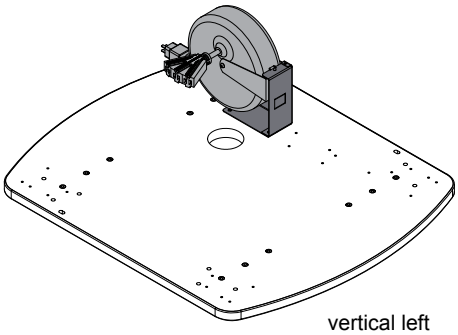


overbridge section view

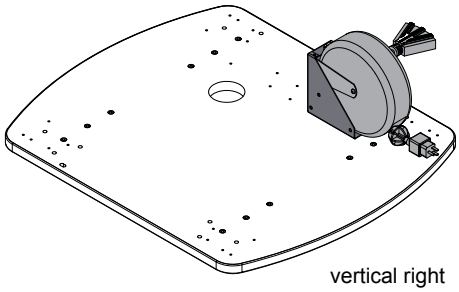
Note: The insert panel shown *(shaded)* is <u>not</u> included with the lectern or overbridge. This option needs to be ordered separately to complete the overbridge. This insert panel is horizontally symmetrical and can be easily removed, rotated, and re-installed if a cutout needs to be relocated to the opposite side of the overbridge.



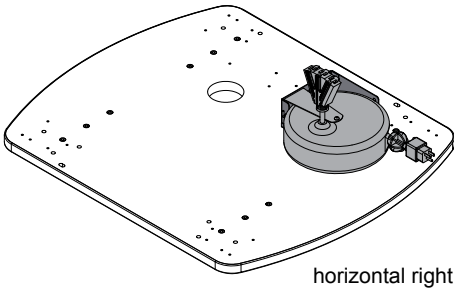
available positions on LINK base panel
for optional cord reel



vertical left
(takes up 6RU)

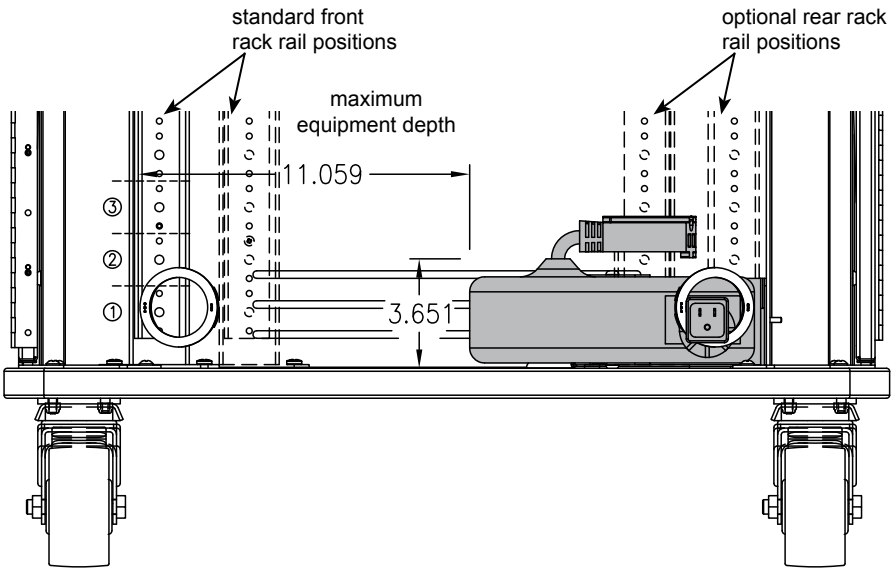


vertical right
(takes up 6RU)

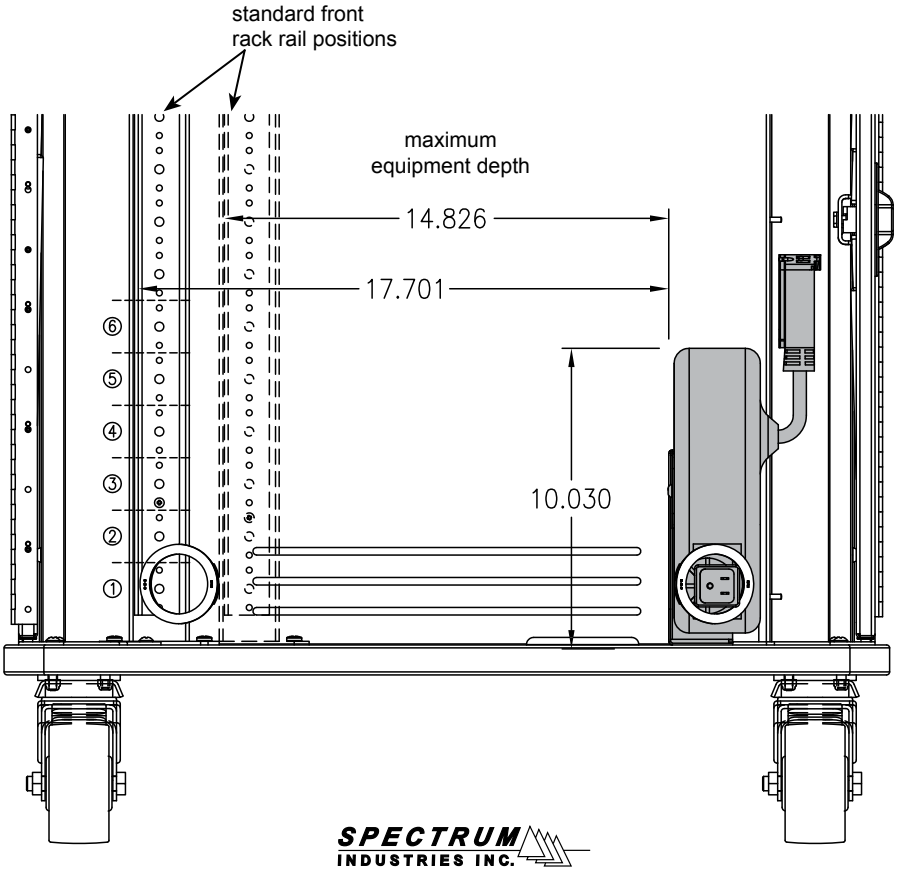


horizontal right
(takes up 3RU)

LINK with optional universal cord reel kit 99037
(available rack spacing)

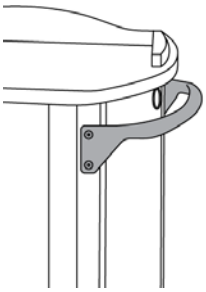


Note: The cord reel must be mounted in the flat, horizontal position when used along with the optional rear rack rail kit (55134 or 55139).

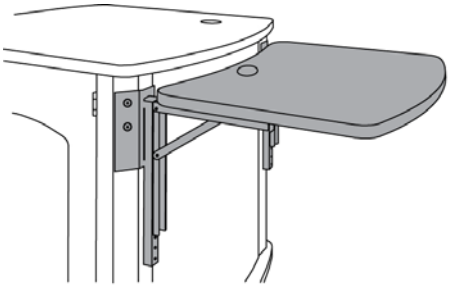


Options

Note: Flip-up document shelf and steel handle are interchangeable and can be mounted on either side.

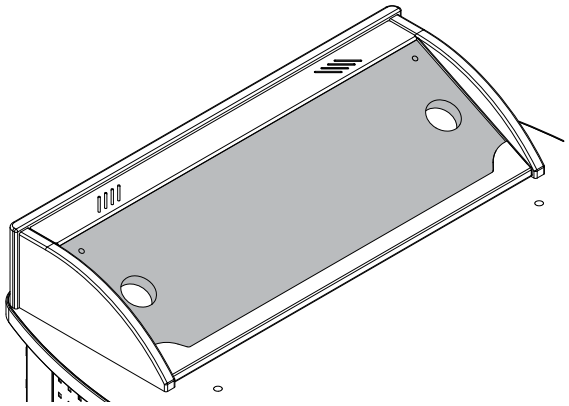


Steel Handle
27.5"W
55132

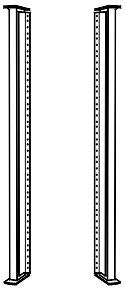


Flip-up Shelf
22.75"W x 26.25"D
(mounts on left or right side)
includes 2" grommet, adjustable-height
(50 lbs max capacity)
55140

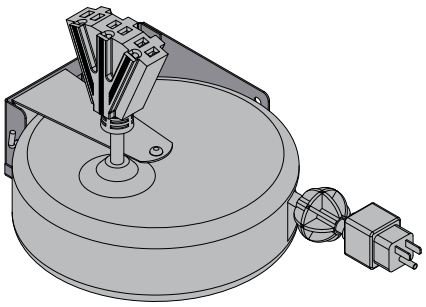
Note: Power and communication wiring for document cameras, laptop computers, and/or projectors placed on the flip-up shelf should be routed on top of the audience-side of the shelf. Use of the shelf grommet hole for wiring will result in pinching of the cords when the shelf is folded.



Overbridge Insert Panel
for overbridge version only-contact Spectrum to specify cutout size(s) and position(s)-overbridge not available separately
(includes two 2" grommets with covers)
96504 - blank panel
96504mod - panel with cutout(s)



LINK Lectern Rear Rack Rail Kit
55139 - 42" 19RU (15RU full-depth)
55134 - 36" 15RU (12RU full-depth)

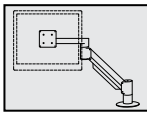


Universal Cord Reel Kit
15' [457.2 cm] retractable, 12 AWG, with breaker, includes universal mounting bracket (mounts horizontally or vertically inside lectern to base panel) 10 lbs [.45 kg]
99037

Note: When installed, the cord reel takes up rack units from the bottom of the rack rail.

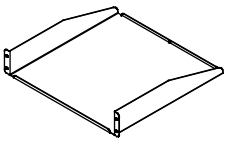
Horizontal installation: 3RU
Vertical installation: 6RU

⚠ The cord reel is intended to provide temporary access to electrical outlets for Spectrum mobile lecterns. Check local electrical codes prior to installation.

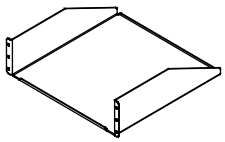


Flat Panel Monitor Arms and Tablet Mounts
(See the Spectrum website or catalog for the latest available monitor arm and tablet mounting options)

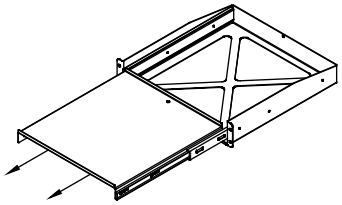
Rack-mount accessories



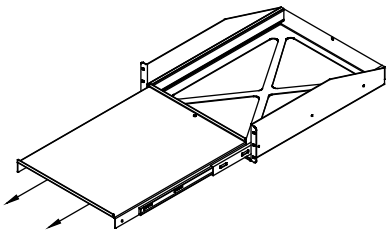
Cantilever Shelf (2RU)
17.5”W x 18”D x 3.5”H
(50 lbs max load)
97504



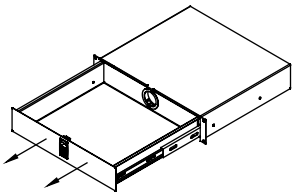
Cantilever Shelf (3RU)
17.5”W x 18”D x 5.25”H
(80 lbs max load)
97502



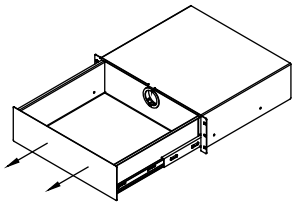
Pull-Out Shelf (2RU)
16.5”W x 17.75”D
(50 lbs max load)
97505



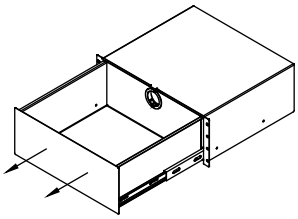
Pull-Out Shelf (3RU)
16.5”W x 21.75”D
(80 lbs max load)
97503



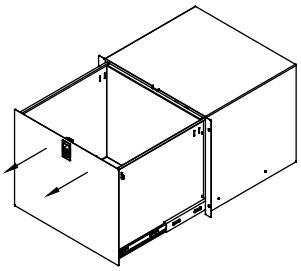
Locking Drawer (2RU)
interior dims:
15.75”W x 13.6875”D x 2.875”H
(25 lbs max load)
97514



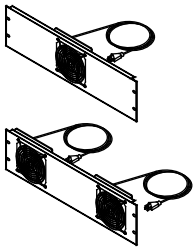
Drawer (3RU)
interior dims:
15.9375”W x 14.5”D x 5.25”H
(50 lbs max load)
97518



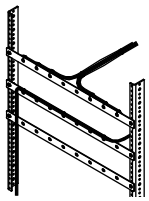
Drawer (4RU)
interior dims:
15.9375”W x 14.5”D x 7”H
(50 lbs max load)
97519



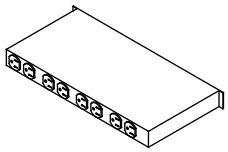
Locking File Drawer (8RU)
with file holder
interior dims:
15.75”W x 13.5625”D x
13.3125”H
(50 lbs max load)
97515



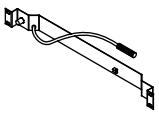
Cooling Fans (3RU)
19”W x 2”D x 5.25”H
Single Fan-97507
Double Fan-97506



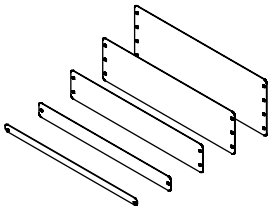
Wire Lace Kit
3 lace straps included
95517



9-Outlet Power Strip (1RU)
19”W x 9”D x 1.75”H
99021

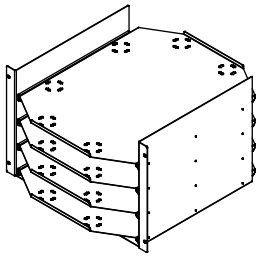


Flexible Halogen Light (1RU)
19”W x 2”D x 1.75”H
99033



Rack-Mount Blanks
(fills rack spaces where components are not needed)

97516 - (½ RU)
97510 - (1RU)
97511 - (2RU)
97512 - (3RU)
97513 - (4RU)



LT-4 Laptop Storage Unit (7RU)
(stores 4 laptops horizontally)
laptop tray dims:
16.25”W x 20.5”D x 2.1875”H
97517

Warranty

WE WILL MAKE IT RIGHT FOR YOU!

Spectrum is committed to provide complete customer satisfaction. Each of our products is manufactured from the best materials available and each product is stringently monitored throughout the production process through our P.A.C.E. program (Product Assurance to meet Customer Expectations).

We expressly warrant that Spectrum products will be of good quality and workmanship and free from defect for the period set out in the warranty table below from the date of delivery. This warranty shall not apply to defects or damage resulting from misuse, abuse, neglect, improper care, modification or repair not authorized by Spectrum, or any other cause outside the control of Spectrum. Spectrum will, at its sole option, either repair or replace the defective product.

This warranty is exclusive; no other warranty, written or oral, is expressed or implied. This warranty is given by Spectrum to Buyer and to no other person or legal entity. No Spectrum dealer, distributor, agent or employee is authorized to make any modification or addition to this warranty.

NOTWITHSTANDING ANYTHING TO THE CONTRARY, SPECTRUM WILL NOT UNDER ANY CIRCUMSTANCES BE LIABLE FOR INDIRECT OR LIQUIDATED DAMAGES, INCLUDING CONSEQUENTIAL, INCIDENTAL AND SPECIAL DAMAGES. IN NO EVENT SHALL SPECTRUM'S LIABILITY, WHETHER UNDER CONTRACT OR WARRANTY, IN TORT OR OTHERWISE, EXCEED THE PURCHASE PRICE RECEIVED BY SPECTRUM FOR THE PRODUCT AT ISSUE AND "RECALL ACTION" EXPENSES. SPECTRUM SHALL NOT BE SUBJECT TO ANY OTHER OBLIGATIONS OR LIABILITIES, WHETHER ARISING OUT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER THEORIES OF LAW, WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY SPECTRUM, OR ANY UNDERTAKINGS, ACTS OR OMISSIONS RELATING THERETO.

Our Customer Service Department is ready to provide immediate attention to any questions, comments or concerns. They are available to answer your calls Monday through Friday from 7 am to 5 pm CST. In addition your product comments or concerns are welcome via e-mail at: spectrum@spectrumfurniture.com.

Warranty Table

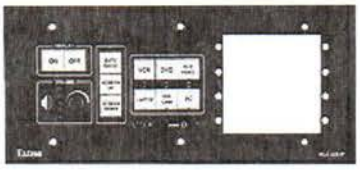
Item	Warranty Period
• Adjustable Crank/Electric Desk Legs	• 1 Year
• Flat Panel Desk Gas Cylinders	
• Adjustable Height Chair Parts – including frames, gas cylinders, wood and plastic parts, and control handles Adjustable Height Chair Parts Casters	• 7 Years
• Adjustable Height Chair Upholstery	• 2 Years
• In-Stock Upholstery	• 2 Years
• Graded-In Fabrics and Customer Owned Material	• No Warranty
• Height Adjustable Columns and Lifts	• 1 Year
• General Use Casters	
• Electrical	
• Keyboard/Mouse Trays	
• Flat Panel Monitor Arm – General Parts	• 5 Years
• Flat Panel Monitor Arm – Gas Cylinders	• 2 Years
• Computer Desk Chassis • Cart Chassis • Lectern Chassis	• 10 Years

MLC 226 IP AAP

Enhanced MediaLink Controller with Ethernet Control and AAP Opening

Key Features

- Ethernet monitoring and control
- Bidirectional RS-232 port for universal display control
- Configurable buttons
- Inactivity timer for display shutoff
- Opening for up to four single space AAP - Architectural Adapter Plates



Model	Version Description	Part #	Education Contract	MSRP
MLC 226 IP AAP	Black Faceplate	60-600-12	$893.20	$1,540.00
MLC 226 IP AAP	White Faceplate	60-600-13	$893.20	$1,540.00
MLC 226 IP AAP	RAL9010 White Faceplate	60-600-15	Retired	

The Extron **MLC 226 IP AAP** MediaLink Controller is an enhanced control panel for controlling AV equipment in any classroom or conference room. It standardizes the control interface for all systems, making display systems simple to use. Standardization also makes setup and maintenance easier to support. The MLC 226 IP AAP also includes IP Link® with GlobalViewer®, a free Web-based AV resource management and remote control software application.

The MLC 226 IP AAP MediaLink Controller offers several enhanced control capabilities including six input selection buttons, two bidirectional serial ports for display and switcher control, three unidirectional serial/IR control ports, six relays, and support for optional IRCM - Infrared Control Modules to control VCRs, DVDs, and other IR controllable equipment.

The flexible MLC 226 IP AAP acts as an extended remote control panel. It is not a switcher; instead, as a controller, it tells the display when to switch between its various inputs. Presenters with little or no training can walk into any multimedia classroom and operate the AV system. The MLC 226 IP AAP includes universal display control for a display's power, input switching, and volume control. The MLC 226 IP AAP features backlit buttons that can be custom-labeled for easy identification. Because the buttons illuminate, they are helpful for presenters in low-light environments. The input selection and room/function buttons on the MLC 226 IP AAP can be utilized for source selection and relays, as well as sending various RS-232 or IR commands.

Especially vital for high traffic areas, the MLC 226 IP AAP fits into a five-gang wall plate and includes an opening to accommodate up to four single space AAP - Architectural Adapter Plates. Blank AAPs are not included. The opening allows for integration with many of Extron's AAPs, including signal pass-through connections and IR control modules for controlling external source equipment such as DVD players and VCRs. The MLC 226 IP AAP has the same look and functionality regardless of where it is mounted: a lectern, desk, wall, rack, or wall box.

Easy System Configuration using Global Configurator Software

The MLC 226 IP AAP is designed to be configured with Extron's Global Configurator. With Global Configurator, the MLC 226 IP AAP can be configured with a wide selection of commonly used display control drivers. These RS-232 or IR drivers are essential for the MLC 226 IP AAP to effectively communicate with a display device. They enable the MLC 226 IP AAP to control basic display functions such as power, input selection, and volume adjustment. Users can create their own drivers or go to the Extron Web site to download RS-232 or IR drivers compatible with the latest and most popular display devices. Global Configurator also adds support for GlobalViewer, a free Web-based AV resource management and remote control software application specifically designed to work with products that include IP Link technology.

The MLC 226 IP AAP is designed to work with almost every Extron switcher, including the MediaLink Switchers, which are specifically designed to complement MediaLink Controllers. MediaLink Switchers are available to accommodate a variety of video, RGBHV, and audio signals while providing unique features that expand AV system capabilities. The MLC 226 IP AAP can also work as a stand-alone device to control a display without the aid of a switcher.

Ethernet Control

The MLC 226 IP AAP is equipped with Ethernet control and is designed to work in conjunction with GlobalViewer, Extron's Web-based AV resource management and remote control application. Together, these form a powerful control solution with the following features:

- **Proactive maintenance** — GlobalViewer can store and display information about connected devices like serial numbers, owner identification, maintenance history, and installed firmware versions. This centralized data can be collected and used to reduce maintenance costs and guide future purchasing decisions. For instance, a projector can be polled routinely to track lamp usage and total life time. When lamp usage reaches a predetermined number of hours, the MLC 226 IP AAP can send a report via e-mail.
- **Event scheduling** — User-defined tasks are easy to configure and schedule with GlobalViewer without the need for traditional programming. For instance, an administrator may want to turn off all projectors every Friday at close of business. The administrator can schedule the system to turn off all projectors at a specified time, and raise all projection screens that were left down.
- **Remote technical support** — Technicians can troubleshoot systems remotely because GlobalViewer provides the real-time status of connected devices. Information such as connection status, power state, and current input selection is displayed in a central location. For many connected devices, technicians can toggle power on or off, switch sources, control volume, and more without leaving their office. Many common problems can be resolved without traveling to the equipment.
- **Theft alerts** — IP Link-enabled products are always on and routinely poll their attached devices for status information. If any serially controlled device, such as a projector or display, is physically disconnected from the network, the MLC 226 IP AAP monitoring its status will know immediately. In such an event, it can send an e-mail message notifying security personnel of the possible theft. For fast action, e-mails can be sent to multiple addresses including cell phones and wireless devices.

Data Logger

Data Logger is a free Microsoft® Excel-based spreadsheet application that allows administrators to automatically gather up-to-date lamp hour and usage statistics for multiple rooms of AV equipment. It provides a simple, convenient way to retrieve AV system usage statistics into a single document for data analysis, collecting critical system information such as frequency of usage for each front panel input and current lamp hours of connected projectors.

Features

- **Ethernet monitoring and control** — An IP integration technology developed by Extron specifically engineered to meet the needs of professional AV environments that enables the MLC 226 IP AAP to be controlled and proactively monitored over a LAN, WAN, or the Internet.
- **Bidirectional RS-232 port for universal display control** — The MLC 226 IP AAP has a dedicated port for communicating with virtually any projector or flat panel display via IR or RS-232. Control drivers can be downloaded or created using the intuitive software.
- **Discrete ON and OFF display power controls** — Simplify system operations and eliminate the need for an external display remote.
- **Two Digital I/O ports** — Port 1 is selectable as a digital input or digital output and can interface with a variety of devices, such as sensors, switches, LEDs and relays. Port 2 is selectable as a digital input or power sense input. The power sense input can verify the On/Off status of a device.
- **Three IR/serial ports for one-way control of external devices**
- **RS-232 port for MediaLink Switcher support** — For controlling an optional Extron MediaLink Switcher.
- **Six internal relays for control of room functions** — Enables control of lighting, screen settings, and other device functions. The relays may be controlled through the front panel, SCP 226 AAP Secondary Control Panel, IR 402 remote, or RS-232.
- **IR learning for customized control of external sources when used with optional IRCM - Infrared Control Modules**
- **Supports IP Intercom** — The optional IPI 101 AAP and IPI 104 AAP IP Intercom Modules provide two-way, half-duplex communications over an IP network between a classroom and remote location such as a help desk.
- **Configurable buttons** — Can be set up to trigger a variety of functions such as selecting an input, sending a serial or IR command, or controlling a relay.

- **Macro capability** — Any button can be configured to execute multiple actions through the serial and IR control ports. For instance, the touch of a single button could trigger commands to turn on the display, select the display's RGB input, and select an input on the MLS - MediaLink Switcher.
- **Tri-color, backlit buttons can be custom labeled for easy identification** — Provide easy operation for presenters in low-light environments.
- **Inactivity timer for display shutoff** — Adjustable timer control provides automatic shutdown to conserve energy, prevent plasma burn-in, or extend projector lamp life.
- **Front panel security lockout** — When the security lockout mode is engaged, the MLC 226 IP AAP's front panel becomes inoperable unless a user-defined PIN number is entered. No functions of the controller or IR remote can be activated.
- **Volume control with volume indication for display or MediaLink Switcher** — Allows for convenient, centralized control without additional remotes. The five LEDs provide clear indication of the current audio setting.
- **Integrated high performance Web server** — Features a built-in Web server with memory available for storing device drivers, GlobalViewer, and custom user Web pages.
- **Removable button caps** — Make it easy to label each button to clearly indicate its function; labels can be quickly changed and don't require programming or engraving.
- **Section 508 Compliant** — Meets or exceeds accessibility standards for Electronic Information Technology. For more information about Extron's Commitment to Accessibility please see our Accessibility Page (/company/article.aspx?id=accessibility).
- **Supports the Extron Control App**
- **Optional SCP 226 Secondary Control Panel, part # 60-671-xx** — Duplicates the MLC 226 IP AAP's front panel buttons and offers a second access point within a room.
- **Opening for up to four single space AAP - Architectural Adapter Plates** — The MLC 226 IP AAP fits into a five-gang wall plate and includes an opening to accommodate up to four single space AAP - Architectural Adapter Plates. Blank AAPs are not included. The opening allows for integration with many Extron AAPs, including signal pass-through connections.
- **Available in black, white, or RAL9010 white**
- **Optional mounting kits enable wall-, lectern-, or table-mounting**
- **Includes MR 500 five-gang mud ring**
- **Highly reliable, energy-efficient external universal power supply included, replacement part #70-775-01** — Provides worldwide power compatibility, with high demonstrated reliability (/company/article.aspx?id=eps_ga) and low power consumption for reduced operating costs.

INCLUDED ACCESSORIES

• PS 1210 C	12V, 1A Power Supply on Captive Screw	70-775-01
• MR 500	Five-Gang Mud Ring - Black	70-519-52
• MR 500	Five-Gang Mud Ring - White	70-519-53

OPTIONAL ACCESSORIES

• NETXC M-M	Male to Male RJ-45 Network Crossover Cable
• CFG Cable	9-pin D Female to 2.5 mm TRS Configuration Cable
• Universal Projector Control Cables	Female 9-pin D Connector to Unterminated - Captive Screw Ready
• IR Emitter and Shield Kits	IR Emitter Kits for Extron Products With IR Output
• IRCM-DV+	Dual-Function DVD and VCR IR Control Module
• IPI 104 AAP	MLC 226 IP Four-Button IP Intercom Station
• MLS 406SA	Six Input Switcher with Stereo Audio Amplifier
• MLS 506SA	Six Input Switcher with Stereo Audio Amplifier
• CM-9BLB	Nine-Button, Four Space Control Module AAP - Architectural Adapter Plate
• SCP 226	Secondary Control Panel for MLC 226 IP and System 5 IP
• MLM 226 L	Replacement Lectern Mounting Kit for the MLC 226 IP
• MLM-WB+	Lockable Metal Wall Box with Flip-Down 4U Rack Space

• CM-3BLB	Three-Button, Double Space Control Module AAP - Architectural Adapter Plate
• IPI 104 AAP	MLC 226 IP Four-Button IP Intercom Station

COMPATIBLE SOFTWARE

• Global Configurator	Free Configuration Software for TouchLink, MediaLink, and IP Link Control Systems
• GlobalViewer Enterprise	Server-Based AV Resource Management Software
• iGVE	Mobile AV Resource Management App
• Extron Control	iPad Control App for TouchLink and MediaLink

SPECIFICATIONS

MLC 226 Series

IP Intercom

Connection type (IPI–MLC)	RJ-45 jack for CAT 5/5e/6 cable
Audio	
Frequency response	20 Hz to 3.3 kHz, ±1 dB
Audio processing	
Audio format	PCM, µ-law companded
Sampling rate	8 kHz
Sample size	16 bit, µ-law companded to 8 bit
Audio latency	Software: 30 ms through 160 ms Network: <150 ms, typical
Audio output	
Number/signal type	1 mono (for use with an optional IP Intercom)
Line level output	-10 dBV (316 mVrms), unbalanced (via 3.5 mm captive screw connector, 2 pole)
Communication	
Transport bandwidth for IPI control and audio, half duplex	80 kbps (0.08% of 100Base-T)
Ethernet protocol	IP (control), TCP (control), UDP (audio)

Control — host ports

Serial host port	2 bidirectional RS-232: 1 rear panel female 9-pin D connector (shared with digital input), 1 front panel 2.5 mm mini stereo jack
Baud rate and protocol	38400 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations	9-pin D connector: 2 = Tx, 3 = Rx, 5 = GND Mini stereo jack: tip = Tx, ring = Rx, sleeve = GND
Ethernet host port	1 female RJ-45
Ethernet data rate (for network communication)	10/100Base-T, half/full duplex with autodetect
Ethernet protocol	ARP, ICMP (ping), IP, TCP, DHCP, HTTP, SMTP, Telnet
Ethernet default settings	Link speed and duplex level = autodetected IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Default gateway = 0.0.0.0 DHCP = off
Web server	Up to 200 simultaneous sessions 7.25 MB nonvolatile user memory
Secondary control panel (SCP)	(1) 3.5 mm 5-pole direct insertion captive screw connector (shared with control module port)
Program control	Extron Global Configurator for Windows® Extron Simple Instruction Set (SIS™) Microsoft® Internet Explorer® Telnet
IR learning frequencies	30 kHz to 62 kHz
IR learning distance	2" (5.1 cm) to 12" (30.5 cm) from the front panel

Control — relay

Number/type	6 momentary or latching (configurable via software)
Connectors	(3) 3.5 mm captive screw connectors, 3 pole
Connector configuration	Groups A, B, C; each with 1 common and 2 normally open relays (default)
Contact rating	24 VDC, 1 A

Control — serial ports

Display control port	(1) 3.5 mm direct insertion captive screw connector, 3 pole, programmable for bidirectional RS-232 control (±5 V) or TTL level (0 to 5 V) infrared control up to 1 MHz

Switcher control port	(1) 3.5 mm direct insertion captive screw connector, 3 pole, for bidirectional RS-232 control (±5 V)
Baud rate and protocol (RS-232)	115200 to 300 baud (9600 baud = default); 8 (default) or 7 data bits; 1 (default) or 2 stop bits; no parity (default), or even or odd parity

Control — IR/serial ports

IR/serial control ports	(3) 3.5 mm direct insertion captive screw connectors, 2 pole Programmable: unidirectional RS-232 (±5 V) control, or TTL level (0 to 5 V) infrared control up to 1 MHz
Baud rate and protocol	115200 to 300 baud (9600 baud = default) ; 8 (default) or 7 data bits; 1 (default) or 2 stop bits; no parity (default), or even or odd parity

Digital I/O control

Number/type	1 digital input/output (configurable), 1 digital input
Connector	1 rear panel female 9-pin D connector (shared with the serial host port) (1) 3.5 mm direct insertion captive screw connector (shared with power sense port)
Pin configuration	9-pin D connector: 1 = digital input, 5 = GND; power sense = digital in, GND = GND
Digital inputs	
Input voltage range	0-12 VDC
Input impedance	28k ohms
Programmable pullup	2k ohms to +5 VDC
Threshold low to high	>2.8 VDC
Threshold high to low	<2.0 VDC
Digital output	250 mA sink from 24 VDC, maximum

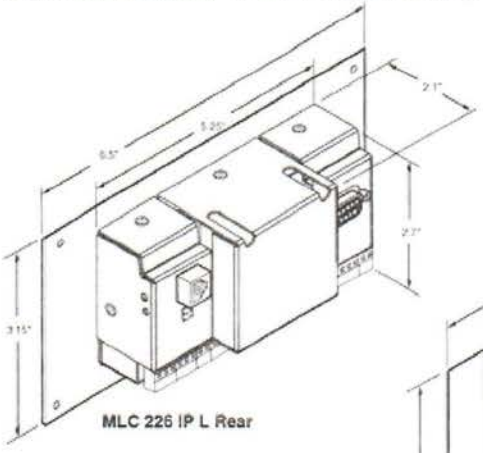
General

Power supply	External Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 1 A
Power consumption	
MLC 226 IP DV+	Includes MLC 226 IP and IRCM-DV+
Device	5.4 watts, 12 VDC
Device and power supply	6.5 watts, 100-240 VAC, 50-60 Hz
All other models	
Device	5.0 watts, 12 VDC
Device and power supply	6.4 watts, 100-240 VAC, 50-60 Hz

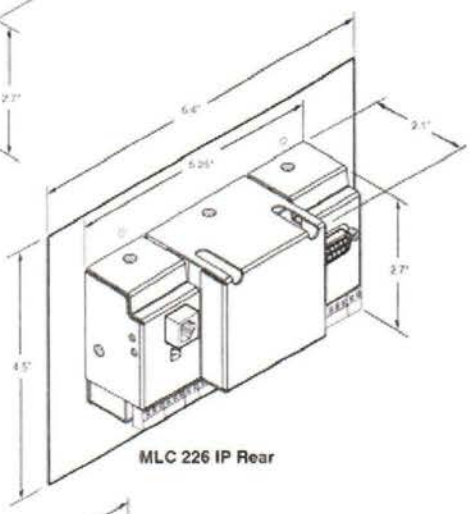
NOTE *If the MLC powers accessories (control modules, SCPs), the MLC must be powered by its own external power supply, not by a switcher. If accessories are powered separately, the MLC may be powered by an MLS or PVS switcher.*

Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, no vents
Thermal dissipation	
MLC 226 IP DV+	Includes MLC 226 IP and IRCM-DV+
Device	18.5 BTU/hr
Device and power supply	21.9 BTU/hr
All other models	
Device	17.0 BTU/hr
Device and power supply	21.8 BTU/hr
Mounting	
Rack mount	
MLC 226 IP DV+	No
All other models	Yes, with optional rack mounting kits
Furniture or wall mount	
MLC 226 IP DV+	Yes
All other models	Yes, with optional mounting kits
Enclosure type	
MLC 226 IP, MLC 226 IP DV+	High-impact plastic faceplate, metal rear enclosure
MLC 226 IP AAP, MLC 226 IP L	Metal faceplate, metal rear enclosure
Enclosure dimensions	
MLC 226 faceplate	4.5" H x 6.4" W x 0.1" D (11.4 cm H x 16.3 cm W x 0.3 cm D) (3 gang)
MLC 226 AAP, MLC 226 IP DV+ faceplates	4.5" H x 10.0" W x 0.1" D (11.4 cm H x 25.4 cm W x 0.3 cm D) (5 gang)
MLC 226 L faceplate	3.15" H x 6.5" W x 0.1" D (8.0 cm H x 16.5 cm W x 0.3 cm D)
Device	
MLC 226 IP DV+	2.75" H x 5.3" W x 2.0" D (7.0 cm H x 13.5 cm W x 5.9 cm D) and 2.7" H x 2.6" W x 0.9" D (6.9 cm H x 6.6 cm W x 2.3 cm D) (Depth excludes knob and buttons. Fits some 5 gang boxes. Allow at least 2.1" (5.3 cm) depth in the wall or furniture.)

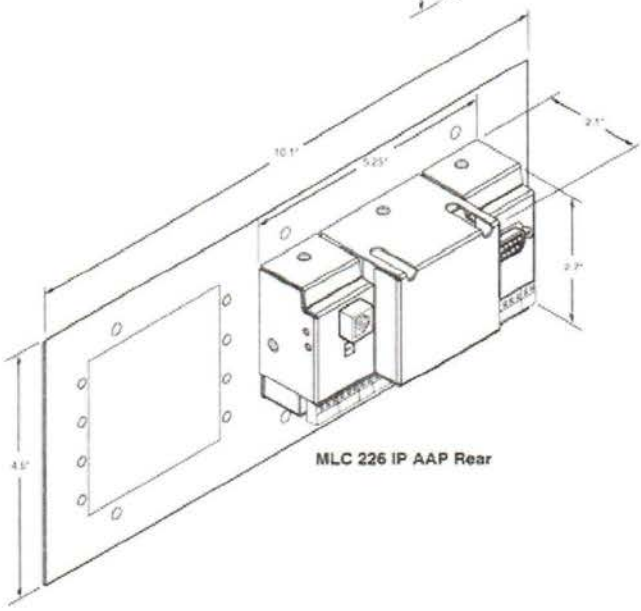
All other models	2.75" H x 5.3" W x 2.0" D (7.0 cm H x 13.5 cm W x 5.9 cm D) (Depth excludes knob and buttons. Fits some 3 gang boxes)



MLC 226 IP L Rear



MLC 226 IP Rear



MLC 226 IP AAP Rear

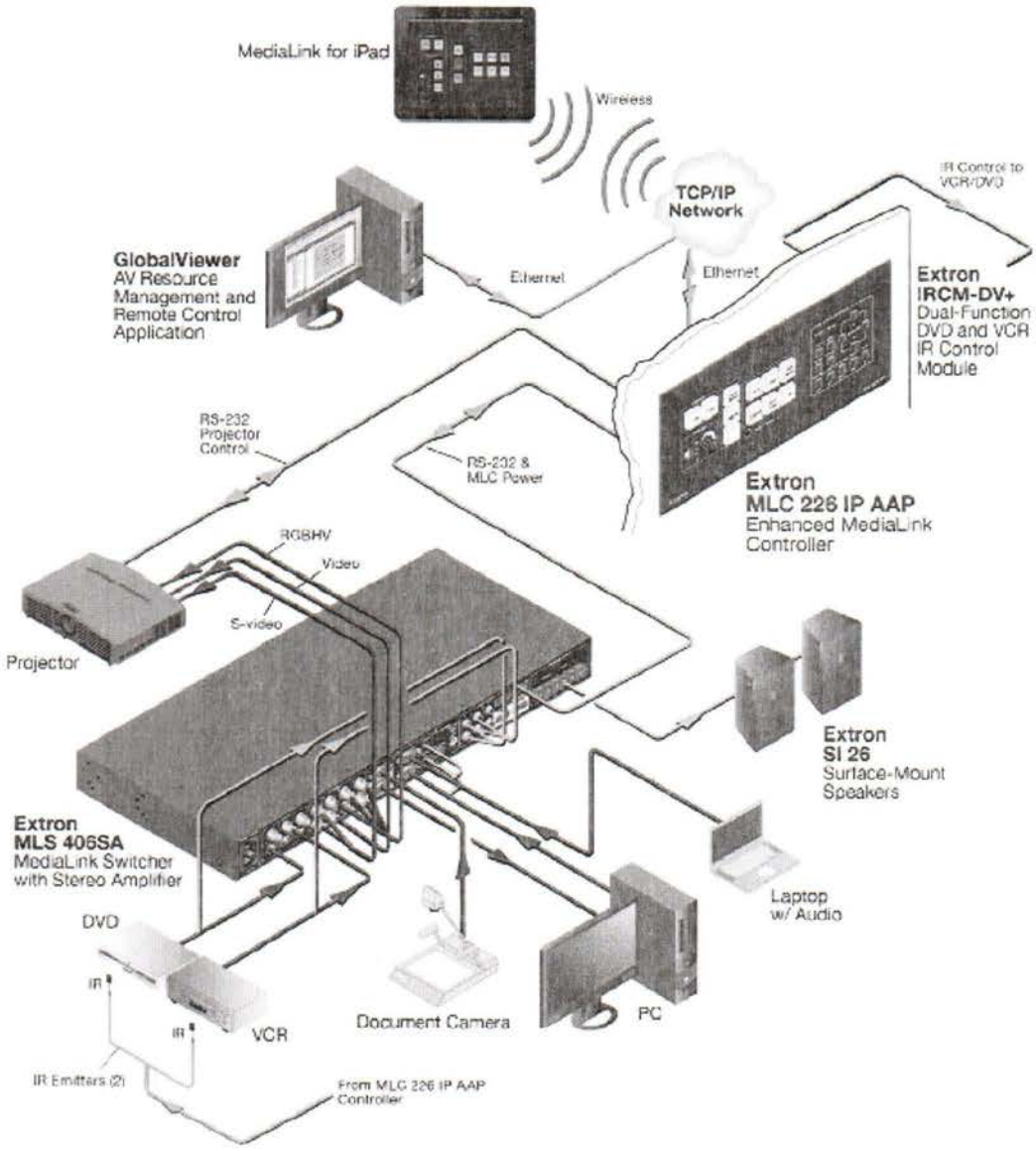
Product weight	
MLC 226 IP DV+	1.0 lbs (0.5 kg)
All other models	0.7 lbs (0.3 kg)
Shipping weight	
MLC 226 IP DV+	5 lbs (3 kg)
All other models	4 lbs (2 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	CE, C-tick, FCC Class A, VCCI, KC mark, ICES
Accessibility	Complies with the appropriate requirements of Section 508 of the Rehabilitation Act (29 U.S.C. 794d).
Warranty	3 years parts and labor

NOTE *All nominal levels are at ±10%.*

NOTE *Specifications are subject to change without notice.*

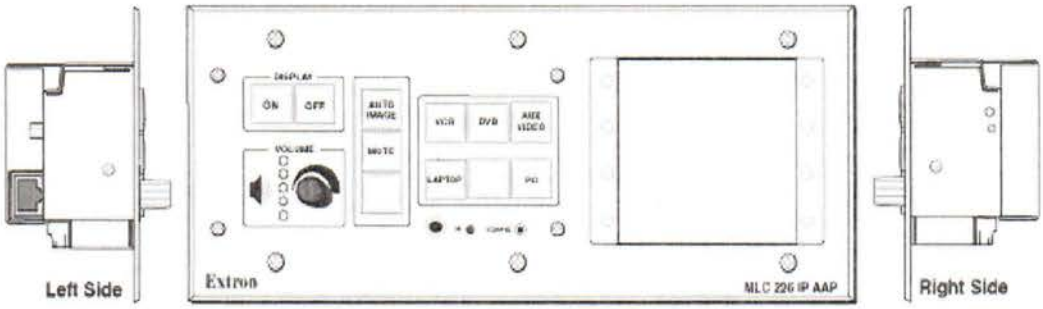
(8.0-011613-D15)

DIAGRAM

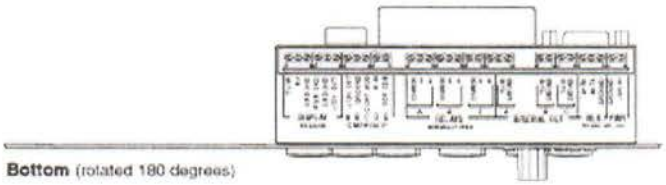


PANEL DRAWING

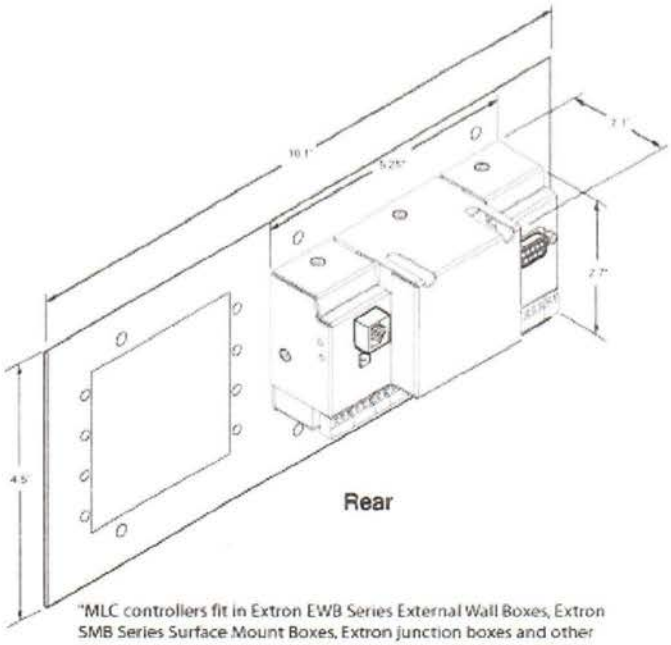
MLC 226 IP AAP



Front



Bottom (rotated 180 degrees)



Rear

"MLC controllers fit in Extron EWB Series External Wall Boxes, Extron SMB Series Surface Mount Boxes, Extron junction boxes and other brands of junction boxes. Before wiring and mounting an MLC in a non-Extron junction box, check for adequate fit and cable clearance."

WATCH VIDEO

50ft Select Active Series CL2 High Speed HDMI® Cable w/ RedMere® Technology

Product Number: **9172**

★★★★★ 54 reviews

Share this product:

Like 6 +1 0

QTY: 1 **$44.55**

Volume Pricing

Compare at $143.81

You save $99.26 (69.02%)

Add to Cart

In Stock

This item should ship today (3/17/2015) if ordered within 2 hours 55 minutes

NEED HELP? CHAT NOW

Add to Wish List

QUESTIONS? CLICK TO CHAT WITH US NOW!

Description Knowledge Base Video Customer Reviews Write a Review

Description

return to top

50ft Select Active Series CL2 High Speed HDMI® Cable w/ RedMere® Technology

A High Speed HDMI® Cable with RedMere® from Monoprice is the best way to transmit your High Speed HDMI signals over the longest distances, while using the thinnest cables possible!

RedMere technology is a breakthrough in the functionality and efficiency of HDMI cables. High Speed HDMI Cables with RedMere can reliably distribute High Speed signals to much greater distances, up to 65 feet (20 meters) at the full 10.2 Gbps data throughput, as opposed to the 25 foot distance for HDMI cables without RedMere technology. This can be done with thinner and lighter cables, which are easier to handle and route through your home theater system and which put less stress on your equipment's HDMI ports.

Normally a cable of this length would be incapable of supporting the full 10.2 Gbps High Speed HDMI data rate, even with 22 AWG conductors. However, with the RedMere chip installed in this cable, it fully supports all High Speed HDMI features with only 28 AWG conductors.

> Note that HDMI Cables with RedMere are directional. One end must be connected to the source device (e.g., Blu-ray™ player) and the other end to the sink/display (e.g., HDTV). Hooking them up backwards will not damage anything, they just won't transmit a signal.

The CL2 rating on this cable indicates that its outer jacket has been designed to burn more slowly, thereby making it safe for use inside or through the walls of residential classed buildings. The CL2 rating ensures that your cable installation complies with fire safety codes and insurance requirements.

> **TIP:** It is a good idea to test cables and connections before installing them inside a wall. If there are any issues or problems, we can help you resolve them before you spend the time, effort, and expense of installing them inside the walls.

This cable supports the following HDMI features:

- 1080p Resolution - This High Speed HDMI Cable has sufficient bandwidth to transfer 1080p video signals between 1080p rated source and sink (display) devices.
- HDMI Ethernet Channel - The HDMI Ethernet Channel provides 100 Mbps, full-duplex Ethernet traffic along the HDMI cable, allowing a wired or wireless Ethernet connection on one device to be propagated to other devices. Note that for this feature to be functional, all pieces of equipment between the Ethernet source and the destination must support the HDMI Ethernet Channel feature.
- Audio Return Channel - Normally, your HDMI cable carries audio information along with the video from a source device (e.g. blu-ray player) to the sink device

(display/television). Often times this goes through an AV receiver to drive a home theater audio system. The Audio Return Channel is primarily used to send the audio signal generated by the television when its internal tuner is used, back to the AV receiver, so that you can use your home theater audio system when watching television signals.

- 3D - 3D is the latest rage for both home theater and gaming. A High Speed HDMI Cable is capable of handling the high bandwidth requirements of 3D signals.
- 4K - The 4K resolution is 3840 x 2160 pixels @ 24 Hz, which is four times that of a 1080p display and the same resolution used by state-of-the-art Digital Cinema systems. A High Speed HDMI Cable is capable of handling the high bandwidth required for 4K support.
- Deep Color - The Deep Color feature provides a minimum of 8-bits per color element (24-bits total), providing for a total of over 16 million color variations. Other versions of Deep Color allow for up to 16-bits per element, for a total of 48-bits and over 281 trillion color variations, which really makes your video images come to life!
- x.v.Color™ - x.v.Color is a promotion name given to the products that have the capability to realize a wide color space based on the xvYCC specifications and is a trademark of Sony Corporation. Currently, only AVCHD and Playstation™ 3 devices support x.v.Color.
- High Definition Audio - HDMI supports a full range of high definition audio types, including SA-CD, DVD-Audio, DTS-HD Master Audio™, and Dolby TrueHD™.

Related Categories

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Audio & Video Converters / Switches

RedMere - High Performance HDMI Cable

HDMI Cable

Audio & Video Splitters

Audio Cables - Optical Toslink

Customers who bought this item also bought

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6ft High-quality Coaxial Audio/...
$4.00

6ft Designed for Mobile 3.5mm Ster...
$4.04

HDBaseT™ Extender Kit
$210.59

6 Zone Home Audio Multizone Contro...
$687.20

3ft 18Gbps Ultra Slim Series High ...
$13.09

Video

return to top

Projector TBD

- WUXGA
- At least 4000 lumens
- HDMI input
- built in closed captioning decoding
- good color reproduction

Da-lite advantage deluxe electrol screen HDTV 16:10 format

- at least 65”H x 104”W 123”D
- needs to have a SCB-100 RS-232 serial control board built in
- bottom of screen must fall at least 4’ from the ground
- larger room may require larger screen
- larger screen may mean ceiling height needs to be increased
- If screen is longer than 10’ wide it should be a tensioned screen

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QLX-D™ Digital Wireless

QLX-D™ Digital Wireless delivers defined, streamlined performance with transparent 24-bit digital audio. Combining professional features with simplified setup and operation, QLX-D offers outstanding wireless functionality for demanding live sound events and installations.

Transparent 24-bit digital audio captures every performance detail

- Extended 20 Hz to 20 kHz frequency range*
- Over 120 dB of dynamic range eliminates transmitter gain adjustment

Incredibly Efficient Wireless

- Wide 64 MHz tuning bandwidth**
- Up to 17 compatible systems per 6 MHz TV channel

Powerful Networking Features

- Compatible with Shure Wireless Workbench® 6 control software
- Remote control from an iOS device via ShurePlus™ Channels mobile app

Rugged, secure systems built to match demanding environments

- AES-256 encryption for secure wireless transmission
- Professional-grade all metal construction

*Microphone dependent
**Region dependent

APPLICATIONS

- Musicians
- Presenters
- Houses of Worship
- Education
- Hotels and Conference Centers

PRODUCT HIGHLIGHTS

- 24-bit Digital Audio
- 100 meter (330 ft.) Range
- Ethernet Networking
- Rechargeable Power Options

QLX-D System Specifications

RF Carrier Range	470–937.5MHz, varies by region (See Frequency Range and Ouput Power table)
Working Range	100 m (328 ft) Note: Actual range depends on RF signal absorption, reflection and interference.
RF Tuning Step Size	25 kHz, varies by region
Image Rejection	>70 dB, typical
RF Sensitivity	–97 dBm at 10^{-5} BER
Latency	<2.9 ms
Audio Frequency Response	QLXD1: 20 Hz – 20 kHz (±1 dB) QLXD2: Note: Dependent on microphone type
Audio Dynamic Range System Gain @ +10	>120 dB, A-weighted, typical
Total Harmonic Distortion –12 dBFS input, System Gain @ +10	<0.1%
System Audio Polarity	Positive pressure on microphone diaphragm produces positive voltage on pin 2 (with respect to pin 3 of XLR output) and the tip of the 6.35 mm (1/4-inch) output.
Operating Temperature Range	-18°C (0°F) to 50°C (122°F) Note: Battery characteristics may limit this range.
Storage Temperature Range	-29°C (-20°F) to 74°C (165°F) Note: Battery characteristics may limit this range.

Frequency Range

Band	Range (MHz)	Transmitter Output (mW)
G50	470 - 534	1 or 10
G51	470 - 534	1 or 10
G52	479 - 534	1 or 10
H50	534 - 598	1 or 10
H51	534 - 598	1 or 10
H52	534 - 565	1 or 10
H53	534 - 598	1 or 10
J50	572 - 636	1 or 10
J51	572 - 636	1 or 10
JB	806 - 810	1 or 10
K51	606 - 670	1 or 10
K52	606 - 670	1 or 10
L50	632 - 696	1 or 10
L51	632 - 696	1 or 10
L52	632 - 694	1 or 10
L53	632 - 714	1 or 10
P51	710 - 782	1 or 10
P52	710 - 782	1 or 10
Q51	794 - 806	1 or 10
S50	(823 - 832) (863 - 865)	1 or 10
X51	925 -937.5	1 or 10

NOTE:
This Radio equipment is intended for use in musical professional entertainment and similar applications. This Radio apparatus may be capable of operating on some frequencies not authorized in your region. Please contact your national authority to obtain information on authorized frequencies and RF power levels for wireless microphone products.

Rechargeable Power Management (sold separately)

SB900 Rechargeable Battery
QLX-D transmitters are compatible with the SB900 lithium-ion rechargeable battery, which provides up to 10 hours of continuous use and precise tracking of remaining life and charge cycle details.

SBC200 Dual Docking Recharging Station
This compact and portable unit charges batteries while in transmitters or out. Up to 4 SBC200's can be chained together to run off one power supply.

SBC800 Eight Battery Recharging Station
This compact and portable unit charges up to 8 SB900 batteries to full capacity within 3 hours, with status LEDs to indicate power levels. SB900 batteries fit securely in the charger for easy, efficient storage and transport.

Furnished Accessories

All Systems
PS23 Power supply
1/2 Wave Receiver Antenna (2)
2' BNC Cable (2)
BNC Bulkhead Adapter (2)
Rackmout Hardware kit
5' ethernet cable
2 × AA batteries (bodypack systems)
Handheld Systems
Microphone Clip (handheld systems)
Handheld Zipper Bag (bodypack systems)
Bodypack Systems
Bodypack Antenna
Bodypack Zipper Bag (bodypack systems)

Battery Runtime (at 10 mW)

Battery Type	Runtime
SB900	up to 10 hours
Alkaline	up to 9 hours

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Component Specifications

QLXD4 Digital Wireless Receiver

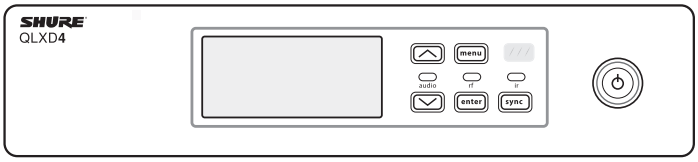
Overview

Featuring transparent 24 bit digital audio quality and incredibly efficient RF spectrum usage, the QLXD4 is a half-rack digital wireless receiver for use with QLX-D™ Digital Wireless Systems. Ideal for presentation spaces, music venues, and houses of worship, the QLXD4 combines professional features with streamlined setup and operation. Automatic scanning quickly finds open frequencies and one-touch sync quickly deploys them to transmitters. Ethernet networking enables networked channel scanning across multiple receivers and Wireless Workbench software integration for remote control of receiver settings from a PC or Mac.

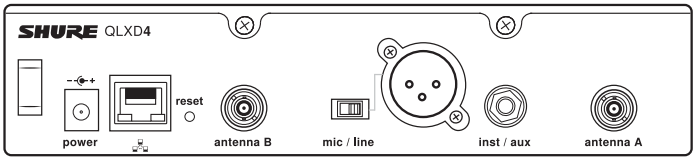
- 64 MHz tuning bandwidth (region dependent)
- More than 60 preset compatible channels per frequency band (region dependent)
- Up to 17 compatible systems per 6 MHz TV channel; 22 systems per 8 MHz channel
- Digital predictive switching diversity ensures solid RF connection
- Automatic channel scan quickly finds the cleanest frequency
- IR sync deploys selected frequency to transmitter
- Ethernet networking provides streamlined setup across multiple receivers
- Networked channel scan configures open frequencies for all connected receivers
- AES 256-bit encryption for secure wireless transmission
- Up to 60 dB of adjustable audio gain
- High-contrast LCD menu and controls with lockout feature
- Audio and RF LED meters with peak indicator
- Detachable ½ wave antennas
- Mic / line switchable XLR output
- ¼" instrument output
- Durable aluminum construction with brushed finish
- Professional-grade rack hardware included
- Compatible with Shure Wireless Workbench® 6 control software
- Remote monitoring and control from iOS devices via ShurePlus™ Channels app

Product Specifications

Dimensions	41 mm × 197 mm × 151 mm (1.63 in. × 7.75 in. × 5.94 in.), H × W × D
Weight	777 g (1.71 lbs), without antennas
Housing	Steel
Power requirements	12 V DC @ 0.4 A, supplied by external power supply (tip positive)
RF Input	
Spurious Rejection	>80 dB, typical
Connector Type	BNC
Impedance	50 Ω
Audio Output	
Gain Adjustment Range	-18 to +42 dB in 1 dB steps
Configuration	1/4" (6.35 mm): Impedance balanced (Tip=audio, Ring=no audio, Sleeve=ground) XLR: Balanced (1=ground, 2=audio +, 3=audio –)
Impedance	1/4" (6.35 mm): 100 Ω (50 Ω Unbalanced) XLR: 100 Ω
Full Scale Output	1/4" (6.35 mm): +12 dBV XLR: LINE setting= +18 dBV, MIC setting= –12 dBV
Mic/Line Switch	30 dB pad
Phantom Power Protection	1/4" (6.35 mm): Yes XLR: Yes
Networking	
Network Interface	Single Port Ethernet 10/100 Mbps
Network Addressing Capability	DHCP or Manual IP address
Maximum Ethernet Cable Length	100 m (328 ft)



QLXD4 Front Panel



QLXD4 Back Panel

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Component Specifications

QLXD2 Wireless Handheld Transmitter

Overview

Featuring transparent 24-bit digital audio quality and incredibly efficient RF spectrum usage, the QLXD2 handheld transmitter is ideal for wireless vocals in presentation spaces, music venues, and houses of worship. Easy to use, the QLXD2 quickly syncs with a wireless receiver over IR at the push of a button and maintains clear, uninterrupted signal over its entire 100 m (330 ft.) range. All metal construction ensures durability, and a wide selection of compatible microphone choices offer legendary Shure sound signatures.

- 20 Hz to 20 kHz frequency range with flat response (actual response is microphone dependent)
- Interchangeable Shure microphone capsules, including the legendary SM58®
- AES 256-bit encryption for secure transmission
- Over 120 dB of dynamic range – no transmitter gain adjustment needed
- 1, 10 mW selectable RF output power
- Up to 9 hours continuous use with 2 x AA alkaline batteries
- Optional Shure SB900 lithium ion rechargeable battery provides up to 10 hours of continuous use and reports remaining runtime in hours and minutes
- External charging contacts for docked charging
- Backlit LCD with easy to navigate menu and controls
- Selectable display mode showing group/channel, frequency, or battery runtime
- 100 meter (330 ft.) line-of-sight operating range
- Rugged metal construction
- Frequency and power lockout

Product Specifications

Mic Offset Range	0 to 21 dB (in 3 dB steps)
Battery Type	Shure SB900 Rechargeable Li-Ion or AA batteries 1.5 V
Battery Runtime @ 10 mW	Shure SB900: up to 10 hours Alkaline: up to 9 hours See Battery Runtime Chart
Dimensions	256 mm × 51 mm (10.1 in. × 2.0 in.) L × Dia.
Weight	347 g (12.2 oz.), without batteries
Housing	Machined aluminum

Audio Input

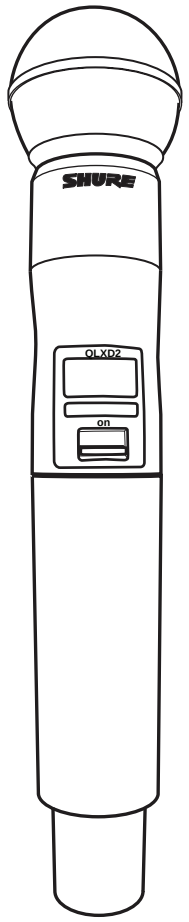
Configuration	Unbalanced
Maximum Input Level 1 kHz at 1% THD	145 dB SPL (SM58), typical Note: Dependent on microphone type

RF Output

Antenna Type	Integrated Single Band Helical
Occupied Bandwidth	<200 kHz
Modulation Type	Shure proprietary digital
Power	1 mW or 10 mW See Frequency Range and Ouput Power table, varies by region

Microphone Options

QLXD2/SM58®	Handheld Transmitter with SM58 Cartridge
QLXD2/SM86	Handheld Transmitter with SM86 Cartridge
QLXD2/SM87A	Handheld Transmitter with SM87A Cartridge
QLXD2/BETA® 58A	Handheld Transmitter with Beta 58A Cartridge
QLXD2/BETA® 87A	Handheld Transmitter with Beta 87A Cartridge
QLXD2/BETA® 87C	Handheld Transmitter with Beta 87C Cartridge
QLXD2/KSM9	Handheld Transmitter with KSM9 Cartridge
QLXD2/KSM9HS	Handheld Transmitter with KSM9HS Cartridge



QLXD2
Wireless Handheld Transmitter

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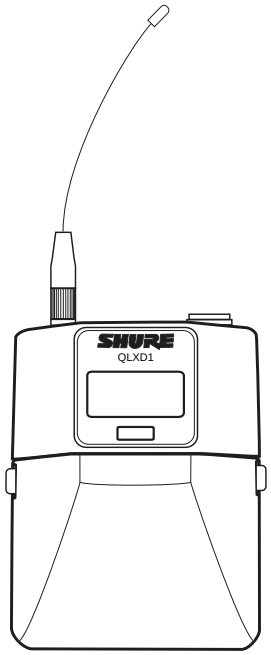
Component Specifications

QLXD1 Wireless Bodypack Transmitter

Overview

Featuring transparent 24 bit digital audio quality and incredibly efficient RF spectrum usage, the QLXD1 bodypack transmitter is ideal for wireless vocals and instruments in presentation spaces, music venues, and houses of worship. Easy to use, the QLXD1 quickly syncs with a wireless receiver over IR at the push of a button and maintains clear, uninterrupted signal over its entire 100 m (330 ft.) range. All metal construction ensures durability, and a wide selection of compatible microphone choices offer legendary Shure sound signatures..

- 20 Hz to 20 kHz frequency range with flat response (actual response is microphone dependent)
- Over 120 dB of dynamic range - no transmitter gain adjustments needed
- AES 256-bit encryption for secure transmission
- Up to 9 hours continuous use with 2 x AA alkaline batteries
- Optional Shure SB900 lithium ion rechargeable battery provides up to 10 hours of continuous use and reports remaining runtime in hours and minutes
- External charging contacts for docked charging
- Backlit LCD with easy to navigate menu and controls
- Selectable display mode showing group/channel, frequency, or battery runtime
- 100 meter (300 feet) line-of-sight operating range
- 4-Pin male mini connector (TA4M)
- Rugged metal construction
- Detachable ¼ wave antenna
- Frequency and power lockout



QLXD1
Wireless Bodypack Transmitter

Product Specifications

Mic Offset Range	0 to 21 dB (in 3 dB steps)
Battery Type	Shure SB900 Rechargeable Li-Ion or AA batteries 1.5 V
Battery Runtime @ 10 mW	Shure SB900: up to 10 hours Alkaline: up to 9 hours
Dimensions	86 mm × 65 mm × 23 mm (3.38 in. × 2.57in. × 0.92 in.) H × W × D
Weight	138 g (4.9 oz.), without batteries
Housing	Cast aluminum

Audio Input

Connector	4-pin male mini connector (TA4M)
Configuration	Unbalanced
Impedance	1 MΩ
Maximum Input Level 1 kHz at 1% THD	8.5 dBV (7.5 Vpp)
Preamplifier Equivalent Input Noise (EIN) System Gain Setting ≥ +20	–120 dBV, A-weighted, typical

RF Output

Connector	SMA
Antenna Type	1/4 wave
Impedance	50 Ω
Occupied Bandwidth	<200 kHz
Modulation Type	Shure proprietary digital
Power	1 mW or 10 mW See Frequency Range and Ouput Power table, varies by region

Microphone Options (see catalog for more)

SM35	SM35 Performance Headset Condenser Microphone
MX150/O	MX150 Subminiature Lavalier Microphone, Omnidirectional
MX150/C	MX150 Subminiature Lavalier Microphone, Cardioid
WL183	WL183 Condenser Capsule Lavalier Microphone, Omnidirectional
WL184	WL184 Condenser Capsule Lavalier Microphone, Supercardioid
WL185	WL185 Condenser Capsule Lavalier Microphone, Cardioid
WL93	WL93 Condenser Capsule Lavalier Microphone, Omnidirectional
WB98H/C	WB98H/C Condenser Capsule Instrument Clip Microphone, Cardioid
MX153B	MX153 Omnidirectional Earset Headworn Microphone, Black
MX153T	MX153 Omnidirectional Earset Headworn Microphone, Tan

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Spectrum Industries LINK lectern 42”H w/HD casters 15RU & overbridge control console #55284ID with:

- Modified OCC panel with cut outs for CC500 on left side and MLC 226 IP AAP(5-gang) on right #96504MOD
- Document Camera shelf #55140ID
- 2RU rack mount cantilever shelf #97504B
- Light monitor arm 4-11.5lbs #95512
- 42” rear rack rail option #55139
- Custom cut laser logo/printed color backer #55145

Irrigation Zone Color Codes

NEUTRAL WIRES: WHITE (#12 AWG)

NOTE: DO NOT INTERCONNECT NEUTRAL WIRES BETWEEN CONTROLLERS.

PILOT WIRES: #14 AWG, USE AS MANY AS NECESSARY

STA.#	COLOR	STA.#	COLOR
1	YELLOW	19	YELLOW W/ RED STRIPE
2	ORANGE	20	ORANGE W/ RED STRIPE
3	BLUE	21	BLUE W/ RED STRIPE
4	RED	22	BLACK W/ RED STRIPE
5	BROWN	23	BROWN W/ RED STRIPE
6	PURPLE	24	PURPLE W/ RED STRIPE
7	YELLOW W/ BLACK STRIPE	25	YELLOW W/ ORANGE STRIPE
8	ORANGE W/ BLACK STRIPE	26	RED W/ ORANGE STRIPE
9	BLUE W/ BLACK STRIPE	27	BLUE W/ ORANGE STRIPE
10	RED W/ BLACK STRIPE	28	BLACK W/ ORANGE STRIPE
11	BROWN W/ BLACK STRIPE	29	BROWN W/ ORANGE STRIPE
12	PURPLE W/ BLACK STRIPE	30	PURPLE W/ ORANGE STRIPE
13	YELLOW W/ WHITE STRIPE	31	YELLOW W/ BLUE STRIPE
14	ORANGE W/ WHITE STRIPE	32	ORANGE W/ BLUE STRIPE
15	BLUE W/ WHITE STRIPE	33	RED W/ BLUE STRIPE
16	BLACK W/ WHITE STRIPE	34	BLACK W/ BLUE STRIPE
17	BROWN W/ WHITE STRIPE	35	BROWN W/ BLUE STRIPE
18	PURPLE W/ WHITE STRIPE	36	PURPLE W/ BLUE STRIPE

NOTE: COLOR SEQUENCE SHALL BE REPEATED IF THE CONTROLLER EXCEEDS 36 STATIONS.

SPARE WIRES: BLACK (#14 AWG)

GROUND WIRES: GREEN OR BARE (#6 AWG)

CONTRACTOR SHALL TEST ALL WIRE FOR CONTINUITY, OPEN CIRCUITS, AND UNINTENTIONAL GROUNDS PRIOR TO CONNECTING TO EQUIPMENT OR BACKFILLING. THE MINIMUM INSULATION RESISTANCE TO GROUND SHALL BE 50 MEGOHMS. ANY WIRING NOT MEETING THIS REQUIREMENT SHALL BE REPLACED AT THE CONTRACTORS EXPENSE.

O

WIRING SCHEDULE

SCALE: N.T.S.

RESOLUTION 16-004
DESIGNATING CERTAIN PRODUCTS,
BRANDS, AND SERVICES

On motion of Member_____, seconded by Member_____, the following resolution is adopted:

WHEREAS, Pursuant to Public Contract Code Section 3400(b), the Grossmont-Cuyamaca Community College District ("District") may make a finding that designates certain products, things, or services by specific brand or trade name for the statutorily enumerated purposes, and

WHEREAS, the District's Board of Trustees ("Board") has reviewed the District's current facilities, general contracts, plans, and specifications in order to evaluate the District's need to establish uniform, complete and compatible maintenance service systems and technology systems Districtwide in order to facilitate the most reliable, dependable, cost efficient and feasible education for students in the District, and

WHEREAS, based on the Board's above described review and Public Contract Code Section 3400(b), the Board has determined that the District must require and specify the use of certain products, things, or services on District projects as found below, and

NOW THEREFORE BE IT RESOLVED BY THE BOARD OF TRUSTEES OF THE GROSSMONT-CUYAMACA COMMUNITY COLLEGE DISTRICT AS FOLLOWS:

Section 1. The District, pursuant to Public Contract Code Section 3400(b), intends to establish uniform, complete and compatible control, management and monitoring systems, furniture, equipment, materials and products Districtwide in order to facilitate the most reliable, dependable, cost efficient development of District facilities and programmatic activity.

Section 2. The District has found compatibility, cost, and utility of other available systems to be problematic and believes it is necessary to establish complete District systems to avoid incompatibility issues, as well as durability and reliability issues, and costs associated with experimenting, replacing incompatible and useless system parts/components, and to avoid the waste of District funds associated with addressing incompatible components, equipment, materials, and products.

Section 3. The District and its consultants have undertaken considerable research into the products/brands utilized by the said systems, which would properly serve the District's administrative and educational purposes.

Section 4. The District's existing facilities already utilize specific products/brands relating to the said systems and furniture, equipment, materials and products. The District's findings contained herein are made to match those existing systems, furniture, equipment, materials and products currently in the District, and to avoid the cost of designing and engineering systems and components that may not be compatible, could never be made compatible or could only be made compatible after expending considerable District resources and funds.

Section 5. Pursuant to Public Contract Code Section 3400(b), the District's Governing Board desires to designate several proprietary systems and products for the District's use in order to match items in existing projects to establish one complete Districtwide system, avoiding incompatibility of products and systems.

Section 6. In addition to the need to establish a Districtwide system to ensure the compatibility of existing parts to new District parts, the District, pursuant to Public Contract Code Section 3400(b), also intends to establish uniform standards for the listed product and system for the following reasons:

RESOLUTION 16-004
DESIGNATING CERTAIN PRODUCTS,
BRANDS, AND SERVICES

A. **Access and Security Systems: Keys, Doors & Door Hardware** – *MILLENIUM*; *BOSCH; SCHLAGE Hardware "C" Series* (with Schlage core for Grossmont College and Yale core for Cuyamaca College) products are necessary for the District's maintenance system because:

1. The access and security systems implementation will allow for maximum integrity of the system by minimizing points of failure.

2. The access and key products assist in the safety and security of the District's students and staff by stopping the duplication of keys by outside vendors.

3. These products and parts are readily available from a variety of sources enabling the District to quickly and easily acquire necessary parts.

4. These products enable Maintenance to stock basic replacement parts for faster repairs.

5. These products limit the number of parts Maintenance must stock.

6. These products are more durable and have a longer useful life than comparable products/brands.

7. These companies are well established in the industry and have been in business for many years, so new and replacement products are expected to be readily available in the future.

B. **Energy Management System for Existing Buildings Only** – *ALERTON BACtalk* for minor repairs/renovations at Cuyamaca College and *AUTOMATED LOGIC CONTROL* for minor repairs/renovations at Grossmont College are necessary for the District's maintenance service system because:

1. These products limit the need for additional staff training in operation and repairs of the existing mechanical systems.

2. These companies' products are compatible with the District's current systems, as each manufacturer requires an inventory of parts for that particular manufacturer. Products from other manufacturers are not interchangeable. Thus, any new manufacturer(s) would add to the District's cost of inventory.

3. Each manufacturer also requires a separate host computer system for programming and setting of temperature control.

C. **Lighting Management System and Lighting Fixtures** – *WattStopper System, Primex Master Clock System* and additional manufacturers described below are necessary for the District's maintenance system because:

1. The WattStopper lighting system is compatible and integratable to the existing system already in place, is efficient, and is contributing to security, cost savings and easy maintenance.

2. The Primex clock system has been tested on site and proven to be accurate. It will synchronize time for all campus clocks via satellite. Its cost is minimal. Dramatic savings are realized due to the elimination of direct wiring for each new building.

3. These products ensure reliable availability of parts enabling the District to quickly and easily acquire necessary parts.

4. They enable Maintenance to stock basic replacement parts for faster repairs.

5. They allow the District to limit the number of parts Maintenance must stock.

6. They allow the District to limit the number and types of bulbs that must be purchased and stocked by Custodial Services.

7. These manufacturers allow the District to limit the possibility of having the wrong bulb used in the wrong fixture, which decreases the number of fixture failures and replacements.

8. Accordingly, the District specifies the following lighting and clock products and components:

    a. All retrofit exterior street parking lot and pedestrian walkway light poles to be "Kim" with "Cree" light fixtures to match existing.

    b. All new exterior street, parking lot and pedestrian walkway lights to be "Kim".

    c. Time Clock – PRIMEX wireless; 12.5 in black face, part #14155, with Transmitter part #14000 with GPS receiver.

D. **Irrigation Systems** – *Calsense Irrigation System* products with ET2000e Controller are necessary for the District's maintenance system because:

1. This system will provide maintenance staff with the ability to centrally control all aspects of irrigation.

2. Other irrigation systems and their parts/components will NOT interface with Calsense.

3. Each manufacturer of other irrigation system parts/components would require an additional, separate host computer system to operate.

4. Ongoing technical support of the system will be provided at no charge for the lifetime of the system.

E. **Fire Alarm Systems** – *Simplex Grinnell* products with ESP Controller are necessary for the Fire Alarm, Public Notification and District's maintenance system because:

1. This system and its component parts have already been installed Districtwide and are monitored by Campus and Parking Services at the Grossmont campus.

2. The backbone network is in place and is a self-monitoring system.

3. This system is integrated into our Districtwide fire alarm monitoring system, is fully functional at both campuses, and it integrates both campuses, which is a unique feature, enhancing safety and control.

4. Introducing another product for new or renovated buildings will greatly reduce the build-in capabilities of the system.

5. Simplex Grinnell is prepared to commit products at a discount rate under future written agreements, as well as technical support.

6. Replacement of parts would be more cost effective for the maintenance staff.

7. Maintenance staff is fully trained on this system.

F. **Low Voltage Management and Integration System** – *Bosch System 3T* is necessary for the District's maintenance system because:

1. The Bosch System shall be used for the integration of the *Millenium* access control and *Bosch* security systems. The Bosch system has the ability to integrate several other campus and District systems (lighting control, fire alarm, HVAC, video surveillance, etc.), but this feature shall remain optional for future implementation.

G. **Chiller Equipment** - *Carrier* products are necessary for Cuyamaca College's maintenance system, and *York* products are necessary for Grossmont College's maintenance system because:

1. Existing chillers in the Central Power Plant at Cuyamaca College are Carrier products and existing chillers in the Central Power Plant at Grossmont College are York products; as additional chiller capacity is identified, it is essential that the equipment operation be fully coordinated and integrated between all of the chillers.

2. There are existing contracts for maintenance with Carrier and York.

3. These products enable Maintenance to stock basic replacement parts for faster repairs.

4. Replacement of parts would be more cost effective for the maintenance staff.

5. The Carrier and York chillers and related equipment are already in place, are efficient, and are contributing to a reliable and energy efficient cooling system and easy maintenance.

6. Maintenance staff is fully trained on the Carrier and York products.

H. **Parking Permit Equipment** - *LUKE Parking Permit Machines* are necessary for the District's support of students and enforcement of the District's parking regulations because:

1. The LUKE multi-space pay station has multiple payment options from coins, bills, credit cards, smart cards, and cell phone payment, providing more convenient support for students.

2. LUKE also has a large, full-color screen that's easy to read, multiple language support, network capability, real-time credit-card authorization, and remote rate configuration, providing more convenient support for students.

3. The LUKE multi-space pay station offers more payment options, better revenue opportunities, and lower cost of ownership for the District, providing maximization of District revenue.

4. The machines are easy to maintain, and by providing a standard of parking pass machines it will facilitate repairs as replacement parts would be universal districtwide.

5. Standardization of machines will provide a consistent user-friendly interface between both campuses.

RESOLUTION 16-004
DESIGNATING CERTAIN PRODUCTS,
BRANDS, AND SERVICES

I. **Furniture –** *Krueger International and Steelcase* lines of furniture are necessary for furniture needs for office locations only at the District and Colleges' to support facilities, students, and curriculum because:

1. An extensive evaluation was performed that included the Director of Facilities, Faculty and Staff at both Colleges as well as the District to review various furniture offerings in an effort to standardize the District's furniture purchases with both new and existing buildings Districtwide.

2. The manufacturers of these products are well established in the industry and have been in business for many years, so new and replacement products are expected to be readily available in the future.

3. Standardization of these products allows for high volume discount pricing from the manufacturers, resulting in cost savings to the District.

4. Standardization of these products will streamline the interior design and ordering process for new building purchases and remodeling projects.

5. These products enable Campus Facilities & Operations to stock basic replacement parts for faster repairs.

6. These products are already in place and have proven to be high quality and durable products.

J. **Uninterruptible Power Supply –** *APC* products are necessary for the District's required needs to support facilities, students, and curriculum because:

1. These systems are fully integrated, operational, and functional at both campuses, in all three computer room locations (District, Grossmont, Cuyamaca).

2. The staff is fully trained on these systems, which greatly reduces the need for additional staff training in operations and repairs.

3. These systems are fully integrated with the Districtwide monitoring system and are centrally monitored by the Information Systems office.

4. Introducing other products would greatly reduce the integrated features and diminish overall staff effectiveness and efficiency.

5. Enables a single source of contact for maintenance and support – also enhancing staff efficiency and response time.

6. These systems are compatible with the District's computer and networking systems.

7. APC is well established in the industry and used at many other local community college campuses.

RESOLUTION 16-004
DESIGNATING CERTAIN PRODUCTS,
BRANDS, AND SERVICES

Section 7: The designation of certain products/brands contained herein shall be effective until the District determines the certain products/brands contained herein need to be revised. At that time, a committee designated by District staff will review the products/brands and recommend to the Governing Board either re-adoption or discontinued use of the designated products/brands. The Governing Board shall then consider the committee's recommendations and re-approve or discontinue the designation of the products/brands contained herein and/or approve additional/replacement products/brands as determined by the Governing Board.

PASSED AND ADOPTED by the Governing Board of the Grossmont-Cuyamaca Community College District of San Diego County, California, this 20th day of October, 2015, by the following vote:

AYES:

NAYS:

ABSENT:

STATE OF CALIFORNIA)

COUNTY OF SAN DIEGO)

I, Greg Barr, Clerk of the Governing Board, do hereby certify that the foregoing is a full, true and correct copy of a resolution duly passed and adopted by said Board at the regularly called and conducted meeting held on said date.

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Clerk of the Governing Board