Cerritos College

Campus Standards Handbook

2013v.1 Update

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Campus Standards Handbook

Contents: Page:

Table of Contents i-ii

Introduction

- Handbook Purpose and Use 1
- Section I - Overview 2
- Section II - Campus Design Guidelines 2
- Section III - Specific Design Criteria 2
- Section IV - Specifications 3
- Appendixes 3

Section I – Overview

- Cerritos College Introduction 1
- Planning and Design Principles 4
- Administrative Procedures 9

Section II – Campus Design Guidelines

- Introduction 1
- Building Design Guidelines 3
- Site Design Guidelines 18
- Campus Wayfinding Signage Design Guidelines 41

Section III – Specific Design Criteria

- Specific Room Design Criteria and Furnishings 1
- Space Inventory 24
- Structural Systems and Considerations 26
- Plumbing System Design 30
- Fire Suppression Systems 32
- Fire Alarm and Mass Notification Systems 34
- HVAC System Design 35
- Energy Management System Design 39
- Electrical Systems Design 40
- Telecommunications System Design 44
- Technology Equipment Rooms 57
- Sound Isolation and Acoustical Treatments 63

Section IV – Specifications

- Master Outline Specifications 1 – 41

Appendix A

- Interior / Exterior Materials & Finishes 1
- Washroom Accessories 5
- Plumbing Fixtures 23
- Lighting Fixtures 52
- HVAC Equipment 99
- Furniture, Fixtures & Equipment (FF&E) 100
- Campus Wayfinding Signage Specifications 101

Appendix B

- Cerritos College 2011 Facilities Master Plan – *Section II, Page 2*
- Cerritos College Signage Standard – *Section II, Page 13*
- Wallace Laboratories – Soil, Plant & Water Analyses – *Section II, Page 30*
- Cerritos College Tree, Shrub, Ground Cover & Vine List Matrices – *Section II, Page 30*
- Site Furnshings – *Section II, Page 32*
  (Benches, Trash Receptacles, Bicycle Racks, Pedestrian Transit Shelters)
- Exterior Luminaires – *Section II, Page 34*
  (Parking Lot Lighting, Area Lighting – Accent Lighting)
- Cerritos College Media Services – Media Support Requirements for New Construction
  Section III, Pages 1-17
- Cerritos College Information Technology – Network Infrastructure Support Requirements for New Construction
  Section III, Pages 1-17, 44
- Door Hardware Catalog Cuts for Cerritos College – *Section V, Page 17*

Introduction

- **Handbook Purpose and Use**
- **Section I – Overview**
- **Section II – Campus Design Guidelines**
- **Section III – Specific Design Criteria**
- **Section IV – Specifications**
- **Appendixes**

Introduction

With their support of a recent bond measure for $210 million, and the second bond measure G for $350 million, the Cerritos community has overwhelmingly endorsed a new direction for Cerritos Community College. Their approval of the Facilities Master Plan has empowered the District to realize multiple goals and objectives. The improvement of campus buildings and aging infrastructure will allow the College to fulfill its commitment to provide a high-quality, academically rigorous instruction responsive to the diversity represented in the student body and served by Cerritos Community College District.

Facilities Master Plan Executive Summary

"The 2011 Facilities Master Plan for Cerritos College has been developed to serve as a guide for future development. It provides a quantitative and qualitative description of the College's strategy to support the educational program needs, address the long range forecast for enrollment, and maximize funding opportunities. It is guided by the 2010-2016 Educational Master Plan (EMP), which serves as the foundation for recommendations regarding facilities. The plan provides a framework for future development, including the placement of new facilities, the renovation of existing facilities, and the improvement of a number of campus wide sites." Refer to the following link for the 2011 Facilities Master Plan for Cerritos College:

http://cms.cerritos.edu/business-services/2011-facilities-master-plan.htm

Handbook Purpose and Use

The purpose of the Campus Standards Handbook is to serve as a guiding reference for architects, engineers, consultants, college representatives and others. This handbook will act to inform decisions and design directions as the Master Plan is implemented. The focus is to improve and maintain the design of the existing campus through adherence to certain features, which are described throughout the handbook. The design of engineered systems will respond to standards set forth in the handbook with the objective of compatible infrastructure components working together in easily maintainable configurations.

The Campus Standards Handbook is divided into four sections.

Section I – Overview
Section II – Campus Design Guidelines
Section III – Specific Design Criteria
Section IV – Specifications
Appendixes

The document's organizational description follows:

Section I - Overview

This section provides a brief introduction to Cerritos College by recalling the campus history and conveying the college's mission. The Planning and Design Principals are set forth to emphasize College goals and objectives that will influence a broad spectrum of design decisions.

In addition, the administrative procedures are described in this section, including the identification of roles, project phases and review procedures. The objective of these procedures is to inform the process from programming, through construction, to occupancy in order to facilitate a mutual understanding of expectations and requirements.

Section II - Campus Design Guidelines

The purpose of the Campus Design Guidelines is to inform designers of the college's goals concerning campus architectural style, aesthetics and ambience. This section is primarily addressed to architects, landscape architects and graphic artists commissioned to execute projects that will affect the appearance, feel and spirit of the campus. Site design, landscaping, building exteriors, signage and interiors are all discussed in this section. Materials, colors, proportions, relationships and form are some of the variables that the Campus Design Guidelines are intended to influence.

This section will not describe engineered systems. The design guidelines for plumbing, ventilation, power, technology and other engineering concerns are set forth in the Specific Design Criteria. The Master Outline Specifications will set forth the specifics of the pieces that, in total, form the intent of the design guidelines.

Section III - Specific Design Criteria

In contrast to the Campus Design Guidelines, this section describes the pragmatic aspects of the project implementation. The Room Design Criteria for common types of spaces are set forth in this section. In addition to describing the engineered systems supporting the campus; various assemblies are described in detail.

The engineered systems are described in order to insure that each project follows the standard criteria set forth by the college. These include design guidelines for structural assemblies, mechanical, plumbing, fire suppression, telecommunications, multimedia and other systems that must work together within campus wide infrastructure and maintenance protocol.

Section IV – Specifications

This section has been compiled to establish a level of quality or generic material that meets the college's specific objectives for the desired quality and character of the campus. The specifications will need to be edited to be project specific.

Appendixes

The campus has selected specific products that work best for their requirements. These have been compiled in this section for easy reference. In some cases, this involves standardizing a system component by specifying the make and model required. This is only done when a system-wide campus standard is necessary for multiple projects to function within a campus-wide system (e.g. fire alarm, building management system, etc.).

In order to apply current product development, new technology, energy saving devices, or enhance design elements, District staff may add, delete or update product specifications as needed to provide the best value engineered building or site systems.

Section I - Overview

- **Cerritos College Introduction**
- **Planning and Design Principles**
- **Administrative Procedures**

Cerritos College Introduction

Campus History

Cerritos Community College, named in 1956 for the "little hills" it occupies, has its roots in the small farming communities that once surrounded the Cerritos Norwalk region. In the 1930s these farming communities were forever influenced by the effects of pre-war industrial boom. The construction of local freeways brought a population surge and added housing tracts and business to the Cerritos dairy farms.

On June 10, 1955, the Cerritos Junior College District was formed by a four-to-one vote from citizens of the Bellflower, Norwalk, Artesia, Carmenita and Bloomfield Elementary districts. Dr. Ralph Burnight, superintendent of the Excelsior High School District for 27 years before the college was born, recognized the need for the extension of postgraduate educational opportunities to the district's high school graduates. The board of trustees for the Excelsior High School District also recognized the importance of a two-year college in the community and called upon the electorate to approve plans for such an institution within the district's boundaries. As a result of these actions, on September 27, 1955 an election calling for a $6 million bond issue to construct Cerritos College was passed with a four-to-one vote.

1st President Ralph Burnight

Then, on October 21, 1958, voters from the cities within the college district approved a second bond issue amounting to $8 million by a four-to-one margin. The funds were ear-marked for the completion of the 95-acre campus and the purchase of necessary instructional equipment.

By the end of 1959, eight buildings had been completed on campus, and funds were made available to provide the remaining facilities to accommodate a student body of 3,500 students. The completed buildings included: the Field House, (March 1958); the Liberal Arts Building, the Technology and Electronics Buildings (September 1959), the Business Education Building, the Lecture Hall, the Science Building, and the Shower and Locker Rooms (October 1959). The Student Center was completed March 8, 1960 and became a social nucleus for students who would collaborate, question, debate and discuss the topics of the day. The library, completed July 1, 1961,

Master Plan of Campus 1950s

became an anchor of valuable knowledge for students and the beneficiary of archived campus news publications. The campus encompassed 95 acres, and its permanent buildings brought the value of the college to $16 million and the assessed valuation of the district served by the college was estimated at $271 million.
The Ralph F. Burnight Center for Performing Arts, named after the first president of the college, was also built in the early '60s and would serve as a reminder of Burnight's commitment to the creation of the institution after his retirement in 1962.

Social Sciences Building, 1960s

By the 1968-69 school year, the campus included 18 buildings and boasted enrollment of more than 11,000 students.

The year 1971 marked a significant year in the college's evolution, as its name changed from Cerritos Junior College District to Cerritos Community College District.
The renovation of the LRC was part of a $12 million investment in a technology infrastructure that also included the "wiring" of the entire campus and the placement of a networked PC on the desk of each employee. The college continued its surge of renovations to facilitate student growth. In the fall of 1998, the campus offered a "One-Stop" Student Services Center.

Campus Aerial Photo, 1970s

Bidding farewell to the 1990s, the 20th century and a millennium rich with history, the college closed one chapter and opened another that would provide technological, socio-cultural and political changes, lending unique flavor to the coming years.

Diversity

Throughout the '80s, the college continued to experience a shift in the diversity of its student population, an ongoing trend since the mid-'70s. This evolution resulted in securing additional personnel to reflect the changing student body, comprised of a rich ethnic diversity, including a 70 percent Latino student population. The student body also included many students who were returning to school late in life and creating new identities in the process.

Cerritos college was a "symbol of opportunity"

Locally, the move on campus to bring evening students into the college's mainstream was accelerated during the decade and an abundance of night-time activities on campus were offered to build a more inclusive student body.

The college's ethnically diverse student body allowed for meaningful conversations with students of other backgrounds across the nation and the world, enhancing student development through unique perspectives offered at the start of the new decade.

Cerritos College strived for a "commitment to technology"

Site Selection

At the end of 1955, after a $6 million bond was passed for Cerritos College, district officials announced plans to build a campus on the site of the John Sousa Dairy on the southeast corner of Alondra Boulevard and Studebaker Road.
The next step of acquiring the land that would house the new college was fraught with legal battles between the college and the dairy owners. The existing dairy owners resisted building a school site next to their dairy farms for fear of declined milk production. The ongoing feud, referred to as the "Cows vs. Kids War," resulted in many heated school board meetings and court battles. Ultimately, a Superior Court judge ruled that the college had a right to obtain grounds for its facilities and the college proceeded to purchase a series of parcels and secured proper zoning for the westerly portion of the site, which amounted to 40 of the 95 acres.

It was not until December 5, 1956—almost three months after the college began offering classes at Excelsior High School—that the title to the proposed college site was acquired. On July 22, 1957, the city of Dairy Valley re-zoned the westerly portion of the site so that construction could proceed.

1st Graduating Class

The college continued its growth spurt in 1966 as the board of trustees purchased the "South 40" acres, enlarging the campus to 135 acres, a procurement that vastly improved the college's land values.

Opening the Campus

The college opened its doors to an enrollment of 197 students on September 11, 1956, holding evening classes in rented rooms at Excelsior High School, about one-half mile east of the proposed Cerritos campus site. It was a transitory campus site, but students were eager to learn and the community anxiously anticipated the construction of the permanent campus.

Year 2000

Planning and Design Principles

The Cerritos College Planning and Design Principles are described in this section. These broad principles support the primary goals of the College and are presented in order to serve as a general guide for the future development of the campus.

Campus Aerial Photo, 1960s

Universal Design/Accessibility

Cerritos College is committed to striving towards a campus that meets the criteria for Universal Design/Accessibility. The Center for Universal Design at North Carolina State University defines Universal Design as "the design of products and environments to be useable by all people, to the greatest extent possible, without the need for adaptation or specialized design". The Center has further developed these seven principles:

Principle One – Equitable Use
The design is useful and marketable to the people with diverse abilities. Guidelines:

- Provide the same means of use for all users: identical whenever possible; equivalent when not.
- Avoid segregating or stigmatizing any users.
- Provisions for privacy, security, and safety should be equally available to all users. Make the design appealing to all users.

Principle Two – Flexibility in Use
The design accommodates a wide range of individual preferences and abilities. Guidelines:

- Provide choice in methods of use.
- Accommodate right or left-handed access and use.
- Facilitate the user's accuracy and precision.
- Provide adaptability to the user's pace.

Principle Three – Simple and Intuitive
Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level. Guidelines:

- Eliminate unnecessary complexity.
- Be consistent with user expectations and intuition.
- Accommodate a wide range of literacy and language skills.
- Arrange information consistent with its importance.
- Provide effective prompting and feedback during and after task completion.

Principle Four – Perceptible Information
The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's abilities. Guidelines:

- Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
- Provide adequate contrast between essential information and its surroundings.
- Maximize "legibility" of essential information.
- Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
- Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

Principle Five – Tolerance for Error
The design minimizes hazards and the adverse consequences of accidental or unintended actions. Guidelines:

- Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated or shielded.
- Provide warnings of hazards and errors.
- Provide fail safe features.
- Discourage unconscious action in tasks that require vigilance.

Principle Six – Low Physical Effort
The design can be used efficiently and comfortably and with a minimum of fatigue. Guidelines:

- Allow user to maintain a neutral body position.
- Use reasonable operating forces.
- Minimize repetitive actions.
- Minimize sustained physical effort.

Principle Seven – Size and Space for Approach and Use
Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture or mobility. Guidelines:

- Provide a clear line of sight to important elements for any seated or standing user. Make reach to all components comfortable for any seated or standing user. Accommodate variations in hand and grip size.
- Provide adequate space for the use of assistive devices or personal assistance.

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Energy Efficiency/Sustainability

Cerritos College is committed to striving towards developing a campus that is energy efficient and sustainable in order to minimize environmental impact, save operation and maintenance costs, and promote health and well being. Through synergistic design coordination between architects and engineers, the building envelope, ventilation, lighting and water systems can work together to reduce use of natural resources and minimize operational costs without substantially increasing construction costs.

Benefits of "Green Design"

There are three basic benefits of "Green Design"; environmental responsibility, economic savings, and improved health and safety for the building's occupants. By definition, a sustainable building will minimize environmental impacts. The college will continue to be a good steward of the community's natural resources through sustainable design. By taking a leadership role, the college is making a commitment to progressive design strategies that benefit the community in the large sense.

LEED and the Design Process

The United States Green Building Council is a national, non-profit organization which has established the LEED Rating System in response to the US market's demand for a definition of a "green building". LEED stands for "Leadership in Energy and Environmental Design" and is a tool to help design teams and owners determine green project goals, identify green design strategies, measure and monitor progress, and document success. It is recommended that the LEED Rating System be used as a guideline by Design Professionals working on campus.

Sustainable Design

Cerritos College embraces the goal of Sustainable Design. Careful attention should be paid to:

- Utilizing natural light in interior spaces
- Utilizing local resources and vendors
- Specifying environmentally friendly products and Green Guard certified furniture
- Specifying materials that have a high level of recycled content
- Obtaining a high efficiency factor when space planning, to minimize construction cost.

Durability/Maintainability

Cerritos College is committed to striving towards developing a campus that is long lasting, durable and easy to maintain. In order to develop cost effective solutions, standards for products and materials have been developed and are described in detail in other sections of this Campus Standards Handbook. These standards will serve several purposes:

1. Consistent material use throughout the campus will identify various areas and functions to the students and assist in wayfinding.
2. Consistency of material selection will create unity within the campus and elevate the appearance of each building as it is remodeled.
3. Levels of durability will be established for each area and will assist the Facilities Department in improved maintenance.
4. Standardization will reduce the amount of attic stock that will be needed for maintenance and repair by campus personnel.

Easier maintenance will result in the finishes lasting for the next 20 + years. As this is a living document, the items will be updated as new and improved versions replace discontinued items. The goal is to keep the level of quality and the ease of operation consistent.

Administrative Procedures

This section of the Handbook is intended to provide a brief overview of the Administrative Procedures established for the implementation of the projects. It includes a description of roles, project phases and review procedures.

These procedures are based on the administrative procedures set forth by the Chancellor's Office. It is expected that the Design Professionals selected to work on the campus are familiar with these procedures for state funded projects on community college campuses.

Project Delivery method is left to Cerritos College discretion.

Description of Roles

CA/OR (Campus Advocate/Owner's Representative)

- Is responsible for overseeing the implementation of the bond program.
- Performs Program Management functions including schedule and budget monitoring, financial forecasting and preparation of paperwork for contract issuance by the College, problem resolution, and strategy development for program implementation.
- Acts as the liaison designated by the College to represent the College User Group, contractors, inspectors, etc.
- Recieves and distribute correspondence to the Project Team and Cerritos College representatives, as required by the project.
- Performs construction management functions including project coordination, scheduling, cost estimating/forecasting, logistical planning and quality control supervision in coordination with the Inspector of Record (DSA Certified Inspector).
- Provides constructability reviews of the design documents at key milestones of the process, including Design Development, 90% Contract Documents and 100% back check for corrections.
- Project delivery:
  Cerritos College has discretion over the method of Project Delivery

Campus Master Plan Architect

- The Campus Master Plan Architect assists the College in developing its Facilities Master Plan, Implementation Plan, Campus Standards, Five Year Construction Plan and Space Inventory.
- The Campus Master Plan Architect will assist the College in the review of projects for conformance with the College's Master Plan goals and objectives, the Campus Standards and Space Program Allocation.

Design Professional

- The Design Professional is the Architect of Record who is under contract with the College. The Architect of Record will assume the lead role for significant building projects.
- The Design Professional's team includes the consultants required to execute the project goals. These can include: landscape architect, civil engineer, structural engineer, mechanical/ plumbing engineer, electrical engineer, acoustical engineer, security design consultant/ audio visual consultants, food service and kitchen designers, or specialty consultants.
- For some projects that do not have a significant building design scope, an engineer may assume the lead role Design Professional role.

User Group

- A User Group and Chair will be selected by the Program Review Team (PRT) for each project.
- The User Group will work with the Design Professional and CA/OR to develop the program, provide technical input, and develop functional strategies for the layout of spaces.
- The Chair of the User Group will work with the CA/OR to coordinate the scheduling of meetings.
- The User Group will approve the documents at the completion of the each design phase.
- The User Group includes members of the College who have special interests in the project, or an expertise required for the functional success of the project.
- This group will typically include:
  - Applicable Vice President(s)
  - Dean of the division(s) for the specific project
  - Department Chair(s)
  - Director of Physical Plant
  - Key faculty / staff members occupying the building

Project Team

- The Project Team will include the designated User Group from the College, the Design Professional, and the CA/OR.

Construction Manager (CM)

- Provides professional construction management services, ranging from Planning and Pre-Design, Preconstruction and Procurement, Construction and Post Construction.

Program Review Team (PRT)

- The PRT will review and evaluate each project's compliance with the College's Master Plan goals and objectives, the Campus Standards and Space Program Allocation.
- The PRT will include the following:
    - College President
    - Vice President of Business Services
    - Director of Physical Plant
    - CA/OR
    - Campus Master Plan Architect

Citizen's Bond Oversight Committee (CBOC)

- The CBOC is responsible for providing an independent community oversight of the bond program's implementation.
- The committee is composed of a minimum of seven members appointed by the Board of Trustees.

Board of Trustees

- The College's Board of Trustees is composed of elected Trustees from the community served by the District. The Board's composition includes a president, vice president, secretary, four members and a student member.

Project Phases, Reviews and Approvals

The following describes the typical phases that a project will go through and the reviews and approvals that are required throughout. It is important to note that each phase will include meetings required to receive approvals and proceed to the next phase.

Implementation Planning
The College's Implementation Plan includes a list of the master plan projects, preliminary budgets and preliminary scheduling. The Implementation Plan is subject to annual review of available resources and campus variables.

Project Scoping
When a specific project is scheduled to be executed, the College will develop a Scope of Work, a Project Budget and a Space Program Allocation. This may be in the form of an Initial Project Proposal (IPP), or Final Project Proposal (FPP). This information will serve as the basis of an advertised RFP for Basic Professional Services to select consultants. The method of project delivery, infrastructure support requirements and other elements of campus support will be determined in this phase.

Selection of Design Professionals
In most instances, the College will use an RFQ/RFP process for selecting Design Professionals. From the submitted proposals responding to the RFP, a short list may be developed, and interviews may be held. After a period of consideration, a Design Professional will be selected and a contract negotiated with the College.

Schematic Design Phase
The Project Team will meet throughout this phase to develop the program requirements and the Schematic Design for the project.

During this phase the College will commission a Soils Report and Geologic Hazard Report. The Design Professional will submit these reports to the California Geologic Survey for review and comment.

During this phase the Design Professional will review the Environmental Impact Report that was prepared for the entire scope of the Facilities Master Plan.

During this phase, a pre-submittal review with the Division of the State Architect will be arranged. This meeting will be attended by the Design Professional, the Director of Physical Plant and the CA/OR.

DELIVERABLES:

- The project deliverables will be pursuant to each project's specific Contract Agreement. Items may include, but are not limited to, the following:
- Project's basis of design
- Space Program Summary of Spaces indicating assignable

square feet (ASF), gross square feet (GSF)
- Schematic Design Package
- Cost Estimate

REVIEWS/APPROVALS:
- User Group – For program & functionality
- Program Review Team – Architecture, site development, aesthetics, program ASF, orientation, finishes, FF&E

INFORMATIONAL PRESENTATIONS
- Facilities & Planning (F&P) Committee
- Board of Trustees (Site Plan & Rendering only)

Design Development Phase
The Design Development phase will commence when all comments have been received and design review approval has been documented and confirmed for the Schematic Design Phase.
The Project Team will meet throughout this phase to develop the Design Development Package for the project. It is worth noting that this milestone matches the end of the preliminary drawing phase as set forth in the Chancellor's Guidelines.

DELIVERABLES:
- The project deliverables will be pursuant to each project's specific Contract Agreement. Items may include, but are not limited to, the following:
- Update changes to Schematic Design deliverables.
- Updated Space Program Summary of Spaces
- Updated Reconciled Cost Estimate
- Color and materials board.
- Details on materials, equipment, signage and assemblies required to convey the design concepts.

REVIEWS/APPROVALS:
- Division of State Architect (DSA) – preliminary review
- California Geological Survey (CGS) – review/comments
- User Group – approval and sign-off
- Program Review Team - approval
- Chancellor's Office – approval for State Funded projects only

INFORMATIONAL PRESENTATIONS:
- Facilities & Planning (F&P) Committee
- Board of Trustees (Site Plan & Rendering Update if required)

Construction Document Phase

The Construction Document phase will begin only after the Design Development submittal has been approved and "signed-off" by the User Group. The Construction Document Phase will include the full detailed development of the project incorporated into complete contract documents – drawings, specifications and other documents required for approvals.

DELIVERABLES:

- Updated Space Program Summary of Spaces
- Updated Reconciled Cost Estimate
- 50% Construction Document submittal.
- 90% Construction Document submittal for a constructability review by the CA/OR.
- 100% Construction Document submittal (including all constructability comments)

REVIEWS/APPROVALS:

- User Group
- Program Review Team
- Local Regulatory Agencies (e.g. Fire Marshall, Flood Control, the city if work is required off-campus, etc.)
- State Health Department (Food service only, if required)
- Division of State Architect (DSA) – 50% review and 100% approval
- State Chancellor's Office

Note: A stamp indicating local fire authority approval must be on the DSA submitted plans.

Bid Document Phase

Once DSA approval has been received, the bid package will be prepared and the project advertised for competitive bidding under the Public Contract Code. This phase will be coordinated by the CA/OR and the College. If the project is state funded, Chancellor's Office Approval to Go to Bid will be required and scheduled accordingly. At the end of the bid period, the contract will be awarded to the successful bidder(s). The form of the contract(s) will depend on the method of delivery employed for the particular project.

Construction Phase

The project team will provide construction administration services during construction. The procedures will depend upon the method of delivery selected by the College. The specific procedure will be set forth in The Design Professionals Agreement, the Construction Contract of the bid package. Some of the final steps of the construction phase will include punch lists, commissioning and training. When the construction phase is complete, the building will be turned over to the owner. The project team will be required to submit "as-built" documents in paper and electronic formats, as well as provide turn-over requirements per contract documents.
There may be a fixture/furnishings and equipment package that is implemented under separate contract. The project team may or may not be involved during the furniture installation or move-in phase of the project.

Operation, Maintenance and Evaluation

The College may choose to implement a Post-Occupancy Evaluation Study on some projects. The User Group, Project Team and contractors would participate in a group meeting, typically managed by a facilitator, and designed to determine what went well and where improvements could be made in order to refine guidelines and procedures for future projects.

Section II – Campus Design Guidelines

- **Introduction**
- **Building Design Guidelines**
- **Site Design Guidelines**

Introduction

Mission Statement

"The mission of Cerritos College is to serve the community by building futures through learning"

Purpose of the Design Guidelines

Cerritos College has established the goal of solidifying its position as an innovative provider of higher education and training. This goal of excellence must not only be maintained but expanded and enriched during the addition of new facilities and moderation of existing facilities. The intent is to design environments where students and faculty can come together in the pursuit of knowledge and skill.

The purpose of the Architectural Design Guidelines is to provide a comprehensive strategic framework to guide the successful design and construction of the new and renovated facilities as they are delivered over time at Cerritos College. It will aid in the clear articulation of the campus ensure that each project plays a supporting role in a cohesive campus. The guidelines will help shape the projects along a path that will make them harmonious in their context and act as a simple design evaluation tool.

Social Sciences Building, 1960

Campus Objectives & Goals

The objective of Cerritos College is to update the campus, improve the look, and to advance the educational experience of the students.

These guidelines outline the following goals of Cerritos College:

- Create a distinct campus entry
- Update architectural style
- Establish a sense of order
- Create an oasis within the campus away from congested surrounding city atmosphere
- Enhance way-finding devices
- Form "Zones of Collegiality" throughout the campus
- Celebrate the diversity of students
- Encourage indoor/outdoor relationships
- Give each quad its own identity reflecting its adjacent disciplines

(See Appendix B Cerritos College 2011 Facilities Master Plan)

http://cms.cerritos.edu/business-services/2011-facilities-master-plan.htm

Building Design Guidelines

- **Existing Architecture**
- **Future Building Design**
- **Facades and Fenestrations**
- **Interior Space Planning**
- **Building Signage and Specifications**
- **Material & Color Palette**

Existing Architecture

"International Style"

Cerritos College campus represents a cubistic mode of architecture Many of the original buildings are a classic statement of an international style of architecture which favored:

- light weight construction
- flat roofs
- transparent walls
- the simplicity of design
- abstract geometric forms

The repetition is displayed within the window system along with facades of multi-colored panels. A few of the original buildings have very dark glazing which contradicts the idea of using a transparent material.

"Floating Architecture"

A few of the existing buildings are elevated, with a recessed base, making the architecture appear to float similar in style to Mies Van Der Rohe's buildings at IIT in Chicago where you must enter the building by ascending a grand stair. These buildings were elevated to create a monumental scale.

"Structural Expression"
Another component of some of the existing buildings is structural expression on the exterior due to a need for seismic upgrades in the 1990's.

On several of the seismic upgrades which usually consist of tube steel, the exposed structure is accented with a contrasting color.

Future Building Design

"Promote Interior Function"

Most of the buildings on campus employ a very dark glazing which does not allow the passerby to see the activities and functions that are happening on the inside of the building. The future buildings should reflect and promote the functions that occur within the building. These buildings should convey what the campus is offering, welcome the students and aid in way-finding through:

- building massing
- coloration
- visual connection to the interiors

Transparent glazing should be utilized in appropriate areas to allow people to view the interior building functions of:

- Common areas
- Entries
- Lobbies
- Stairways

Reflective glazing and translucent materials may be utilized to provide natural light in areas where more privacy and fewer distractions are required.

"Convey a 'Commitment to Technology'"

Technology helps people share information and knowledge quickly and efficiently. To remain on the forefront of education, the campus has strived for a "commitment to technology". This "Commitment to Technology" can be conveyed through the architecture by:

- Utilizing state of the art technology for systems and learning
- Employing modern materials
- Exposing the structural elements
- Highlighting the structure with color

"Celebrate the Entry Ways"

The main entry of a building is often the most important part in regard to the identity of the building and way-finding throughout the campus. Because of this, the entries of the new and existing buildings should be celebrated by:

- Developing lobbies
- Utilizing canopies
- Utilizing color as a way-finding device
- Accent lighting

A natural flow of pedestrian traffic leading into the building will be created by developing a visual hierarchy at the entryway.

"Create Transition Spaces"

Transition spaces from the exterior to the interior are needed throughout the campus. These spaces can be developed with the use of:

- canopies
- arcades
- tensile membranes

A transition space can:

- Add a layer of visual interest to the façade of a building
- Bring human scale to a monumental building
- Act as a gathering area during both day and night
- Provide outdoor shading

"Develop Lobbies"

Many of the existing buildings on campus do not have lobbies. Lobbies are important spaces as they act as an arrival space in a particular building. They are also transition spaces in between classes for faculty and students. Lobbies create gathering areas for students instead of in the corridors, where the noise of conversation would be disruptive to classes in session. At night time, the lobby can be utilized as a safer place than outside to wait for class to start.

The lobbies should:

- Employ a generous ceiling height to create an open and inviting feeling both inside and outside
- Introduce color as an accent and as a way-finding device
- Provide natural lighting to enhance the interior environment
- Provide a sense of connection between interior and exterior through the use of glazing
- Contain seating for students to gather or study

Use Furniture for Color Accents

Colors can be utilized for way-finding or as an accent within the architecture/interiors to highlight or display an important item. Color can also be used within the furniture. The color of the furniture can be bold and make a statement because furniture is not permanent. It has more flexibility to be updated if it becomes out of style or the function of the space has been changed.

The furniture should be carefully planned so that any technology within the furniture is hidden.

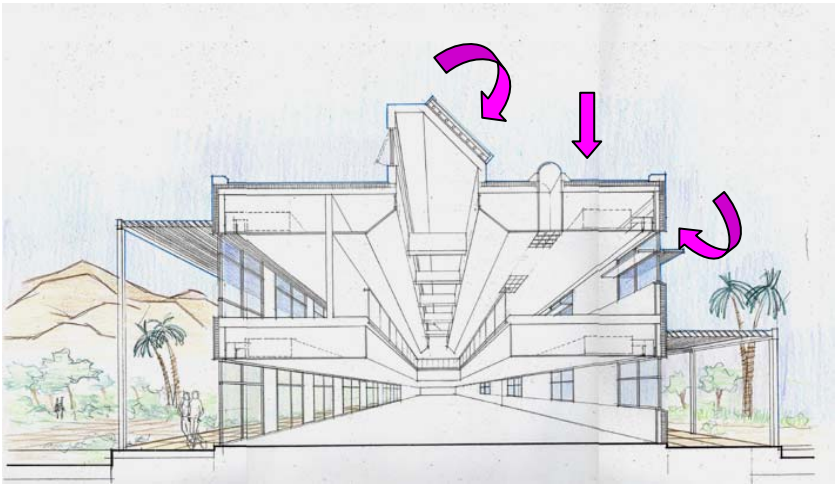
"Utilize Natural Light"

The incorporation of natural light is extremely important, not only to reduce electrical loads but also to create an enjoyable environment for students and staff. It has been proven that buildings that incorporate natural light into a space versus building spaces without natural light actually increase student test scores. Care should be taken to make sure that no direct light enters a space and adversely affects the functions performed there-in.

Create a well balanced use of both natural and artificial light on interior spaces with the use of:

- Shaded fenestration
  - Horizontal sunscreens
  - Vertical sunscreens

- Indirect light sources
  - Light monitor
  - Skylight
  - Reflected light



"Keep a Consistent Typology"

Use consistent typology with the existing buildings but implement sustainable design and environmentally friendly systems which work within that typology.

Existing

- Flat roofs
- Light weight construction
- Repetitive rectangular forms

Seismic Upgrade

- Flat roofs
- Expressed Structure
- Accent color for structure

New

- Flat roofs, except at entry
- Repetitive rectangular forms
- Accent color for structure

Facades and Fenestrations

Introduction

Cerritos College is primarily comprised of single story buildings. The older central campus facades are multi-colored with vertical stripes which create a scale-less feeling. While negotiating the campus it is impossible to discern what programs the college offers. The master plan identifies the need to change the perception of the college.

Cerritos College's facades include an extensive material palette. Building façade materials are painted concrete, metal siding, exterior plaster, window walls, natural stone tiles, and the most distinctive materials are the vertically striped colored metal panels and windows in aluminum window wall systems. The colored window systems are difficult to miss. They date the campus and have proven impossible to alter without remodeling the entire vertical building envelope.

The Future

The concept of future building facades is to reflect and promote the programs that take place inside them. There is a great opportunity to enrich the campus and give it a new forward thinking image and vitality. Building massing, coloration and visual connection to building interiors can allow the reading and transference of interior functions.

The college is concerned with the concepts of sustainability and therefore the facades should also be reflective of their orientation. Sun control devices can provide for large glass expanses to exist while preventing direct sunlight/ heat to transfer into the building. Care should be taken to limit or protect glazing on the western and southern sides of the buildings.

As the original buildings are remodeled and upgraded structurally for seismic forces, painted steel brace frames have been placed on the exterior of the buildings. This idea of structural expression can be adopted by new buildings as the structure can read through the façade. The concept of frames can also be modified to the use of the frames for window shading in the form of horizontal or vertical trellises.

Interior Space Planning

Space Planning Guidelines

The success of architecture lies in achieving a balanced relationship between the site, the building's mass and the interior functions. Interior architecture should compliment and coordinate with the interior spaces and user group functions. This is done by means of spatial relationships, activity grouping, color texture, lighting and furniture to create spaces that are:

- Functional
- efficient
- comfortable
- psychologically appealing
- stimulating for the users
- flexible

Today's research supports flexible, non-specific learning spaces. In space planning, it is the function of a space that will dictate the layout for walls, casework, lighting and furniture. Certain programs should be able to use any given room. Due to the high cost of both real estate and construction, a proactive approach should be taken when studying the common spaces that can be flexible for various departments and programs. The goal is to limit the number of rooms designed with fixed seating so furniture may be rearranged to accommodate various needs, like small group discussions.

- Develop flexible learning environments

Creating areas for students to gather before or after class, will maintain the free flow of students and prevent blocking of circulation paths at classroom doors and corridors. These spaces may be designed by creating niches off circulation corridors.

- Create spaces for students in between classes

Building Signage

(See Appendix for Cerritos College Signage submittal)

Consistent signage should be used throughout the campus. Standard materials and fabrication processes must be used to insure that replacement signage can be consistently duplicated over the long term. Simple, classic design using traditional typefaces should be used to avoid creating a system that will look dated in the future.

Durability is extremely important, as interior signage is difficult to maintain. Signage in locations partially exposed to the elements should use exterior grade quality materials. Exterior grade Tactile/Braille components should be specified for these locations.

Flexibility of the interior signage system is important in a constantly evolving campus environment. The selected system provides for integral signage inserts that can be easily changed, but that are durable.

Signage must comply with current CBC for Accessibility and Fire, Life & Safety as required.

The Campus Signage Standard includes curved extruded aluminum, acrylic/screen print and etched photopolymer sign types. Exterior grade reflectorized aluminum signage is also standard where vehicular traffic comes in contact with pedestrian Path of Travel (POT).

Room Identification Signs will be clear anodized aluminum with satin finish. The frame will be mechanically fastened to the wall. The frame will accept removable clear Mylar acetate with black lettering for the room names. Tactile room numbers and corresponding CA Grade II Braille will also be stamped on the acetate sheet. If required, an informational sign may be located below the room number sign.

- See Space Inventory chapter in Section III for room numbering standards.

Room Number Identification Signage will be clear anodized aluminum with satin finish. The sign will include tactile room numbers and CA Grade II Braille. The frame will be mechanically fastened to the wall.

Restroom Pictorial Signage will be ¼" thick acrylic with subsurface silkscreened graphics and back painted.

Accessible Signage will be ¼" interior photopolymer with raised

graphics and CA Grade II Braille. Mounted using silicone and VHB tape. Accessible signage shall comply with current CBC.

Other informational signage will be 1/8" thick acrylic with subsurface silkscreened graphics. Mechanically fastened to the wall.

Evacuation Plan Signage will be a 1/8" thick aluminum frame with acrylic insert. Insert to have subsurface applied digital print. The frame will be mechanically fastened to the wall. Evacuation Plan Signage is to be provided in each building on campus. Coordination with Campus Police Chief and Local Fire Authority is recommended.

Building Directories should be provided at each building. Directories shall be designed to accommodate changes in use.

Building Dedication Plaque will be made of cast bronze or clear aluminum, with a leatherette finish. The sign shall have a single line raised border. The plaque shall include the words, "Cerritos College", the official campus name of the building and the dedication date. The name of the College President, names of the current Board of Trustees members, the contractor, and the architect of record shall also be included. The layout can be modified as necessary to accommodate the number of names, This plaque will be heavy and accommodations shall be made to reinforce the framework of the wall where this plaque is to reside

Material & Color Palette

(See Appendix A for Interior / Exterior Materials & Finishes)

Interiors

In the new buildings, entrances should be specially treated with accent walls or natural materials that can be seen through the lobby windows. Lobbies and corridors could be rendered in lively and interesting colors and forms to differentiate them from classrooms, study spaces, labs, etc. Private spaces should be thoughtfully rendered to create a professional look befitting the use. Business environments should project an atmosphere of formality that will reflect a similar experience to the student's future working environment.

When working within the existing architecture, interiors can be sympathetic with the original design intent. Any intervention should attempt to create a comfortable environment. Curvilinear forms, strong colors and materials can delineate between new and original.

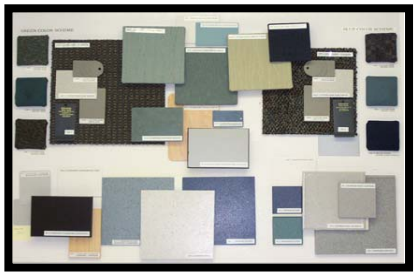
Color Schemes

Two interior color schemes have been developed for Cerritos College:

- Green Scheme
- Blue Scheme

Refer to Appendix A for an Interior Materials & Finish Board example showing color schemes and their arrangements.

Materials and Finishes



Various materials, colors and textures may be used to:

- act as way finding or queuing devices at entries and corridors
- differentiate between private and public spaces
- create accents
- reflect the uniqueness of the course
- display diversity of the student body
- strengthen and enhance the architectural concept and form

Low maintenance and Durability of materials and finishes shall be a priority. Paint colors shall also be limited to minimize maintenance supply quantities.

Sustainable Design

Proper color selection is an important aspect of natural lighting schemes. Interior designers are encouraged to work closely with designers to achieve the goals of synergies in Sustainable Design.

Exteriors

The exterior presentations of any new or renovated building, and its use of materials, textures and colors, contribute towards its compatibility with the existing campus environment. The color schemes should have consistency with the existing campus buildings, using highlights to give the new building its own identity.

The new exterior building materials & finishes should be comprised of exterior stucco, concrete, steel and glass. The color palette shall be used to create a consistent color scheme throughout the campus.

Exterior Materials & Finishes

(See Appendix A for Exterior Materials & Finishes Board)

Exterior Stucco Finish:

- Cement stucco finish Base/Color Pack System by La Habra
- Integral color finish coat consisting of powdered color pigments and dispersing agents
- May be applied in a variety of textures

Concrete:

- Concrete structures
- Exposed concrete surfaces

Steel:

- Exposed steel structures
- Steel Accents
- Architecturally Exposed Structural Steel (AESS)

Glass:

- Reflective Glass
- Transparent / Tinted Glass
- High Performance glazing systems

Interior/Exterior
Create a link between the indoor and outdoor spaces using:

- Transparent Glazing
- Landscape
- Floor Materials

Sustainable Design
Careful attention should be paid to:

- Acquiring and utilizing natural light in an interior space
- Utilizing local resources and vendors
- Specifying environmentally friendly products and Green Guard certified furniture
- Specifying materials that have a high level of recycled content
- Obtaining a high efficiency factor when space planning, in order to cut down on construction cost.

Interior materials are an important part of creating a healthy interior environment. Proper color selection, particularly brightness, is an important aspect of natural lighting schemes. Interior designers are encouraged to work closely with Architects and Engineers to achieve the goals of synergies in Sustainable Design.

Site Design Guidelines

- **Introduction**
- **Existing Conditions**
- **Landscape Design Goals**
- **Landscape Design Principles**
- **Landscape Design Elements**
- **Plant Materials**
- **Irrigation and Maintenance**
- **Paving Materials**
- **Site Furnishings**
- **Campus Lighting**
- **Building and Site Lighting**
- **Campus Wayfinding**

Introduction

At the Celebration of its 50th year of providing education to the communities of Cerritos and Norwalk, Cerritos College is looking forward to the next 50 years. Bond Measures CC and G Funds will implement the goals of improving infrastructure and campus facilities, increasing the student population, providing a variety of programs for the students including distance education. These goals will be supported by the overall improvements to the campus. The student's first impression will be an important factor in the decision to enroll. To this end implementation of a Master Plan will greatly enhance the first impression of Cerritos College while enhancing the college's identity and utility for its student body, faculty, visitors and surrounding local community.

To understand current campus conditions an extensive survey was done of existing site conditions including site systems, pedestrian circulation, and existing spatial relationships. Several ideas were explored in trying to develop a coherent system that integrated existing and proposed buildings with a new circulation and spatial hierarchy strategy. The guidelines and master plan have been prepared with the intent of creating a strong and unifying framework for the campus, providing the cohesive integration of site functions with an overall campus aesthetic.

This section provides overall campus guidelines and contains further information regarding campus context, site system studies, planting and paving selections and strategies for the development of the campus as a whole.

Goal

The goal is to establish guidelines that will guide future development of campus open space in a manner that will simultaneously unify and reinforce the unique identity of Cerritos College.

Existing Conditions

Regional Context and Statistics

Cerritos College is fronted on Alondra Boulevard, approximately a half mile east of the 605 Freeway and 13 miles from the Pacific Ocean. The College is within the San Gabriel River drainage basin. The winters are relatively short with average temperatures between 47 and 68 degrees F in February. Although the average summer temperature high is 84 degrees, the temperatures can reach over 100 degrees. The city has an average rainfall of 21.5 inches annually, and lies in Sunset Zone 22 which is classified as Cold-Winter Portions of Southern California's Coastal Climate.

Evaluation of the soils by a Horticulture Soils Consultant indicates that irrigation with poor water quality has resulted in the build up of high salinity and salt in the soils. Excess sodium causes soils to seal and crust preventing soil aeration and reducing water infiltration. It is recommended that calcium containing amendments be added to the soils to improve conditions. In addition to the high alkalinity, high chloride and high boron rates have been determined to be a problem in several areas of the campus, which contributes to limited plant rooting and vigor. Soil moisture typically increases with depth. Throughout the Cerritos College campus the moisture level decreases where dense, compacted subsoils occur. This condition is a sign of poor drainage. The Horticultural Soils Report recommends remediation programs such as leaching and the application of amendments to reduce the affects of these problems as part of the soil preparation for new landscape plantings. Unless adequate percolation is verified, subsurface drainage solutions will be required to establish adequate drainage for tree health, vigor and life.

Due to the significant problems found by the Horticultural Soils Consultant, full compliance with the Horticultural Soils Report and its recommendations for soil remediation is key to a successful landscape design.

A full copy of the Horticultural Soils Report, prepared by Wallace Laboratories, dated Nov. 22, 2005, is included in the Appendix.

Site Context

The College is located along two major streets, Alondra Boulevard on the north and Studebaker Road on the west. Alondra Boulevard is primarily a commercial thoroughfare and Studebaker Road serves residential neighborhoods to the south of the campus. 166th Street forms the southern boundary of the campus. A residential neighborhood is on the opposite side of this street.

Although Cerritos College occupies a significant location within the City of Cerritos its entries are not clearly defined. This lack of definition does not encourage the use of the campus by the surrounding community.

Campus Edges and Views

The existing conditions of the campus offer both opportunities and constraints, which influence the Master Plan.

Campus Monument

The intersection of Alondra Boulevard and Studebaker Road is the most prominent corner of Cerritos College. Currently, a low, dark sign flanked by an informal grouping of pine trees is located on the campus's corner. The pines block the view from the street to the lawn and campus beyond.

Perimeter Street Trees

Pittosporum rhombifolium (Queensland Pittosporum) trees are located in a planting area between the public walkway and the campus parking lots along Alondra Boulevard and Studebaker Road. These trees are well established with full canopies. The hedge beneath the trees is predominantly Rhaphiolepis indica (Indian Hawthorn). This combination of trees and shrubs screens the parking lots and creates a consistent green edge for the campus.

Southern Campus Edge

The southern edge of the campus between the public walkway and Parking Lot 10 along 166th Street is planted with turf. Two vehicular entrances to the Parking Lot 10 are located on this edge. The entrances are not marked with signs that indicate the college's presence or direct the flow of vehicular or pedestrian traffic.

Eastern Campus Edge

The eastern edge of the campus abuts a residential neighborhood. It is planted with mature Xylosma congestum (Xylosma) shrubs that have grown and been maintained as 20-foot tall trees that effectively define the edge of the parking lot and provide a dense buffer between

the adjacent homes and the parking lot. South of the Sports Complex the campus edge lacks planting between the parking lot and the block wall that separates the campus and the adjacent homes. With the exception of a few Eucalyptus trees the edge east of the Sports Complex also lacks planting between the campus and the adjacent residential neighborhood.

Parking Lots

The parking lots are the first experience of Cerritos College for students, faculty, staff and visitors. A lack of trees and shrubs combined with broad expanses of asphalt creates an unwelcoming environment as the first impression of the campus. The prominent campus security towers further contribute to the negative atmosphere of the parking lots. The lack of clear and consistent vehicular wayfinding signage contributes to confusion for users of the parking lots. It is unclear which lots serve students, faculty, staff and visitors. The parking lots lack pedestrian-oriented directional signage, causing disconnect between the parking lots and the campus. The parking lots do not have clearly marked and well-oriented passenger drop-off areas. Parking in the area north of the Student Center/ Administration Building and the Social Science Building is a potential area for the creation of a convenient drop-off location and the improvement of traffic flow. If future state funding enables the reconstruction of the Burnight Center and the Fine Arts Building, parking and drop-off facilities could be improved to accommodate parking and coordinated drop-off areas.

Pedestrian Circulation

The existing pedestrian circulation system is not clearly defined and does not have a distinct landscape character. At several points walkways cross open drainage channels that are unattractive and create a drop-off condition at the walkway edge. Pedestrian wayfinding signage is sporadic and unclear. Connections between the pedestrian circulation system and the parking lots are not clearly defined.

Generally, the pedestrian circulation system is a grid defined by the placement of the existing buildings. There are four major north-south walks and four major east-west walks. These walks lack distinct landscape treatments and clearly indicated wayfinding signage. Furthermore, the current circulation network lacks a clear hierarchy. With the exception of the integral color concrete accents located within the Central Quad, all campus walkways are natural color concrete.

Campus Gathering and Social Spaces

The existing campus landscape design provides few amenities that encourage students to become engaged with their campus. The addition of vibrant quadrangles, intimate gathering spaces, attractive seating areas and the comfortable shade of trees would encourage students to engage in extracurricular activities and linger on campus.

The campus will be drastically changed when several existing buildings are replaced with larger multi-story Classroom/Office/Lab Buildings on the north and south of the new Science, Engineering and Math Building. The new construction will create engaging and dynamic spaces for student interaction and the development of campus life.

Central Quad

The Central Quad is the campus green surrounded by the Learning Resource Center, the Student Center and Burnight Center. This large lawn area is subdivided by several walkways, which diminish the flexible use of the space. Its few trees are small and are struggling to survive. The combination of walkways and minimal shade cause the Central Quad to be a place to traverse rather than a place to linger.

Students seem to prefer smaller and more intimate shady spaces that provide refuge from the sun for gathering and socializing. For example, the shady and defined space of the nearby amphitheater at Burnight Center is a more popular gathering area than the Central Quad.

Secondary Quads

Secondary quads include the South Quad, which is defined by the Health Sciences Building, the Auto Technology Center and the Community Education Center. This open lawn includes a straight forward walkway pattern and a sprinkling of informally planted trees that create an inviting and well used space.

Courtyards

There are courtyards at the Administration Building, the Social Sciences Building, the Fine Arts Center and the Auto Technology Center. These courtyards lack design definition that larger trees, interesting paving and shaded seating areas create. Providing these elements will attract more student participation.

Recreation / Sports Complex
The college's recreational amenities are located at the eastern end of the campus. The eastern portion of the campus is comprised a football/soccer stadium, athletic fields for baseball, tennis courts and a pool complex. These grounds are to be retained for their support of organized sports and recreational activities of Cerritos College.

The dappled light filtering through the Eucalyptus trees that surround the fields of the Sports Complex contributes to its park-like character. This park-like character will be maintained and enhanced.

Community Facilities
Community facilities include the Learning Resource Center, Student Center, Burnight Center Theater and Teleconference Center. Parking access is provided for these facilities from Alondra Boulevard on the north and from Parking Lot 10 on the south.

Landscape Design Goals

Campus Identity within the Community
As an important institution of higher learning in southern Los Angeles County, Cerritos College's growth provides an opportunity to build upon the existing campus to secure its identity as a community resource and increase the significance of the campus within its urban setting. Reinforcing and strengthening existing landscape elements will add striking and dramatic design elements. The use of plants that are part of the college landscape heritage is also encouraged. Through implementation of this design strategy Cerritos College will improve its campus and encourage greater use by students, faculty, staff and visitors from the surrounding community.

Clarity in Wayfinding
Clarity, in wayfinding, is a major focus for Cerritos College. The campus has multiple entries that must be visually articulated and a pedestrian circulation system that must be clearly defined. Defining the pedestrian circulation system's hierarchy will provide for improved wayfinding on the campus, especially for first time visitors. The implementation of both physical and visual connections throughout the campus will establish a clear system of wayfinding.

Quality of Life
Creating a comfortable and engaging environment at Cerritos College for the students, faculty, staff and visitors is an important component. Outdoor spaces that accommodate active social gatherings will maximize the opportunity for student interaction and promote campus life. In addition to active social spaces, more passive and private spaces for use by individuals and small groups. The transitions between active and passive areas will contribute to a more dynamic campus design.

Landscape Design Principles

There are four landscape design principles:

I. Establish a clear campus landscape framework, which defines spatial hierarchies and organizes circulation;
II. Implement a landscape concept, which defines campus areas and the circulation system, enhances wayfinding and creates social spaces;
III. Formulate a network of unifying elements, which visually reinforces the campus as a haven within the community;
IV. Develop a unique character to define the open space.

Landscape Design Elements

These guidelines will direct the future development of open space on the campus in a manner that will unify and reinforce the identity of the college. Five key landscape components for the enhancement of the campus are:

1) Campus Monument
2) Campus Gateways
3) Parking Lots & Perimeter
4) Pedestrian Promenades, Quads and Courtyards
5) Learning Gardens

Campus Monument

The Campus Monument is located at the intersection of Alondra Boulevard and Studebaker Road. At this prominent location, the monument will announce Cerritos College to the surrounding community and visiting traffic. The monument will be highly visible. Its proportion and placement will respond to the scale of the intersection and the speed of the passing vehicular traffic. It will announce the campus programs and its activities to the surrounding community using state-of-the-art electronic LED sign technology. Removal of existing pines on the corner will open the view from the intersection of a broad lawn and the new and renovated buildings beyond. The development of the Campus Monument will provide a distinct signature for the community while providing a gateway to the campus.

Campus Gateways

The Campus Gateways serve as visual cues that direct and lead first time visitors onto the campus. These Gateways are required to accommodate major vehicular traffic entering the campus. Vertical architectural elements such as prominent trees, water features and pilasters will enhance the vehicular entrances to the campus. Their design shall compliment the architecture of the new buildings on campus. Selected for their seasonal yellow flowers, Tipuana Tipu (Tipu) street trees augment the gateways to create an entry drive to parking lots.

Campus Gateway

The Main Campus Gateway is located off Alondra Boulevard north of the Administration Building. This is a focal point for vehicular traffic traveling along this route and serves to mark the "front door" of the campus and provides a wayfinding device for visitors to the college.

A secondary gateway, such as the one off Studebaker Road at New Falcon Way provides an alternate entry for students, staff and faculty who are more familiar with the campus.

Tertiary campus entries include other entries into the parking lots originating off of Alondra Boulevard, Studebaker Road, and 166th Street. Although these entries will continue to function as campus entries, they will not have architectural or landscape markers. Directional signage will be provided at these entries as necessary.

Parking Lots & Perimeter

The Parking Lots and Perimeter of the campus differentiate the college from the surrounding community. The improvement of these areas should welcome the surrounding community and arriving guests. The existing boundaries along Alondra Boulevard and Studebaker Road should be redesigned to clearly identify campus gateways and provide a better pedestrian experience.

The existing parking lots surrounding the campus should be improved to address the vast areas of asphalt by introducing trees, drought tolerant planting and increased pedestrian amenities. Other opportunities for Sustainable improvements include the use of permeable and light colored paving, as well as storm water control and conservation.

Improving the parking lots and perimeter is intended to reduce the negative impact on the College's aesthetic image.

The Cerritos College 2011 Facilities Master Plan provides specific design recommendations for site improvement projects. Refer to the following link for more information:

http://cms.cerritos.edu/business-services/2011-facilities-master-plan.htm

Pedestrian Promenades, Quads and Courtyards

Promenades, Quads and Courtyards should create a clear pedestrian circulation system throughout the campus while linking buildings and public gathering areas together.

Pedestrian Promenades are created by enhancing the main existing walkways with new trees to emphasize functional importance and provide shade and comfort for pedestrians. Tree species selected to reinforce the existing tree palette, reflect the campus landscape heritage and respond to the Southern California climate.

The pavement for the promenades should be maintained 20 feet wide to establish prominence within the pedestrian circulation system and provide required access for firefighting equipment.

Cerritos College is the first exposure to the collegiate experience for a majority of the student body. The Quads and Courtyards enhance this experience by providing places for students to congregate, converse, socialize, celebrate and participate in extracurricular activities.

Framed by significant campus buildings, Quads comprise a series of destination spaces and gathering areas. These areas are points of interest and provide opportunities for thoughtful placement of sculpture, water features and other elements that encourage activity and interaction of students, staff, faculty and visitors.

The Central Quad is the physical and symbolic heart of the campus. As the campus evolves, the character of the Central Quad should evolve and be developed in accordance with the guidelines and needs of the campus. The central Quad should support a variety of uses including ceremonies such as graduation, assemblies and concerts, passive recreation and informal lawn sports such as catch and Frisbee tossing. The mix of uses will generate a relaxed and engaging campus atmosphere. A water feature or sculpture may be included as a focal point in the quad.

In contrast to the larger Quads, courtyards serve as outdoor extensions of adjacent buildings. These spaces may be used by smaller groups and individuals for quieter and more intimate purposes.

Courtyards are envisioned to be unique individual spaces. Shade structures, sculpture, water features and significant plantings of trees, shrubs and ground covers will establish the individual identity of each quad.

As extensions of individual buildings courtyards can facilitate a variety of uses including individual study and passive recreation, classroom gatherings and alternative education activities. The landscape in each courtyard should relate to the style of the building. Significant landscape elements such as existing trees should be incorporated into the design. Existing trees should be selectively pruned and maintained to enhance their character.

New building additions to the campus such as the Physical Science and Technology (PST) building, to be located at the northwestern corner of the campus will frame new courtyard spaces. These spaces should incorporate specimen trees, special plantings and other landscape elements such as sculpture to make these spaces intimate refuges within the campus.

Learning Gardens

Learning Gardens use a diverse plant palette to facilitate the school's pedagogy of Active Learning. Selected for their aesthetic application, heritage value to the campus or the California landscape, these spaces add color and interest to the landscape. The installation of informational plaques adds an educational dimension to the landscape. Information might include botanical descriptions, origin and uses of the plants.

Other landscape elements include paving, site furnishings, art programs, lighting and water features. These elements add richness and contribute to the unique identity of Cerritos College.

Plant Materials

See Appendix for:

- Wallace Laboratories – Soil, Plant & Water Analysis
- Cerritos College Tree, Shrub, Ground Cover & Vine List Matrices

Analysis of the existing campus landscape identified large specimen trees and groupings of trees that should be protected during expansion of the College campus. These mature trees are assets to a growing and changing landscape and should be valued for their part in contributing to the campus character. These Heritage trees include a Quercus agrifolia (Coast Live Oak), a Ginkgo biloba (Maidenhair) tree, several rows of Jacaranda mimosifolia (Jacaranda) trees, a group of Koelreuteria bipinnata (Chinese Flame) trees, pines, Eucalyptus and other trees. Other large trees found within the courtyards of existing buildings should also be considered for protection. Further analysis by an arborist is recommended to determine the health, anticipated lifespan and landscape value of existing trees as part of the design process for each area.

Planting additional Eucalyptus trees along the Sports Complex perimeter will improve the established character and the distant canopy skyline views from elsewhere on campus and the surrounding community.

Mature cypress trees provide a green edge on the south end of the stadium. Bougainvillea provides a colorful screen along the stadium's western edge. A Xylosma congestum (Xylosma) hedge screens the chain link fence on the north side of the sports facilities and creates a green edge for Parking Lot 1 and 2.

Irrigation and Maintenance

Existing Conditions

The campus has two meters for reclaimed water: (1) at the east side of the C-10 parking lot near 166th St; (2) The third stall from the north in the northern section of the parking lot in the southwest corner by Studebaker. This reclaimed water comes to the campus at 90 psi.

The existing controllers/time clocks are Rainbird ESP-MC Series equipment. The sports fields require multiple programs for each of the four field zones, and controllers with programmable zones will be required. There are currently more than 35 zones on campus. The design standard for sprinkler control boxes will be stainless steel if they are located outside. The campus standard manufacturer for irrigarion equipment is Rainbird.

Future Requirements

Cerritos College currently does not have a campus-wide Central Control Irrigation System. The implementation of state-of-the-art computerized Central Control Unit (CCU), linked with project-specific Irrigation Control Units (ICU's), will efficiently control and monitor the use of irrigation water. This technology will enable maintenance personnel to closely and effectively control irrigation use by providing customized watering schedules and water distribution for each automatic remote control valve; and reducing staff maintenance time. Furthermore, the use of additional water-saving irrigation devices such as master valves, flow sensors, moisture sensors, rain sensors, low-flow water emitters, check valves, and remote weather stations coupled with a more drought-tolerant landscape plant palette, will collectively and dramatically reduce the College's potable water demands and expenses. Similarly, planting areas should group together plants with similar hydrological and solar needs.

Paving Materials

In general, pedestrian paving should be natural color concrete with a broom finish throughout the campus. Downplaying the hardscape foundation with a universal utilitarian pavement focuses attention upon the landscape improvements and the new buildings. Over time, this economical pavement solution will unify the campus and minimize future maintenance and replacement costs.

It is recommended that the Central Quad, Secondary Quads and Courtyards also utilize natural color concrete to minimize maintenance and installation costs. Accent colors approved by the PRT may also be applied to create visual interest. A more closely spaced joint pattern may also be utilized to enhance the paving pattern within these spaces.

Drain inlets within paved areas should be minimized in favor of sheet flow drainage to adjacent planting areas. This strategy will eliminate the visual clutter and potential tripping hazards that drain inlets can create.

Site Furnishings

(See Appendix B for Site Furnishings)

To enhance design coherence throughout the campus, a family of site furnishings and lighting has been selected.

Cerritos College is also planning to include an art program into its campus environment where sculpture can be used to enhance wayfinding as well as provide aesthetic pleasure.

Primary art pieces may be large scale and visible from a distance. These pieces will serve as campus focal points, and are proposed to be located in quad areas and at the end of promenades.

Secondary art pieces are smaller scale than the primary art pieces. They should be used in courtyards and more intimate spaces within the campus to provide elements of surprise or contemplation. These sculptures may include several smaller components that suggest an artistic concept or suggest a narrative.

Temporary installations should also be promoted. As short term events these exhibits create change and engage students with their campus. The locations of temporary installations can be flexible because of their limited durations. These installations can include work by students, faculty, visiting artists and others. Temporary installations will serve the educational mission of the college by broadening the students' experience and understanding of art.

Special consideration should be given to lighting, pedestals and plaque assignments for permanent art placements. Lighting, plaques and pedestals should be designated so they are uniform and create a family of parts used throughout the campus. This will help to unify the sculpture into a cohesive art program. In all cases, special consideration for the placement of each piece within the campus landscape should be taken to most effectively contribute to the character and integrity of the campus Master Plan.

Water features may be installed in key locations to provide focal points that are engaging and provide interest to the campus.

Campus furniture such as benches, trash receptacles, lighting, bicycle racks and shelters will work together as a family of elements that contribute to the design unity of the campus. Selection of a contemporary set of campus furniture in a neutral tone and a durable finish will best compliment the surrounding campus architecture. The following pieces have been selected as a recommendation for incorporation into the campus landscape:

- Parking Lot Light Fixtures
- Area Light Fixtures
- Benches
- Trash Receptacles
- Bicycle Racks
- Pedestrian Transit Shelters

Campus Lighting

(See Appendix for Exterior Luminaires)

Cerritos College students take full advantage of the nighttime classes offered, so special attention must be paid to creating an environment that is safe and attractive. Light can transform the mood of the environment. So, by illuminating buildings with colored lights, it will reinforce the campus identity & way-finding.

Building and Site Lighting

Overview
A primary goal of the College is to maximize energy efficiency and to utilize sustainable design practices wherever possible on campus. The College may not pursue LEED certification for all the buildings; however, their goal is to utilize sustainable design practices wherever practicable. Currently, the campus has a Building Management System that controls the majority of the building and site lighting. All new projects should be connected to that system.

Lighting design is an important component of the energy efficient design required by the Campus. Lighting design must consider energy efficient design as well as the use of renewable energy sources. In addition, the lighting must provide the visual comfort to optimize the learning environment on campus.

The following design objectives address both interior and exterior lighting requirements on campus. The goal is to exceed Title 24 requirements by as much as 20% and to maximize the use of renewable energy sources. All projects on this campus should adhere to these design criteria and objectives. If a need arises to modify these requirements during the design phase it is the designer's responsibility to notify the Owner in writing. Although it is not mentioned for the remainder of these guidelines, all of the requirements below are goals but they are all subject to compliance with state mandated Title 24 requirements.

INTERIOR LIGHTING

Lighting Levels
Foot candle levels should be consistent with IES guidelines. Lighting levels should be calculated at desk height (30 inches) and should use appropriate reflectance factors for the finishes and furniture located in the individual room.

Lighting Fixture Types
The type of light fixtures should enhance the overall aesthetics of the space as well as provide quality, comfortable light. Indirect/direct fixtures should be used where possible in classrooms. All fixtures should be chosen and located to reduce glare and increase the visual comfort of the building occupants.

Lamps/Ballasts

The primary lamp source for all interior spaces is fluorescent. Compact fluorescent lamps should be used for smaller fixtures. For linear type fixtures, T8 lamps should be used. In larger areas with higher ceilings T5 lamps can be used but care must be taken due to the extreme brightness of these lamps. Linear fluorescent lamps should have a CRI of at least 70 and compact fluorescent a CRI of at least 80. Where possible, use linear fluorescents due to the higher efficiency than compact fluorescents. Ballasts should be electronic type with a THD<10%. Dimming ballasts should be solid-state type and compatible with any dimming or daylighting systems used. Ballasts should be employed to allow multiple lighting levels in each space.

Controls

Controls should consist of a networked lighting control system, switches, dimmers, and occupancy sensors. A networked lighting control system should be utilized on every building where possible and should be integrated into the campus Building Management System. The system allows central time control over multiple zones which helps to maximize energy efficiency. Manual switches should meet the requirements of Title 24. Dimmers should be used in selected areas as dictated by the College. Occupancy sensors should be used wherever possible to maximize energy efficiency. Occupancy sensors should utilize dual technology. Sensors for small single-occupancy rooms can be wall-mounted. Larger rooms will require ceiling mounted sensors. Regardless of the controls used, all spaces greater than 100 square feet should utilize multiple lighting levels. All lighting controls should be integrated into the campus-wide Building Management System.

Daylighting

Daylighting is an opportunity to utilize a renewable energy resource to maximize energy efficiency. Wherever possible daylighting should be utilized. This may impact HVAC loads and equipment sizes. Because of the impact of automatic control on the lighting levels to the occupants, care should be taken in choosing to utilize daylighting systems. Because of the many issues surrounding the use of these systems it is the designer's responsibility to address the use of daylighting during the early stages of project design. Any opportunities to use this system should be addressed in writing to the

Owner during the initial design stage. Provide enough information to allow the Owner to make an informed decision regarding the use of this system.

EXTERIOR LIGHTING

Existing Condition

Currently the campus exterior lighting has 95% high pressure sodium lighting.

Glare Control

The following design strategies should be taken into account to help increase nighttime visibility and to reduce glare:

- Distribute light more uniformly and over a broader area by using shorter poles with lower wattage lamps.
- Reduce light levels.
- Shield light sources.

Light Pollution

In keeping with other energy efficiency and LEED goals, the plan would be to comply with the "dark-sky" concept to prevent light pollution at the campus from bleeding into the atmosphere. Although most of the college is currently high pressure sodium lamp sources, it would be beneficial to study the use of metal halide or other lamp sources for all exterior lighting. In addition, full cut-off and shielded luminaires should be used for new exterior lighting. Luminaires mounted on buildings and on poles should be aimed and shielded to avoid any light trespass onto adjoining properties. Unshielded security floodlights or wallpacks should be avoided. The use full cut-off luminaries is recommended, wherever possible. All fixtures should have controlled distribution. Up-lighting should be avoided wherever possible.

Security – Safety

Lighting that provides a sense of security increases legitimate nighttime activity which in turn increases actual security. This can be accomplished by providing increased uniformity, reduced shadows, reduced source glare, using natural color lamps, and avoiding over-lighting. Sidewalks, pathways and bikeways should be designed to provide illumination onto the vertical plane so people's faces are comfortably lighted. Low height bollards generally light the ground and should be utilized in conjunction with taller luminaries or where another criterion takes precedence. Additional transitional lighting

should be provided to the sides of walkways as they pass building alcoves, building entrances, or dense shrubbery.

Color
Metal halide lamps with a CRI above 65 should be used. For smaller fixtures compact fluorescent lamps should be used. For heavily populated pedestrian locations where superior color is required and where there is sufficient project budget, ceramic metal halide lamps should be used. These lamps should have a CRI above 80 with an apparent color of 3200K to 5000K depending on the application.

Controls
Exterior lighting control should be incorporated into the campus-wide Building Management System. Exterior lighting should be zoned to allow multiple levels of light during the entire nighttime period. The lower level for basic security and a higher level for normal usage. Hours of operation should conform to the campus operating schedules.

Luminaires
Luminaires selection should consider vandalism. Sturdy construction is required. Provide tamperproof fasteners. Provide rigid and fixed aiming to prevent rotation of fixtures. Lenses and diffusers should resist breakage, weakening, or discoloration by aging or exposure to UV light.

Thermal Considerations
Some exterior fixtures have excessive surface heat due to the weatherproof construction. These include up-light in-ground fixtures. These should be avoided due to the excessive heat which can burn people and add to the light pollution discussed earlier.

Title 24
Outdoor lighting design should conform to Title 24 requirements of the California Building Code, the latest adopted edition.

Exterior Luminance Levels

Exterior Luminance Recommendations				
Space Type Categories	Horizontal FC (Min. Avg.)	Vertical FC (Avg.)	Luminance Ratios	
Exterior Building Entries	5	3		
Exterior Doors, Inactive	3	3		
Sidewalks and bikeways	2	1	4:1	Avg/ Min
Parking Lots	1	0.25	20:1	Max/ Min
Areaway Lighting	1	0.25	4:1	Avg/ Min

Campus Wayfinding

In the built environment, proper Wayfinding design allows people to orient themselves in physical space so they may navigate to a desired location. The importance of wayfinding cannot be stressed enough on a college campus. The new student or visitor must be able to identify where they enter the campus for first-time information. Having an easily identifiable way from the parking lot to the main services on campus will create a very positive student service image. With multiple site entrances to parking on Alondra and Studebaker, signage and a priority of site signage will aid in visitor satisfaction. A good wayfinding concept will:

- Utilize consistent signage and graphic communication
- Define spatial grammar to provide a natural flow and relationship between buildings
- Use audio/visual aids, audible devices and tactile elements
- Accommodate special-needs users

Campus Wayfinding may be broken down into two categories:

- **Vehicular Wayfinding** - primary entry monument, secondary entry monuments, primary vehicular directionals, parking and secondary vehicular directionals, parking area identification
- **Pedestrian Wayfinding** – directories, freestanding directionals, building identification

Other design considerations may be color coding corresponding with different areas on campus or the use of sculptures and artwork for location markers.

Campus Wayfinding Signage Design Guidelines

- **Design Theme and Approach**
- **Campus District Zoning**
- **Sign Location Plan**
- **Typeface**
- **Material & Color Palette**
- **Sign Types**
- **Signage Guidelines**
- **Prohibited Signs and Materials**

Design Theme

The designs of the signs will follow the principles of modern and clean lines, for a timeless look. The design should be progressive, forward thinking, clear and functional. A fresh approach to color, form and type will help enliven the campus, creating pieces of visual interest within the campus, reinforcing the campus spirit, as well as guiding visitors and students to their destination.

Design Approach

Consistent signage should be used throughout the campus. Standard materials and fabrication processes must be used to insure that replacement signage can be consistently duplicated over the long term. Simple, classic design using traditional typefaces should be used to avoid creating a system that will look dated in the future.

Durability is extremely important, as exterior signage will be exposed to the elements and the signage should be built to last. Tactile/Braille/Accessible signage should be placed in key locations.

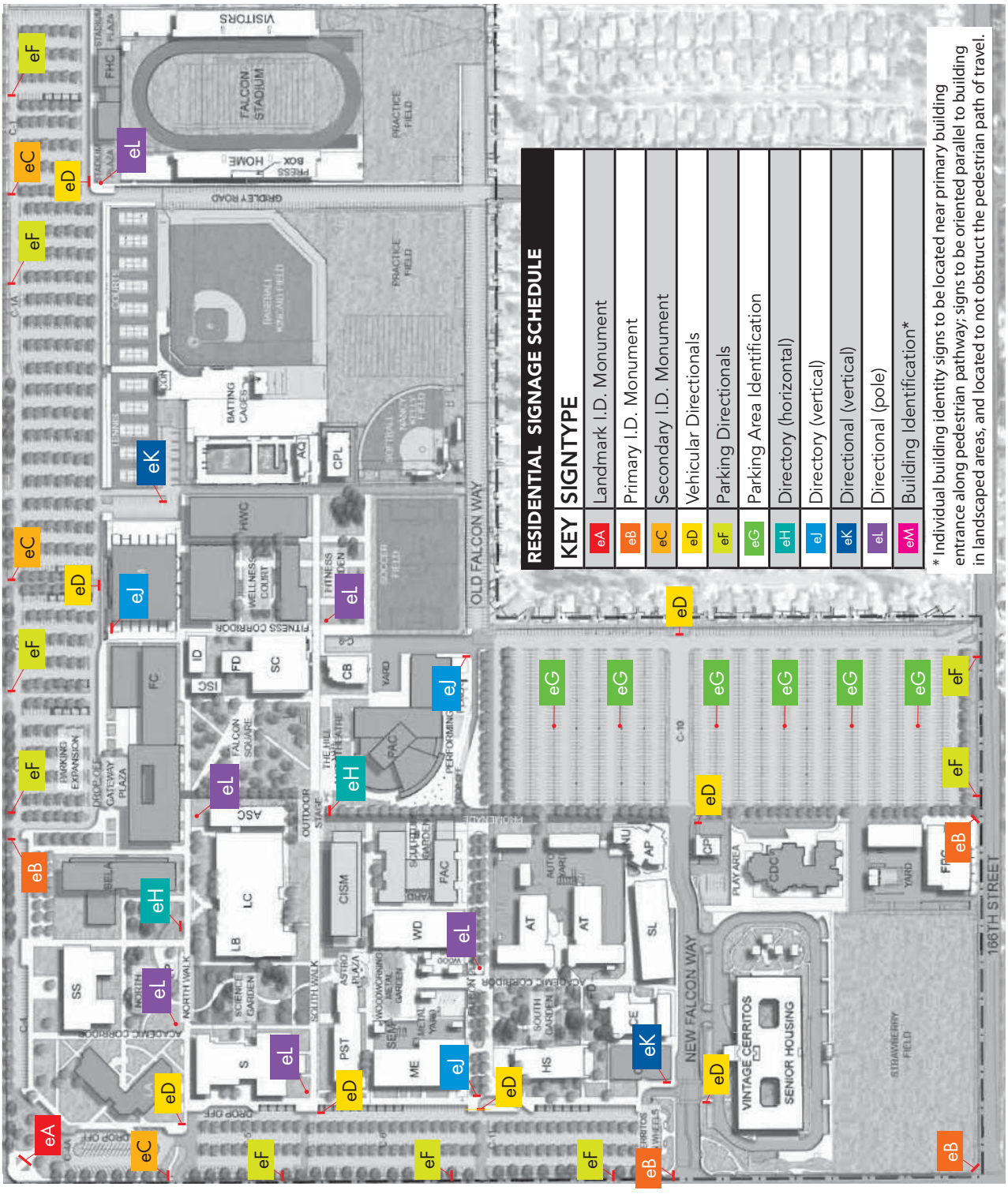
Flexibility of the signs is a consideration. Proper planning should be implemented to account for future messaging and futue buildout.

Quality

As a principle, open space should be avoided as this may encourage vandalism or "tagging" on signage and school property. Durable paint and material finished should be strongly considered to prevent vandalism and/or assist in ease of removal.

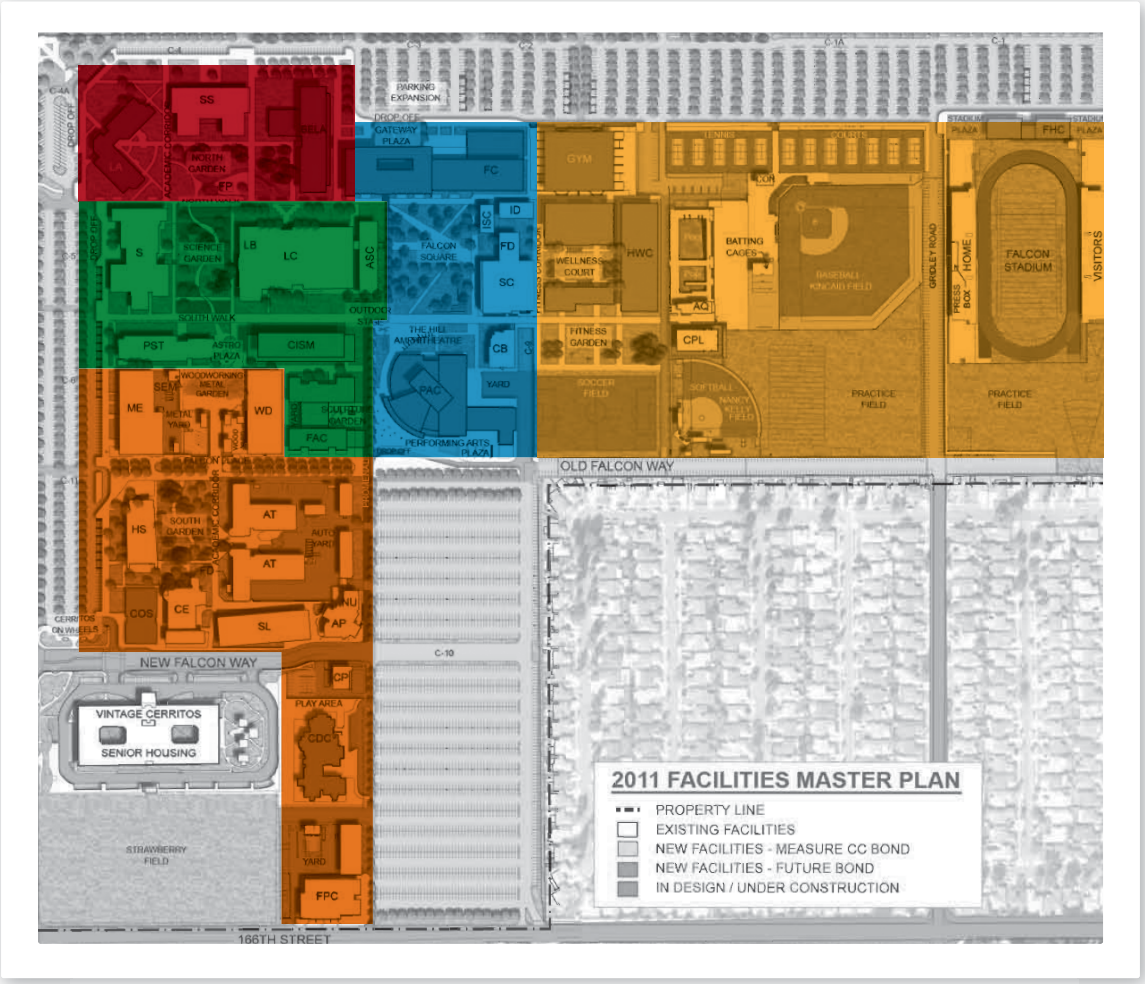
All paint to be Matthews paint or similar pre-approved quality and be either UV resistant or have a UV filter applied after painting. Final coating to be an anti-graffiti spray coating to ensure signs are more graffiti resistant.

Conceptual Signage Location Plan



Campus District Zoning

The color zoning will be used on campus maps and wayfinding.



Education Core A

Education Core B

Education Core C

Social Core

Health & Wellness Core

Typeface

The typefaces for Cerritos College will be Neutraface 2 Display and Univers 57 Condensed. Designed by Christian Schwartz in 2003, Neutra is a face with a distinct personality, inspired by one of modernism's most influential architects, Richard Neutra. It has been labelled "the most typographically complete geometric sans serif family ever."

Neutraface 2 Display Bold

ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789

Univers 67 Bold Condensed

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

Univers 57 Condensed

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

Icons

Example:

CERRITOS COLLEGE

Please purchase ticket at paystation.

Material

Polished Concrete - Cool*

Polished Concrete - Warm*

Textured Concrete - Warm*

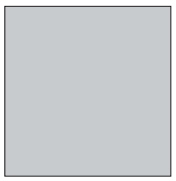
Painted Aluminum

*To be coordinated with landscape paving materials and architectural materials/colors.

Color

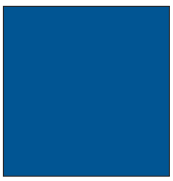
Matthews paint colors are recommended for use on signage.

MP33260
Twilight Zone

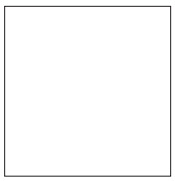


MP19894
Stainless Steel Metallic

MP10261
Indanthrone Blue (Match Cerritos Blue Pantone 19-3955 TCX Royal Blue)



MP02160
Sailboat Blue



MP07147
Babys Breath

Zoning colors

MP10338
Fiesta Red

MP14092
Donegal Green

MP00170
Moline Orange

MP04721
Ciel Bleu

MP04498
Tagetis Yellow

Parking colors

MP14460
Camo Green

MP04998
Plum Kuchen

MP00205
Orange Ember

MP01126
Davies Crest Red

MP11399
Crayon Green

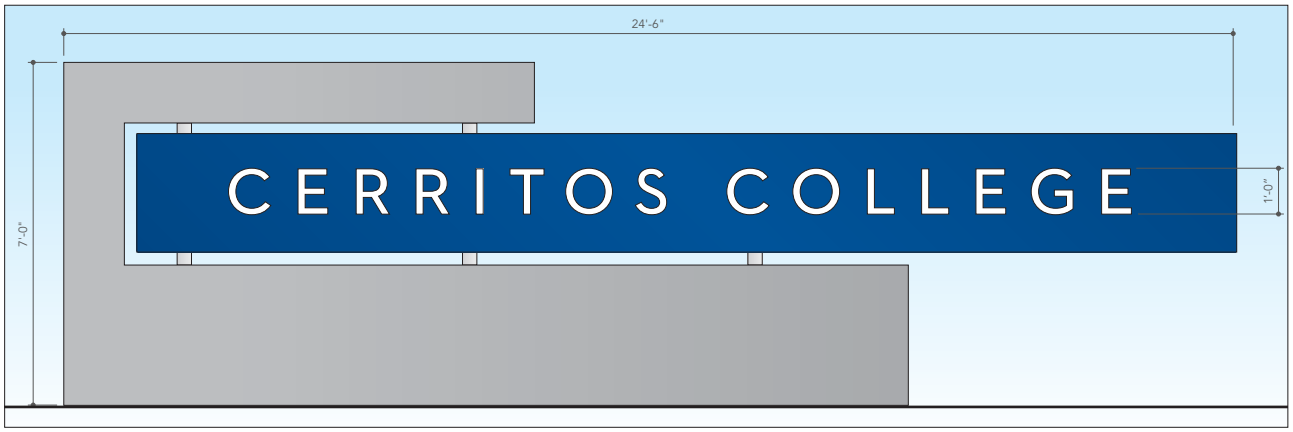
MP00285
Magenta Sigh

MP00853
Plastic Pumpkin

MP00225
Rose Petal

eA Landmark Identity Monument

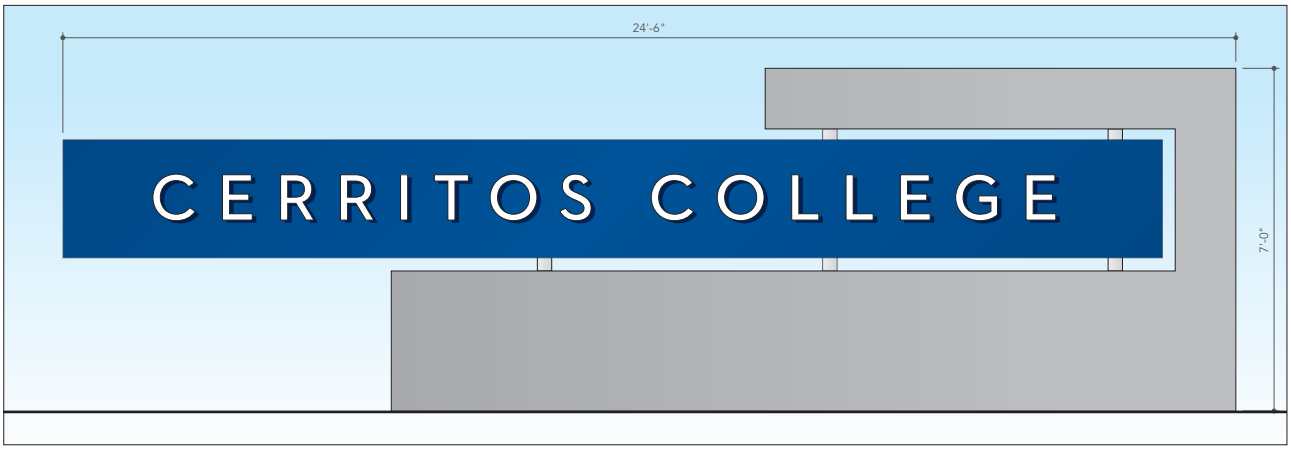
Creates a landmark and visual statement that clearly defines the campus edge at Studebaker and Alondra. A horizontal sign format speaks to the language of classic college campuses, white vertical elements can be grouped with the sign to create more variation.



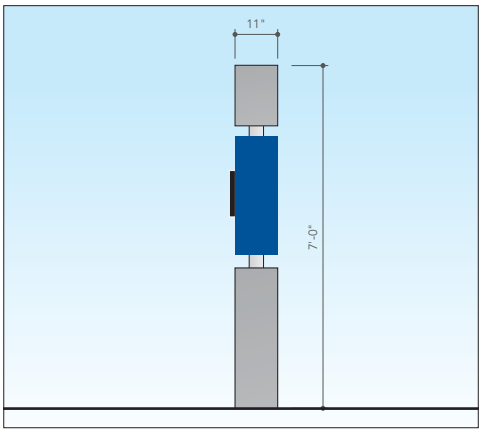
1 Front View
Scale 1/4" = 1'-0"

Purpose	Announce project and define its borders.
Maximum Number	1
Location(s)	Corner of Studebaker and Alondra
Orientation	One sided, horizontal
Minimum Sign Size	Height: 7', Width: 25', Depth: 1'
Font	Neutraface 2 Display
Maximum Letter Size	1'
Primary Sign Copy	CERRITOS COLLEGE
Secondary Sign Copy	None
Sign Const. / Material	Concrete, Painted aluminum, Internally illuminated push thru acrylic
Illumination	Internally illuminated
Special Considerations	Landscaping to be planted around sign.

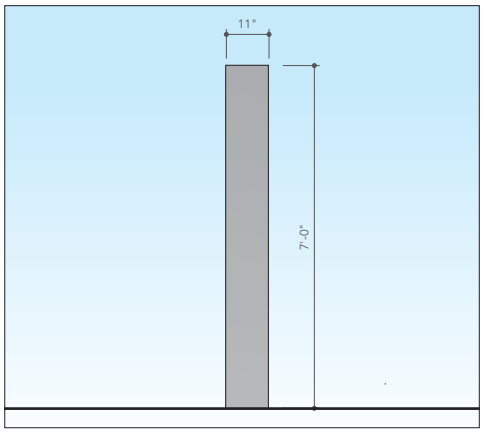
eA Landmark Identity Monument



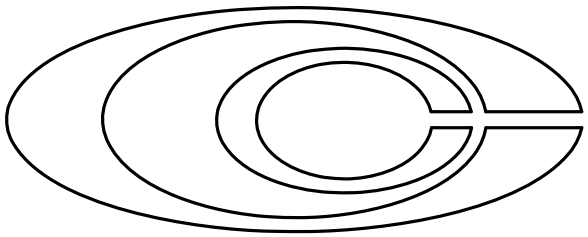
2 Back View
Scale 1/4" = 1'-0"



3 Side View
Scale 1/4" = 1'-0"

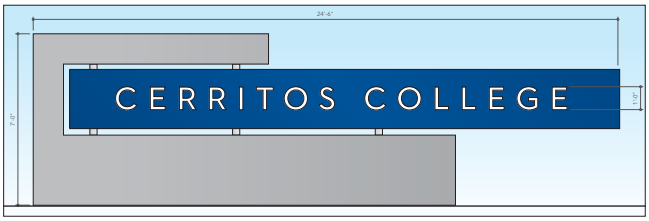


4 Back View
Scale 1/4" = 1'-0"

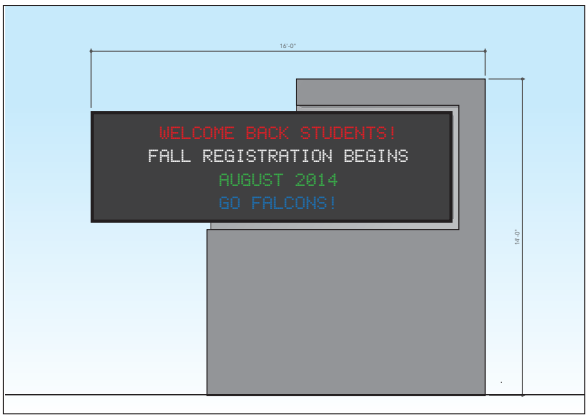


CERRITOS COLLEGE LOGO - "CONCENTRIC C'S"

eA Landmark Identity Monument (with digital)



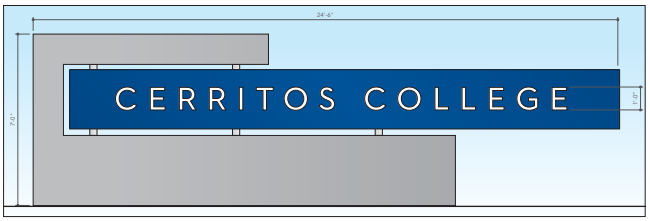
1 Front View
Scale 1/8" = 1'-0"



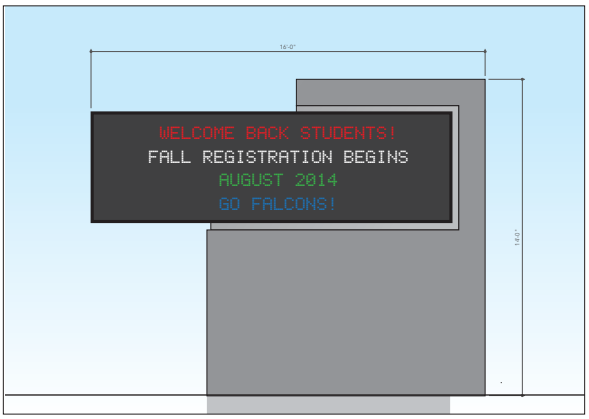
2 Front View
Scale 1/8" = 1'-0"

Purpose	Announce project and define its borders.
Maximum Number	1
Location(s)	Corner of Studebaker and Alondra
Orientation	One sided, horizontal
Minimum Sign Size	Height: 7', Width: 25', Depth: 1'
Font	Neutraface 2 Display
Maximum Letter Size	1'
Primary Sign Copy	CERRITOS COLLEGE
Secondary Sign Copy	None
Sign Const. / Material	Concrete, Painted aluminum, Internally illuminated push thru acrylic
Illumination	Internally illuminated
Special Considerations	Landscaping to be planted around sign.

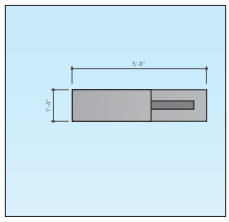
eA Landmark Identity Monument (with digital & seal totem)



1 Front View
Scale 1/8" = 1'-0"



2 Front View
Scale 1/8" = 1'-0"



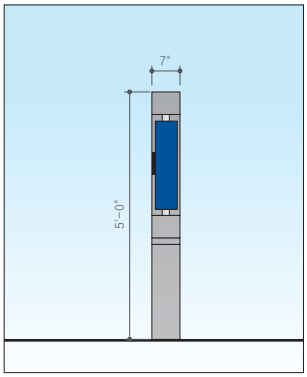
3 Top View
Scale 1/8" = 1'-0"

Purpose	Announce project and define its borders.
Maximum Number	1
Location(s)	Corner of Studebaker and Alondra
Orientation	One sided, horizontal
Minimum Sign Size	Height: 7', Width: 25', Depth: 1'
Font	Neutraface 2 Display
Maximum Letter Size	1'
Primary Sign Copy	CERRITOS COLLEGE
Secondary Sign Copy	None
Sign Const. / Material	Concrete, Painted aluminum, Internally illuminated push thru acrylic
Illumination	Internally illuminated
Special Considerations	Landscaping to be planted around sign.

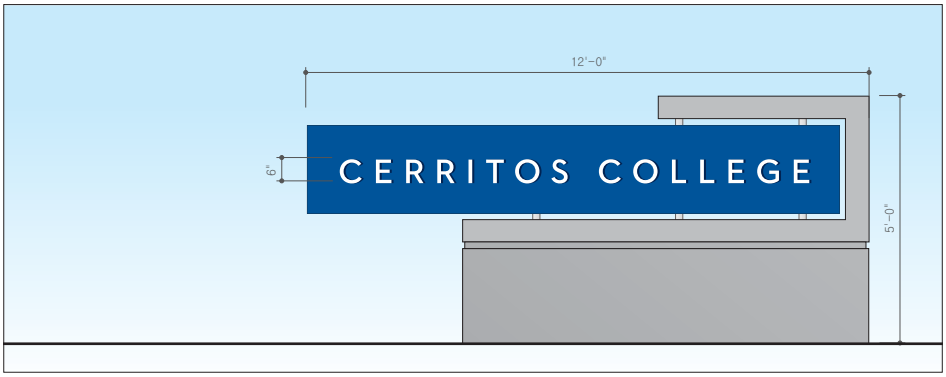
eB Primary Identity Monument

Creates a landmark and visual statement that clearly defines the campus edge. Welcomes vehicles into the primary entry points of the campus and identifies major entrances.

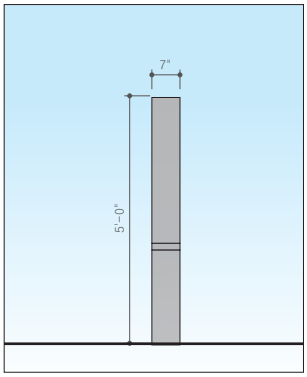
1 Front View
Scale 1/4" = 1'-0"



2 Side View
Scale 1/4" = 1'-0"



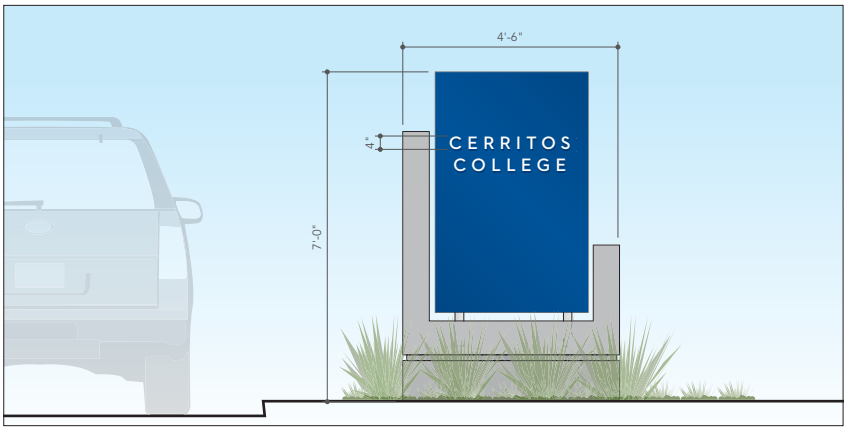
3 Front View
Scale 1/4" = 1'-0"



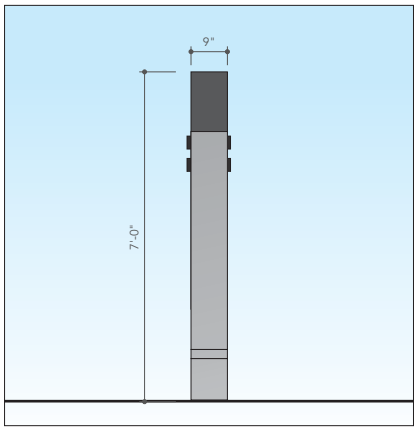
4 Side View
Scale 1/4" = 1'-0"

Purpose	Announce project and define entries
Maximum Number	3
Location(s)	New Falcon Way; 166th/Studebaker; 166th St. entry
Orientation	One or double sided
Maximum Sign Size	Height: 5', Width: 12', Depth: 7"
Font	Neutraface 2 Display
Maximum Letter Size	6"
Primary Sign Copy	CERRITOS COLLEGE
Secondary Sign Copy	None
Sign Const. / Material	Concrete, Painted aluminum, Internally illuminated push thru acrylic
Illumination	Internally illuminated
Special Considerations	

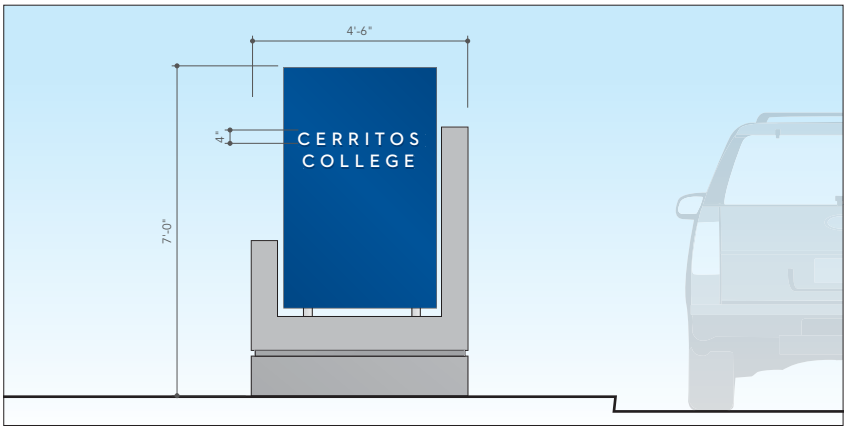
eC Secondary Identity Monument



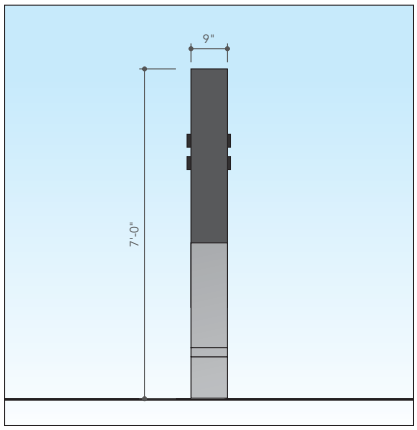
1 Front View
Scale 1/4" = 1'-0"



2 Side View
Scale 1/4" = 1'-0"



3 Front View
Scale 1/4" = 1'-0"

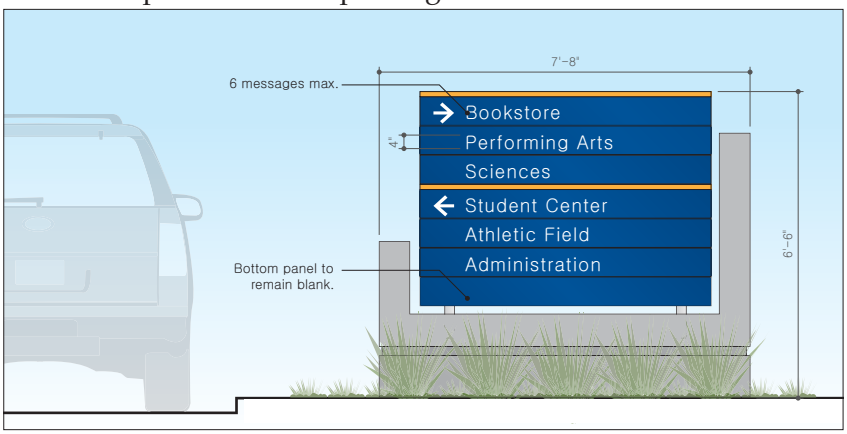


4 Side View
Scale 1/4" = 1'-0"

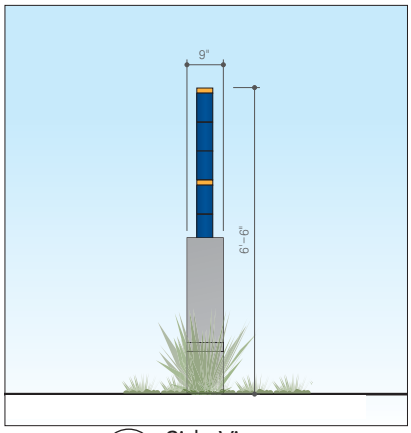
Purpose	Announce entry and reinforce borders.
Maximum Number	4
Location(s)	Secondary Entries
Orientation	Double sided, vertical
Maximum Sign Size	Height: 7', Width: 4'-6", Depth: 7"
Font	Neutraface 2 Display
Maximum Letter Size	4"
Primary Sign Copy	CERRITOS COLLEGE
Secondary Sign Copy	None
Sign Const. / Material	Concrete, Painted aluminum, Internally illuminated push thru acrylic
Illumination	Internally illuminated
Special Considerations	

eD Vehicular Directionals

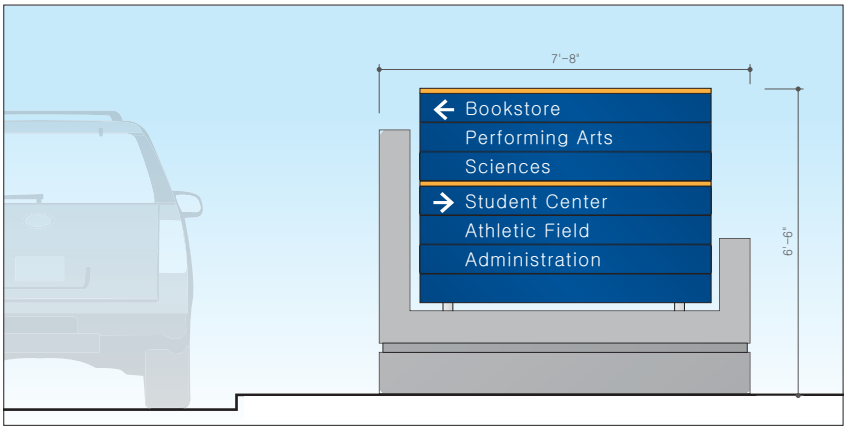
Directs vehicles at key decision points throughout the campus parking area; messaging to have key and important drop-offs, departments and parking destinations in the area.



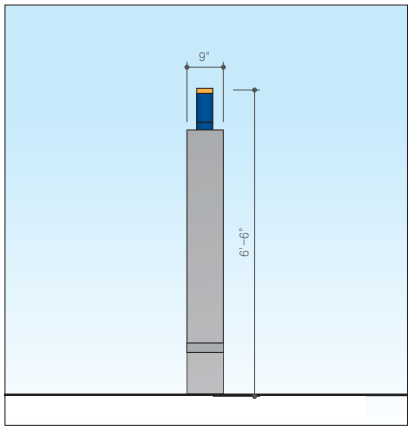
1 Front View
Scale 1/4" = 1'-0"



2 Side View
Scale 1/4" = 1'-0"



3 Back View
Scale 1/4" = 1'-0"



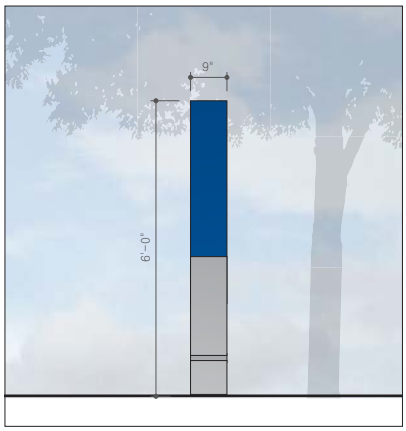
4 Side View
Scale 1/4" = 1'-0"

Purpose	Direct vehicles to parking areas
Maximum Number	TBD
Location(s)	Vehicular decision points as needed
Orientation	Facing vehicles
Maximum Sign Size	Height: 6'-6", Width: 7'-8", Depth: 9"
Font	Univers 57 Condensed / 67 Bold Condensed
Maximum Letter Size	4"
Primary Sign Copy	TBD
Secondary Sign Copy	None
Sign Const. / Material	Concrete, Painted aluminum, Vinyl
Illumination	None
Special Considerations	Panels to be replaceable, maximum 6 messages, bottom panel to remain blank.

eF Parking Directionals

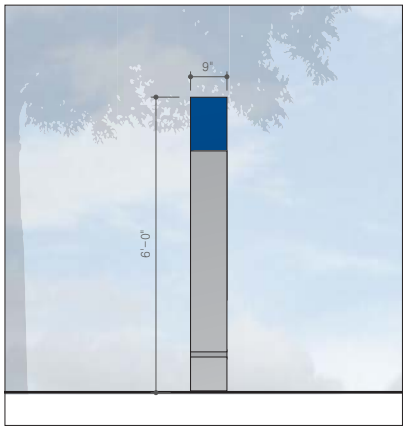
Identifies parking lots and directs vehicles into correct parking areas; messaging to have lot identification and secondary messaging for parking rules and regulations.

1 Front View
Scale 1/4" = 1'-0"



2 Side View
Scale 1/4" = 1'-0"

3 Back View
Scale 1/4" = 1'-0"

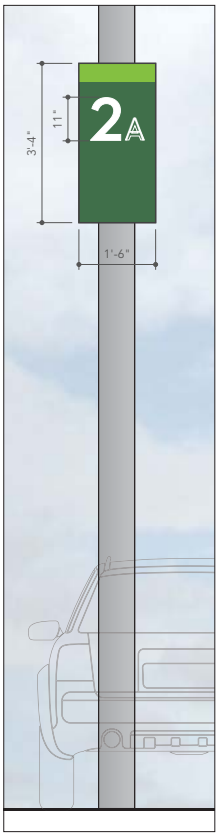


4 Side View
Scale 1/4" = 1'-0"

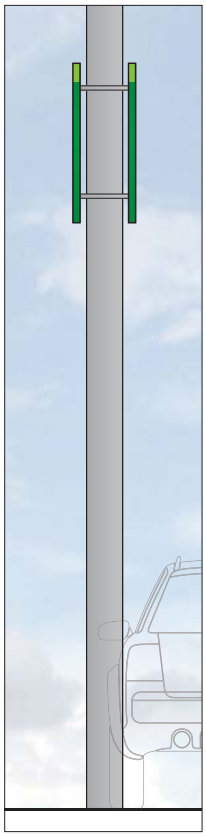
Purpose	Identify parking lots
Maximum Number	TBD
Location(s)	Parking entry points
Orientation	Facing vehicles
Maximum Sign Size	Height: 6', Width: 3'-6", Depth: 9"
Font	Neutraface 2 Display / Univers Condensed
Maximum Letter Size	Lot number size: 2'; secondary copy size 4"
Primary Sign Copy	Lot Number
Secondary Sign Copy	Additional Information
Sign Const. / Material	Concrete, Painted aluminum, vinyl
Illumination	None
Special Considerations	

eG Parking Area Identification

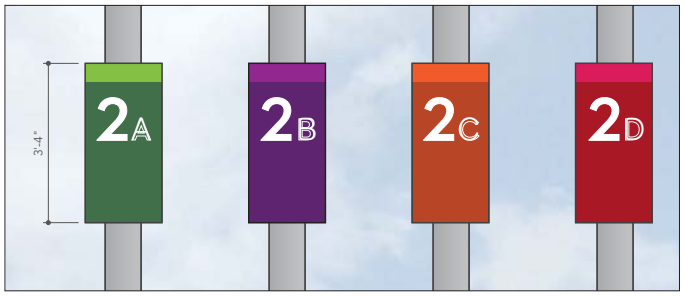
Identifies parking in the expansive south parking lot, helps students and visitors locate their car.



1 Front View
Scale 1/4"= 1'-0"



2 Side View
Scale 1/4"= 1'-0"

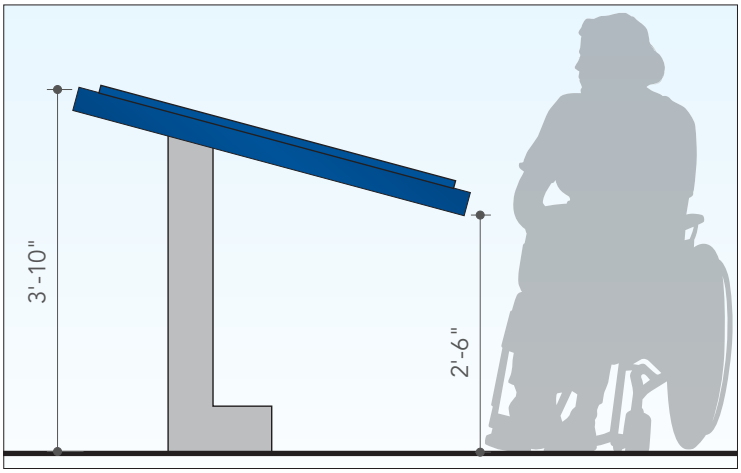


3 Front View
Scale 1/4"= 1'-0"

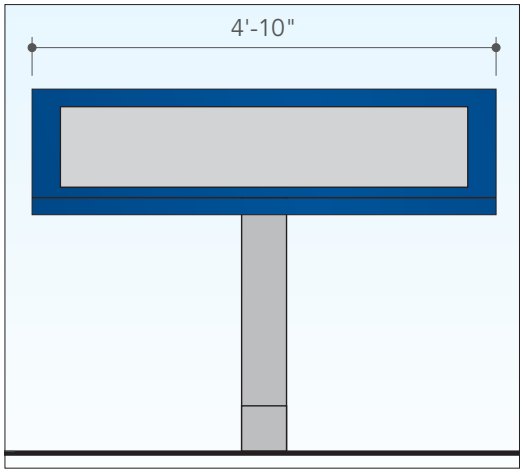
Purpose	Identify parking zones
Maximum Number	TBD
Location(s)	Parking lot light poles
Orientation	Double sided
Maximum Sign Size	Height: 3'-4", Width: 1'-6", Depth: 1"
Font	Neutraface 2 Display
Maximum Letter Size	11"
Primary Sign Copy	Lot number
Secondary Sign Copy	Zone letter
Sign Const. / Material	Painted aluminum
Illumination	None
Special Considerations	

eH Directory (horizontal)

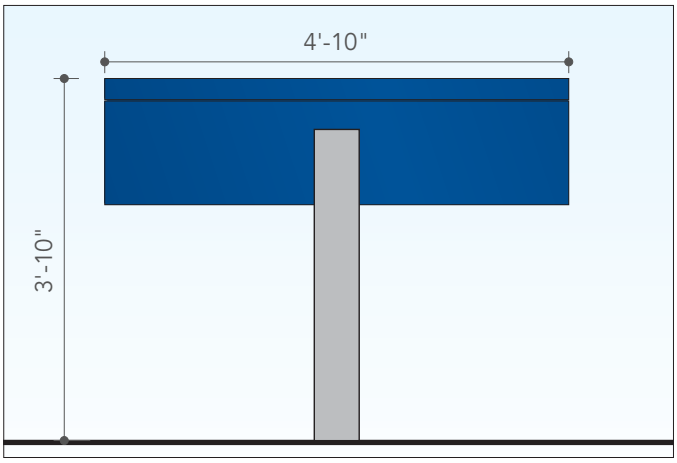
Locates and directs pedestrians to listed areas, key locations, and buildings throughout the campus. Horizontal tabletop design to be handicap accessible.



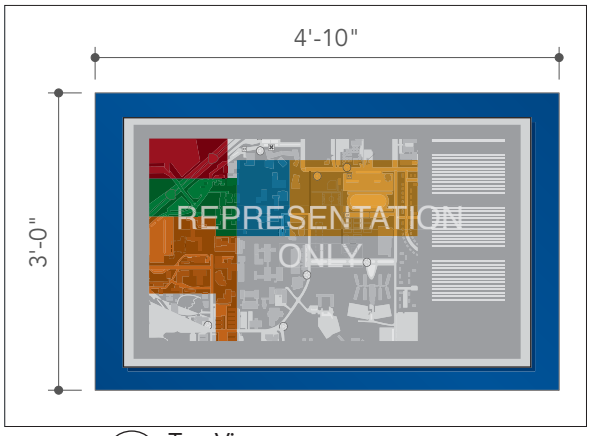
1 Front View
Scale 1/2" = 1'-0"



2 Side View
Scale 1/2" = 1'-0"



3 Back View
Scale 1/2" = 1'-0"

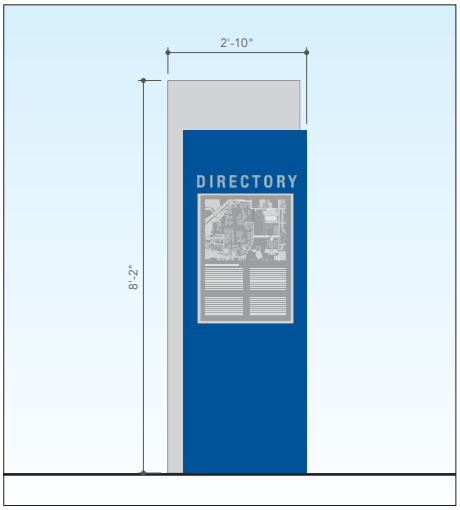


4 Top View
Scale 1/2" = 1'-0"

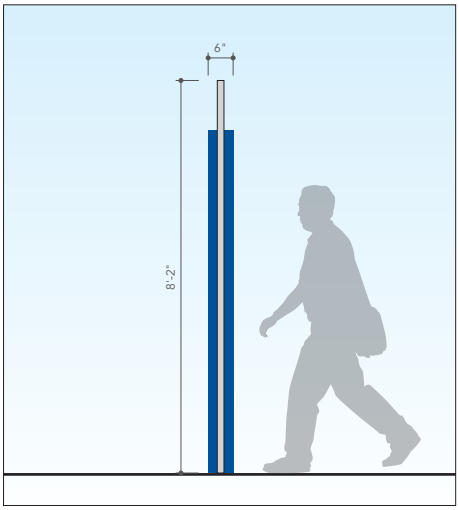
Purpose	Direct pedestrians throughout project
Maximum Number	TBD
Location(s)	Key decision points when entering and throughout project
Orientation	Facing pedestrians
Maximum Sign Size	Height: 3'-10", Width: 4'-10", Depth: 3'
Font	Univers 67 Bold Condensed (on map)
Maximum Letter Size	3"
Primary Sign Copy	Map by others
Secondary Sign Copy	Map by others
Sign Const. / Material	Painted aluminum
Illumination	Internal illumination
Special Considerations	Map by others, map to be changeable, duratrans internally illuminated with glass face

eJ Directory (vertical)

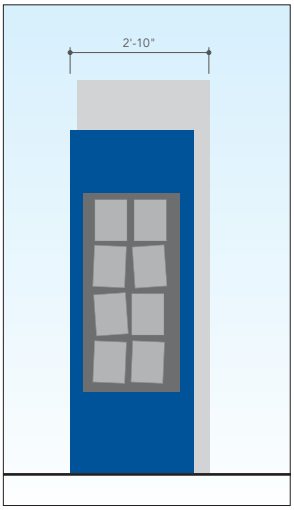
Locates and directs pedestrians to listed areas, key locations, and buildings throughout the campus.



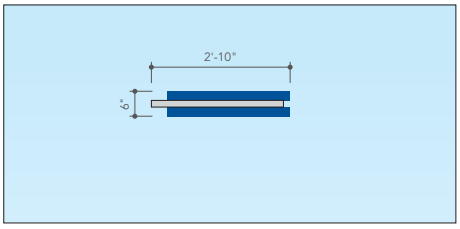
1 Front View
Scale 1/4" = 1'-0"



2 Side View
Scale 1/4" = 1'-0"



3 Back View
Scale 1/4" = 1'-0"

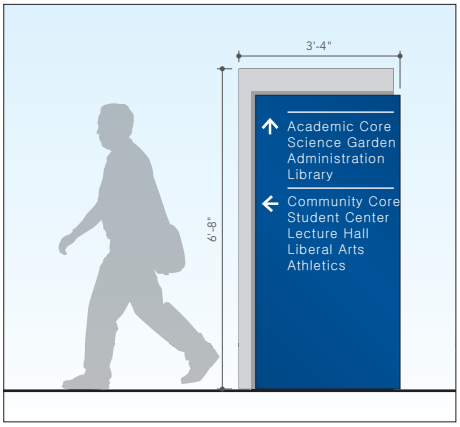


4 Top View
Scale 1/4" = 1'-0"

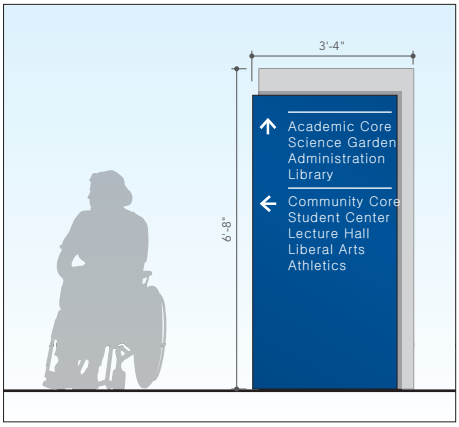
Purpose	Direct pedestrians throughout project
Maximum Number	TBD
Location(s)	Key decision points when entering and throughout project
Orientation	Facing pedestrians
Maximum Sign Size	Height: 6'-8", Width: 3'-4", Depth: 7"
Font	Univers 57 Condensed / 67 Bold Condensed
Maximum Letter Size	3"
Primary Sign Copy	DIRECTORY
Secondary Sign Copy	TBD
Sign Const. / Material	Painted aluminum
Illumination	Exterior luminaire with down-lighting capability
Special Considerations	Back of sign to have pin-up space

eK Directional (vertical)

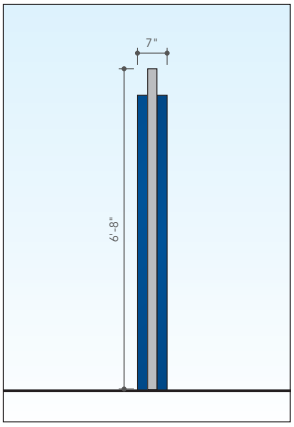
Directs pedestrians to listed areas, key locations, and buildings throughout the campus.



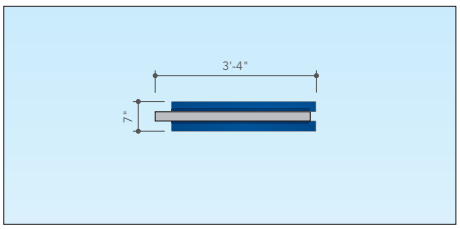
1 Front View
Scale 1/4" = 1'-0"



2 Side View
Scale 1/4" = 1'-0"



3 Back View
Scale 1/4" = 1'-0"

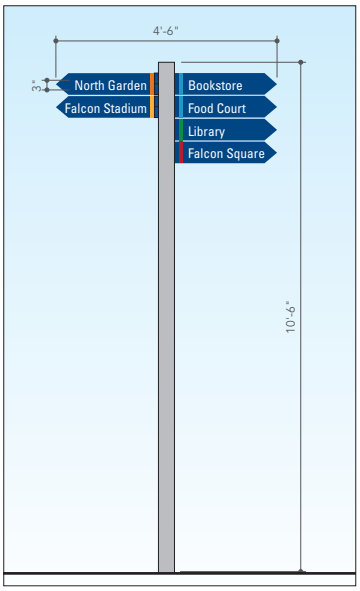


4 Top View
Scale 1/4" = 1'-0"

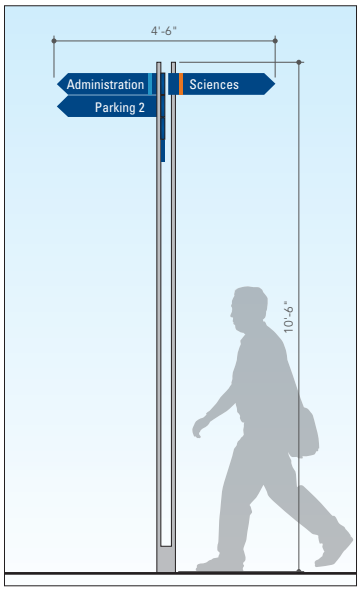
Purpose	Direct pedestrians throughout project
Maximum Number	TBD
Location(s)	Key decision points when entering and throughout project
Orientation	Facing pedestrians
Maximum Sign Size	Height: 6'-8", Width: 3'-4", Depth: 7"
Font	Univers 57 Condensed / 67 Bold Condensed
Maximum Letter Size	3"
Primary Sign Copy	TBD
Secondary Sign Copy	TBD
Sign Const. / Material	Painted aluminum
Illumination	None
Special Considerations	No more than 4 messages under each header for clarity.

eL Directional (pole)

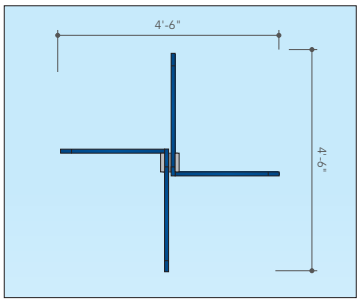
Directs pedestrians to listed areas, key locations, and buildings throughout the campus.



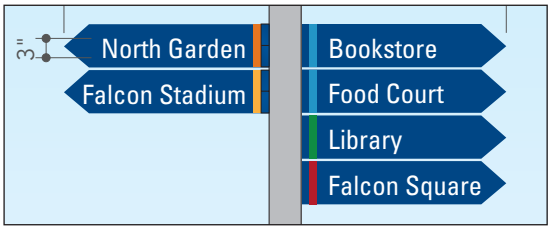
1 Front View
Scale 1/4" = 1'-0"



2 Side View
Scale 1/4" = 1'-0"



3 Top View
Scale 1/4" = 1'-0"

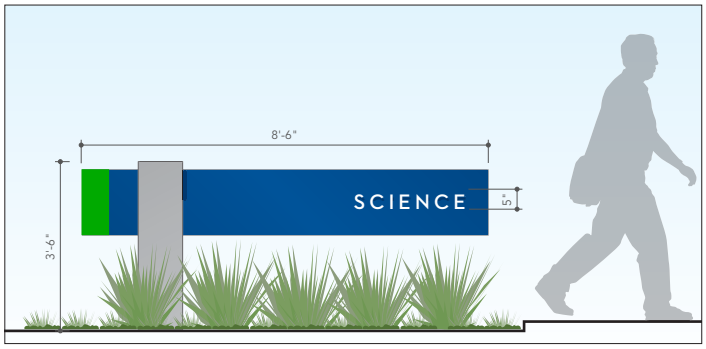


Color Detail

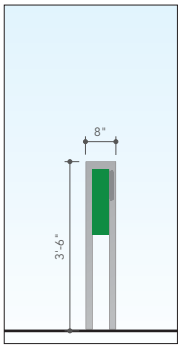
Purpose	Guide pedestrians throughout project
Maximum Number	TBD
Location(s)	Key decision points within project
Orientation	Facing pedestrians
Maximum Sign Size	Height: 10'-6", Width: 4'-6", Depth: 4'-6"
Font	Neutraface 2 Display
Maximum Letter Size	3"
Primary Sign Copy	TBD
Secondary Sign Copy	TBD
Sign Const. / Material	Painted aluminum, push thru acrylic
Illumination	None
Special Considerations	No more than 4 blades per direction. Color to be according to zoning.

eM Building Identification

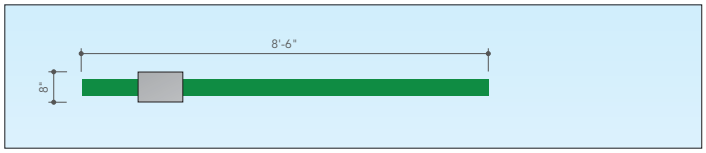
Identifies buildings on the campus, helps visitors and students be certain of their location within the campus.



1 Front View
Scale 1/2" = 1'-0"



2 Side View
Scale 1/2" = 1'-0"

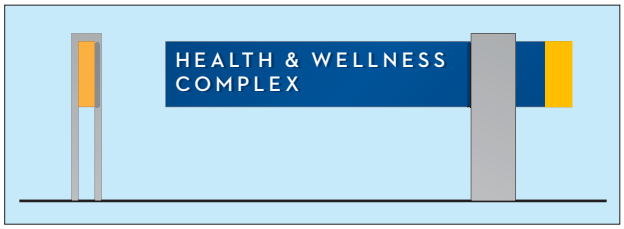


3 Top View
Scale 1/2" = 1'-0"

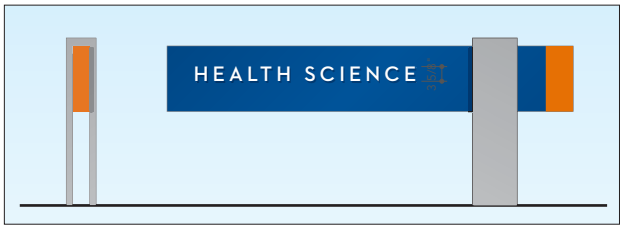
* Individual building identity signs to be located near primary building entrance along pedestrian pathway; signs to be oriented parallel to building in landscaped areas, and located to not obstruct the pedestrian path of travel.

Purpose	Identify Building Entries
Maximum Number	TBD
Location(s)	Outside of buildings, in landscaping
Orientation	Facing pedestrian
Maximum Sign Size	Height: 3'-6", Width: 8'-6", Depth: 8"
Font	Neutraface 2 Display
Maximum Letter Size	5"
Primary Sign Copy	Building name
Secondary Sign Copy	None
Sign Const. / Material	Painted aluminum
Illumination	None
Special Considerations	Sides and top of plade to be painted according to school zoning colors.

eM Building Identification

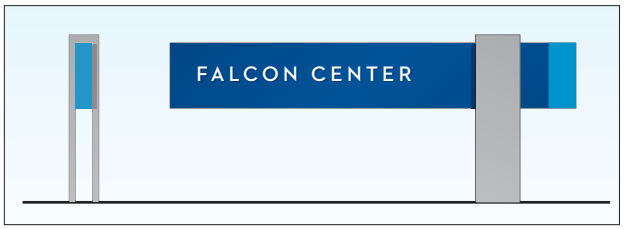


4 Front View
Scale 1/2" = 1'-0"

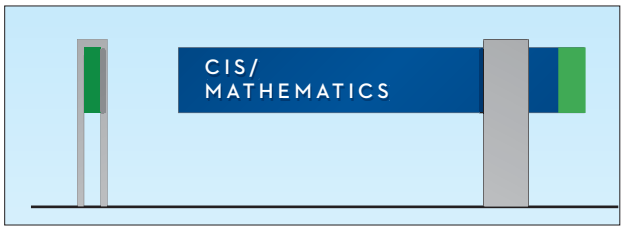


7 Front View
Scale 1/2" = 1'-0"

5 Front View
Scale 1/2" = 1'-0"



8 Front View
Scale 1/2" = 1'-0"



6 Front View
Scale 1/2" = 1'-0"

Sides and top of blade to be painted according to school zoning colors.

* Individual building identity signs to be located near primary building entrance along pedestrian pathway; signs to be oriented parallel to building in landscaped areas, and located to not obstruct the pedestrian path of travel.

General Sign Requirements

1. A comprehensive signage and graphics system must be submitted to the college development team for approval prior to the installation of any signs. This system must address all signage, as applicable, including:
    - Landmark Identity
    - Primary Identity
    - Secondary Identity
    - Vehicular Directionals
    - Parking Directionals
    - Parking Area ID
    - Campus Directory
    - Pedestrian Directionals
    - Building ID
2. Exterior signage shall be for identification only and may not be treated as an advertising device.
3. Small, free-standing or building-mounted directional signs are permitted for parking, service access, drive-thru lanes, etc., or any information mandated by government regulations.
4. Except where used as part of a logo, color for signs should be limited to one color for the lettering and one color for the background.
5. Sign conduits, transformers, junction boxes, etc. must be concealed from view.
6. The individual or group submitting the sign designs is responsible for verifying the existence and location of any easements, utilities or other restrictions that may affect the placement of signage.
7. All signs should have clear legibility for universal accessibility; Meet or exceeds are ADA standards for type size, type style, color contrast, messaging and heights.
8. All signs should be integrated with the landscape; Each building's primary signage should be located within softscape and integrated where possible into the site landscaping; Natural materials with integral color, like stone, frosted glass and anodized metal are preferred for primary site signage.

General Sign Requirements (Continued)

9. Durable materials for the signs are required; Warm, natural base materials for monument and vehicular directionals such as stone, pre-cast fine aggregate concrete and warm, light colored bricks, concrete block. Stones may use any finish: polished, honed, rustic, split flute, split face or rough finish. River rocks are not to be used; Modern materials such as painted metal, brushed aluminum or stainless steel, glass, lexan, acrylic and cast resin panels for all other sign elements (i.e. type, back plates, raceways, mullions, freestanding signs and wall-mounted signs and letters).
10. Typefaces used on identity signs should be of easy-to-read fonts and contrasting colors and materials from the surrounding support walls or landscape.
11. All identity signs or campus markers should be sited to maintain sight lines at entries and major circulation routes.
12. Following is Cerritos College's Board of Trustees approved signage vendor for electronic media
signage, software, engineering, etc:

    National Sign & Marketing Corporation
    13580 Fifth Street
    Chino, CA 91710
    909.591.4742
    Contact: John Kane

Prohibited Signs and Materials

The following sign types and finishes shall be prohibited on the Cerritos College campus:

1. Illuminated sign boxes.

2. Illuminated canopies.

3. Signs with exposed raceways, conduit, junction boxes, transformers visible lamps, tubing, or neon crossovers of any type.

4. Rotating, animated and flashing signs.

5. Signs attached, painted on, or otherwise affixed to trees, other living vegetation, landscaping or natural materials.

6. Signs attached, painted or otherwise affixed to awnings, tents or umbrellas, however, such signs may be permitted in conjunction with special design review by the college committee.

7. Balloons and inflatable signs.

8. Signs which emit odor, visible matter, or sound (unless for the hearing impaired).

9. Signs which bear or contain statements, words or pictures of an obscene, pornographic or immoral character.

10. Fluorescent or reflective sign colors.

11. Simulated materials, i.e. wood grained plastic laminate, wall covering, paper, cardboard or foam.

12. Signs made with plastic, lexan, or acrylic, translucent or opaque.

13. A-frame type signs.

illuminated sign box example

illuminated canopy example

Section III – Specific Design Criteria

- **Specific Room Design Criteria and Furnishings**
- **Space Inventory**
- **Structural Systems and Considerations**
- **Plumbing System Design**
- **Fire Suppression Systems**
- **Fire Alarm System**
- **HVAC System Design**
- **Energy Management System Design**
- **Electrical Systems Design**
- **Telecommunications Systems Design**
- **Technology Equipment Rooms**
- **Sound Isolation and Acoustical Treatments**

Specific Room Design Criteria and Furnishings

Overview
The Specific Room Design Criteria (RDC) establishes recommended features for the room types listed. These are intended to be flexible requirements. The RDC establishes goals that need to be addressed during programming by the Project Team. Those goals should be met whenever possible.

The College recognizes that each project will have its individual character and unique requirements. Renovation projects may limit the Project Team's ability to achieve some of the stated goals due to existing circumstances within the building or the surrounding site. For both new and renovated buildings, there will be trade-offs required to fulfill programming imperatives and to respect budget limitations.

For classrooms and labs there may be additional requirements stemming from a particular teaching style or subject matter being taught. For this reason, designers should always incorporate flexibility into room designs that will allow for changing methodologies of teaching and improvements in technology.

The Project Team should also refer to other portions of the Handbook and be familiar with State Chancellor's Guidelines for a complete description of Specific Room Design Criteria. In Section II-C, the Site Design Guidelines discuss the design parameters to be used for the redevelopment of the campus. The Interior Space Planning Guidelines are described in Section II-B Building Design Guidelines.

The Room Design Criteria addresses features that are of particular importance to Cerritos College. It is presumed that the design professionals will comply with code requirements, State Chancellor's Guidelines and address Industry Standards important to the design and specifications for room types.

See Appendix for Cerritos College specific requirements:

- Media Services – Media Support Requirements for New Construction
- Information Technology - Network Infrastructure Support Requirements For New Construction

Offices & Support Space

Room Size - Faculty

- 160 ASF per office serving two faculty members.

Support Spaces

- Waiting area for students
- Mail Room and Lounge centrally located. Adjacencies – faculty offices, meeting rooms, lunch room, and restrooms.

Equipment/Fixtures

- Faculty Office – Tackboard outside office, whiteboard inside office, phones, power and data outlets as required for additional equipment.
- Lunchroom – Microwave, refrigerator, sink, garbage disposal and coffee maker.
- Faculty Lounge – Whiteboard.
- Mail Room – Shared network printers.

Casework/Storage

- Bookcases, lockable cabinets, file cabinets in offices.
- General storage in Lounge and Mailroom.

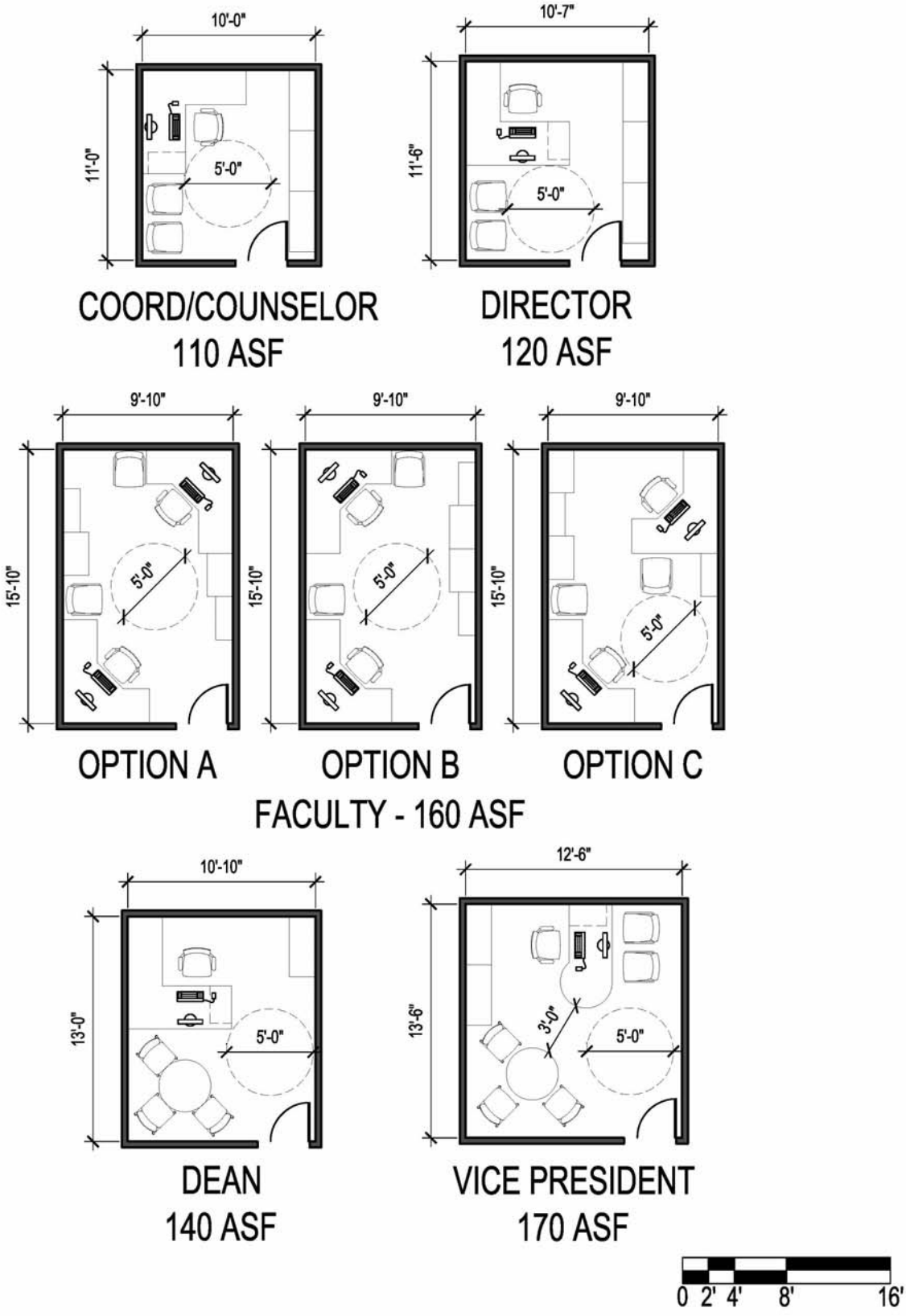
Room Size – Administration

- The following table sets forth the office space standards for Cerritos College (Incorporates DSS recommendations).

Cerritos College Office Allowance Standards -

Position	Square Footage
Vice President	170 ASF
Dean	140 ASF
Director	120 ASF
Coordinator/Counselor	110 ASF
(2) Person Faculty	160 ASF

Office
Room Diagrams



Conference/Meeting Rooms

Room Size

- 250 square feet: 10-12 seats.
- Ceiling Height: 9 feet to 11 feet.

Architectural Features

- Full height partitions per criteria set forth in the Specific Design Criteria "Sound Isolation and Acoustical Treatments".

Power/Data/Lighting

- Power and one standard data outlet located on each wall, as well as the wall where furniture, casework and the audiovisual equipment cabinet is to be installed.
- Power and one Quad data outlet located in a floor box under the conference room table or integrated into the conference room table.
- Lighting - Parabolic non-glare and/or suspended indirect light fixtures with multiple switching for maximized light control to support electronic presentations. Coordinate lighting fixtures with projector location to avoid conflict with projection cone and lights.

Audio Visual Image Display

- Maximum Viewing Distance: <14'.
- Image Height: 24".
- Image Width: 32" (4:3 image aspect ratio), or 43" (16:9 "widescreen" image aspect ratio).
- Flat panel display device (e.g. 50" LCD or plasma screen) provided with security features such as security screws and lockdown brackets.

Audio Reproduction

- Stereo loudspeakers integrated into flat panel display device or ceiling mounted. Audio volume will be controlled via the Multi-Media Control Panel (MMCP) or remotely in smaller venues.
- Assistive Listening System: Provision of a portable ALS system for rooms without installed voice reinforcement systems.

Audio/Video Source Equipment

- Audiovisual Source and Control systems will be installed in secured AV equipment cabinet. This can be a dedicated AV equipment cabinet or integrated into the instructor station.

- Blu-ray player located in the AV cabinet
- Analog and Digital connection for current technologies (e.g., VGA, HDMI, etc.)
- Network connections
- Extension USB cable for computer access
- Microphones (when required)
- Computer and Monitor
- Videoconferencing equipment (when required)

System Control & Monitoring

- All smart rooms will be programmed to be monitored and controlled remotely via current media management system with x-panel features.
- Ability to provide the following:
    1. Live status on media equipment in the room.
    2. A help function that will allow the instructor to call for assistance when needed.
    3. Control of all audio/video sources.
    4. Ability to turn on and shut down system.
    5. System should replicate classroom functionality.

Multi-Media Control

- The control panel will be a touch screen with enough features to control all media.
- Back up wireless/internet option for all control panels should the panel become disabled (such as x-panel).
- All media will be controlled through a digital media switch. It may allow for digital and analog inputs. Current college standards are Crestron DM.

Image Display

- Screens should be 16:10 aspect ratio.
- Video projectors (minimum 1920 x 1200 pixels and 4,000 ANSI lumens.)

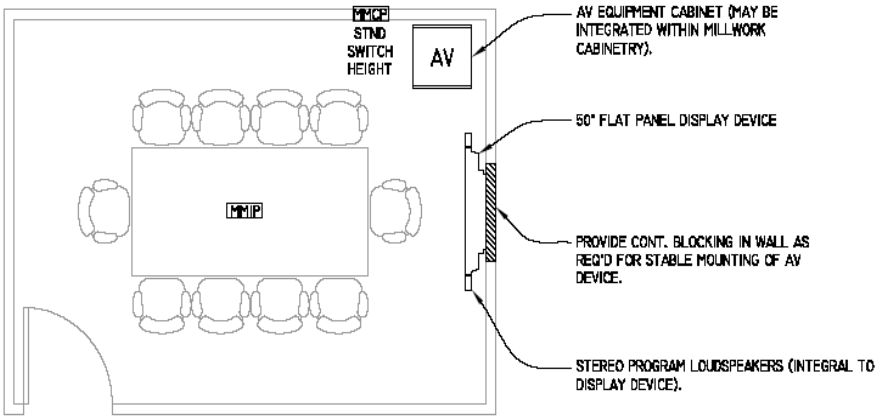
Digital Signage Displays

- Check for current campus standards.

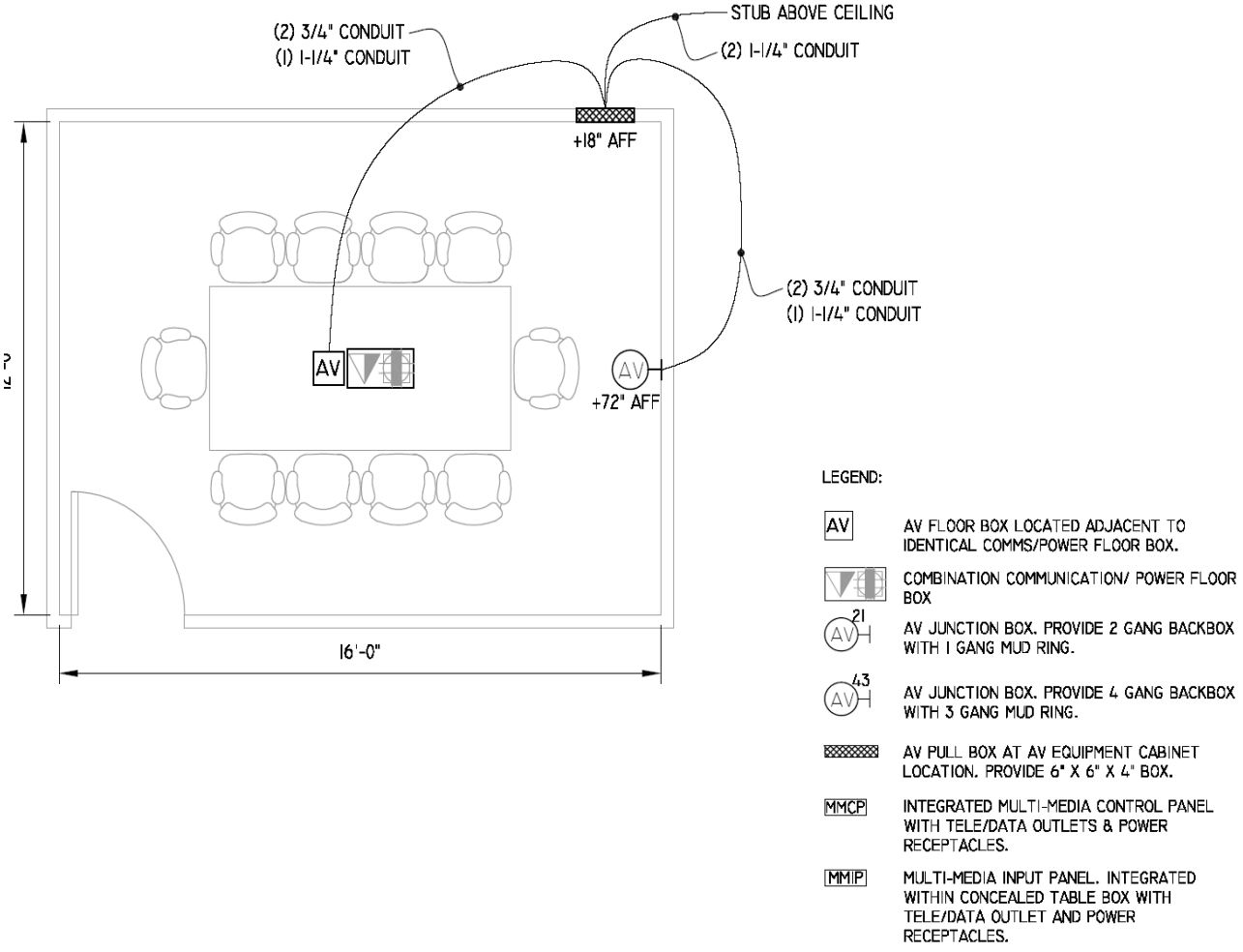
Videoconferencing Systems

- When specified, system should be high definition.
- Should be able to integrate campus phone system.
- Should be able to integrate audio/visual sources.
- Operated through a control panel.

Conference Room
Room Diagram – Audio/visual Equipment Plan



Conference Room
Room Diagram – Audio/visual Infrastructure Plan



Computer Labs

(See Appendix for Cerritos College Media Services – Media Support Requirements for New Construction)

Room Size

- 750 - 900 square feet: Serving 35-45 students.
- Ceiling Height: 10 feet – 12 feet.
- Proportions: Similar depth to width ratios shall be maintained to provide good viewing of white board and projection displays.

Architectural Features

- Primary and secondary instructor locations allow for instructor positions at the front or rear of the room, (see Smart Classroom requirements).
- Full height partitions per criteria set forth in the Specific Design Criteria "Sound Isolation and Acoustical Treatments".
- Lockable cabinets for equipment and materials. See "Audiovisual" for related requirements.
- Natural lighting through "clerestory" windows.
- Computer Labs will have an electronic swipe-card station for attendance and identification.
- Avoid extreme variations of surface brightness around computer lab.

Power/Data/Lighting

- Wall mounted or recessed floor box for power, data and AV multi-media input panel at instructor station.
- Power receptacles and one standard data outlet dedicated to AV next to the AV multi-media input panel at instructor station.
- Power and one standard data outlet on each classroom wall.
- Power and one standard data outlet mounted at the ceiling projector location for ceiling mounted projector and wireless access point. Also include a 2 inch diameter conduit from the projector mount location down to the floor box locations for each instructor podium in a Smart Classroom.
- Provide distribution of power and one data drop per student seat in the Computer Labs. Outlets shall be located at wall and floor locations to provide distribution to multiple seating layout options.
- Lighting - Parabolic non-glare and suspended indirect light fixtures with multiple switching for maximized light control to support electronic presentations. Coordinate lighting fixtures with projector location and switch the light fixtures from the front of the room to the back on separate switches.

Audio Visual Image Display

- Maximum Viewing Distance: 30′ – 35′.
- Image Height: 60″ – 72″.
- Image Width: 80″ – 95″ (4:3 image aspect ratio), or 107″ – 120″ (16:9 "widescreen" image aspect ratio).
- Display Technology: Ceiling mounted video projector (minimum 1024 x 768 pixels; 3,000 ANSI lumens) projecting onto ceiling recessed matte white tensioned front projection screen.

Audio Reproduction

- Media Audio Reproduction: Stereo loudspeakers shall be ceiling mounted. Audio volume will be controlled via the AV Control Panel at the instructor station.
- Voice Reinforcement: Provisions for the use of a wireless and wired microphone system shall be included in each room. Equipment will be located in the lockable AV Equipment Cabinet. Amplified speech reproduced through 6″ ceiling recessed loudspeakers distributed at approximately 12′ centers.
- Assistive Listening System (ALS): Provision of an ALS system is required in each room with a permanently installed voice reinforcement system. A portable ALS system shall be accommodated in all classroom locations.
- ALS system installations shall comply with the latest edition of the California Building Code.

Audio/Video Source Equipment

- Audiovisual Source and Control systems will be installed in secured AV equipment cabinet. This can be a dedicated AV equipment cabinet or integrated into the instructor station.
- Blu-ray player located in the AV cabinet
- Analog and Digital connection for current technologies (e.g., VGA, HDMI, etc.)
- Network connections
- Extension USB cable for computer access
- Microphones (when required)
- Computer and Monitor
- Videoconferencing equipment (when required)

System Control & Monitoring

- All smart rooms will be programmed to be monitored and controlled remotely via current media management system with x-panel features.
- Ability to provide the following:
    1. Live status on media equipment in the room.

2. A help function that will allow the instructor to call for assistance when needed.
3. Control of all audio/video sources.
4. Ability to turn on and shut down system.
5. System should replicate classroom functionality.

Multi-Media Control

- The control panel will be a touch screen with enough features to control all media.
- Back up wireless/internet option for all control panels should the panel become disabled (such as x-panel).
- All media will be controlled through a digital media switch. It may allow for digital and analog inputs. Current college standards are Crestron DM.

Image Display

- Screens should be 16:10 aspect ratio.
- Video projectors (minimum 1920 x 1200 pixels and 4,000 ANSI lumens.)

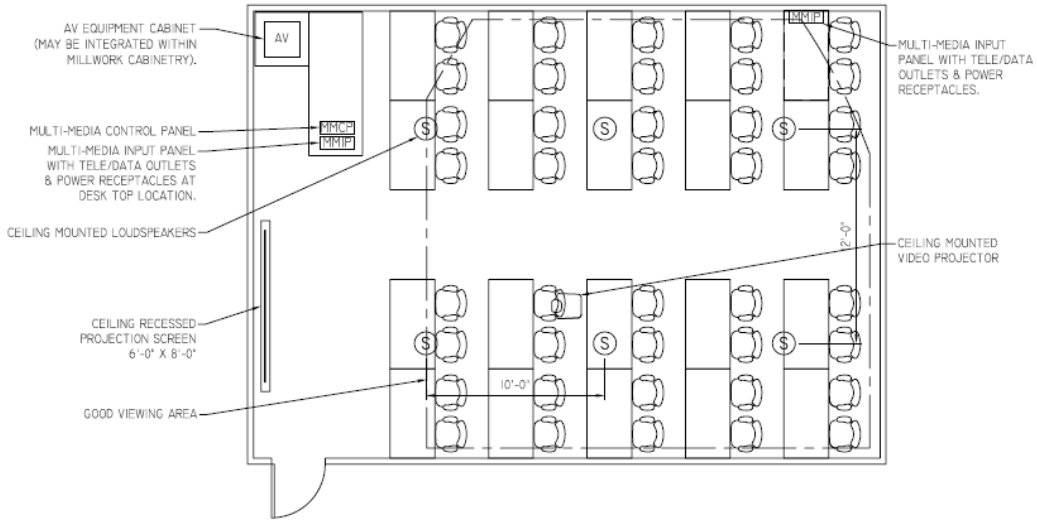
Digital Signage Displays

- Check for current campus standards.

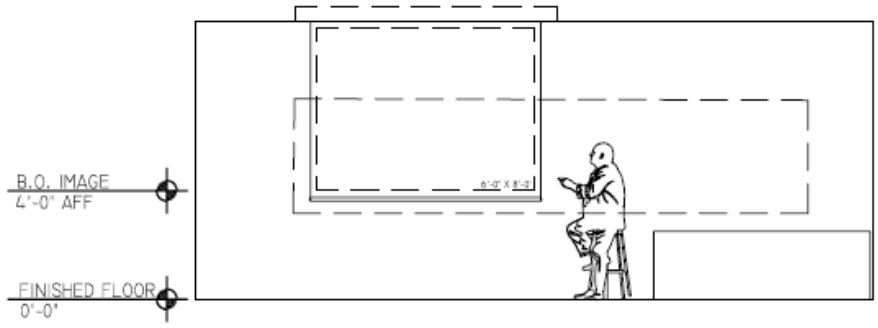
Videoconferencing Systems

- When specified, system should be high definition.
- Should be able to integrate campus phone system.
- Should be able to integrate audio/visual sources.
- Operated through a control panel.

Computer Lab
Room Diagram – Audiovisual Equipment Plan



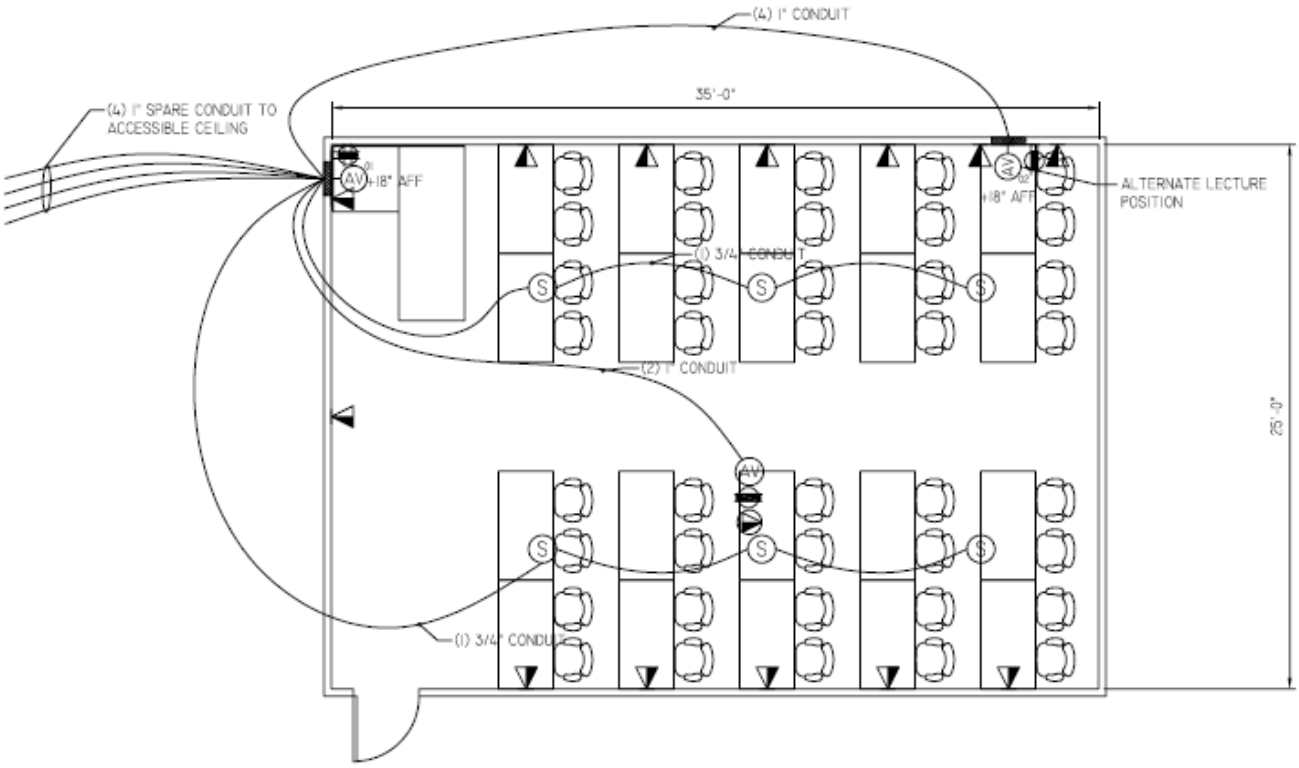
Computer Lab
Room Diagram – Front Wall Elevation



LEGEND:

AV	CEILING MOUNT AV JUNCTION BOX, POWER AND DATA OUTLETS FOR PROJECTOR.
AV 01	AV JUNCTION BOX. PROVIDE 2 GANG BACKBOX WITH 1 GANG MUD RING.
AV 02	AV JUNCTION BOX. PROVIDE 4 GANG BACKBOX WITH 3 GANG MUD RING.
	AV PULL BOX AT AV EQUIPMENT CABINET LOCATION. PROVIDE 12" X 12" X 4" BOX.
MMCP	INTEGRATED MULTI-MEDIA CONTROL PANEL WITH TELE/DATA OUTLETS & POWER RECEPTACLES.
MMIP	MULTI-MEDIA INPUT PANEL. INTEGRATED WITHIN CONCEALED TABLE BOX WITH TELE/DATA OUTLET AND POWER RECEPTACLES.

Computer Lab Room Diagram – Audiovisual Infrastructure Plan



Technology Classrooms

Room Size

- Room size will vary with the levels of Technology.
- Level I classroom to be 750 - 900 square feet: Serving 35-45 students.
- Level II and III classrooms to be same size or larger than Level I
- Ceiling Height: 10 feet – 12 feet.
- Proportions: Similar depth to width ratios shall be maintained to provide good viewing of white board and projection displays.

Architectural Features

- Instructor locations allow for the instructor podium/work station at the front or rear of the room.
- Full height partitions per criteria set forth in the Specific Design Criteria "Sound Isolation and Acoustical Treatments".
- Lockable cabinets for equipment and materials. See "Audiovisual" for related requirements.
- Natural lighting, and control of lighting. Lighting such that it can be controlled when utilizing OHP/LCD projector.
- Features promoting flexibility shall be incorporated into the classroom's design features. Some shared classrooms will be used for various disciplines; therefore, it is important to enhance the instructor's ability to transform classrooms for their particular area of instruction.
- Cabinetry at corners for storage and media.
- White Board extending at least 2/3rds on the presentation wall (behind instructor).
- White Boards on both side walls.
- Bulletin Boards on both sides of all white boards.
- Instructor's chair or stool.
- Student tables to seat 2, 3 or 4 – Capacity determined by room size.
- Student chairs that can be nested.
- Drop down screen mounted in the middle of the presentation wall.
- Clock at back or room.
- Sturdy window shades.

- Doors that are controlled not to slam.

Technology Classroom

Definitions:

- Level I Classroom – the Level I classroom on campus is equipped with a "state of the industry" level of technology that supports basic content display.
- Level II Classroom – the Level II classroom is a more technologically intensive space that provides an additional layer of technology to assist the instructor.
- Level III Classroom – the Level III classroom has the same level of technology as the Smart Classroom, but is capable of originating distance education and video conferencing.

	Level I Classroom	**Level II Classroom**	**Level III Classroom**
Projector & Screen for Main Image Display	●	●	●
Internet Access	●	●	●
Cerritos College Data Network Access	●	●	●
Access to Distance Learning Content	●	●	●
Dedicated Classroom Computer	●	●	●
Speakers for Program Audio Reproduction	●	●	●
Telephone for Helpdesk and Campus Police	●	●	●
Microphone and Speakers for Voice Reinforcement		●	●
Assistive Listening System (ALS)**		●	●
Integrated System Control		●	●
Document Camera		●	●
DVD/VCR		●	●
Distance Learning Dedicated Display			●
Video Cameras			●
Distance-Learning Capable			●
Voting / Student Response System			●*
Proctoring Systems			●*
Desk-mounted tablet			●*

*- as needed by specific teaching model.

** - required in every room with a permanently installed voice reinforcement system.

Power/Data/Lighting

- Wall mounted or recessed floor box for power, data and AV multi-media input panel at instructor station.
- Power receptacles and one standard data outlet dedicated to AV next to the AV multi-media input panel at instructor station.
- Power and one standard data outlet on each wall in the classroom. (Wireless data network access will be the primary method of accessing network resources - including the Internet - by students.)
- Power and two standard data outlets mounted at the ceiling projector location for ceiling mounted projector and wireless access point.
- Floor boxes, power receptacles, and data outlets installed behind or offset from the projector.
- Lighting - Parabolic non-glare and/or suspended indirect light fixtures with multiple switching for maximized light control to support electronic presentations. Coordinate lighting fixtures with projector location.

Audio/Video Source Equipment

- Audiovisual Source and Control systems will be installed in secured AV equipment cabinet. This can be a dedicated AV equipment cabinet or integrated into the instructor station.
- Blu-ray player located in the AV cabinet
- Analog and Digital connection for current technologies (e.g., VGA, HDMI, etc.)
- Network connections
- Extension USB cable for computer access
- Microphones (when required)
- Computer and Monitor
- Videoconferencing equipment (when required)

System Control & Monitoring

- All smart rooms will be programmed to be monitored and controlled remotely via current media management system with x-panel features.
- Ability to provide the following:
    6. Live status on media equipment in the room.
    7. A help function that will allow the instructor to call for assistance when needed.
    8. Control of all audio/video sources.

9. Ability to turn on and shut down system.
10. System should replicate classroom functionality.

Multi-Media Control

- The control panel will be a touch screen with enough features to control all media.
- Back up wireless/internet option for all control panels should the panel become disabled (such as x-panel).
- All media will be controlled through a digital media switch. It may allow for digital and analog inputs. Current college standards are Crestron DM.

Image Display

- Screens should be 16:10 aspect ratio.
- Video projectors (minimum 1920 x 1200 pixels and 4,000 ANSI lumens.)

Digital Signage Displays

- Check for current campus standards.

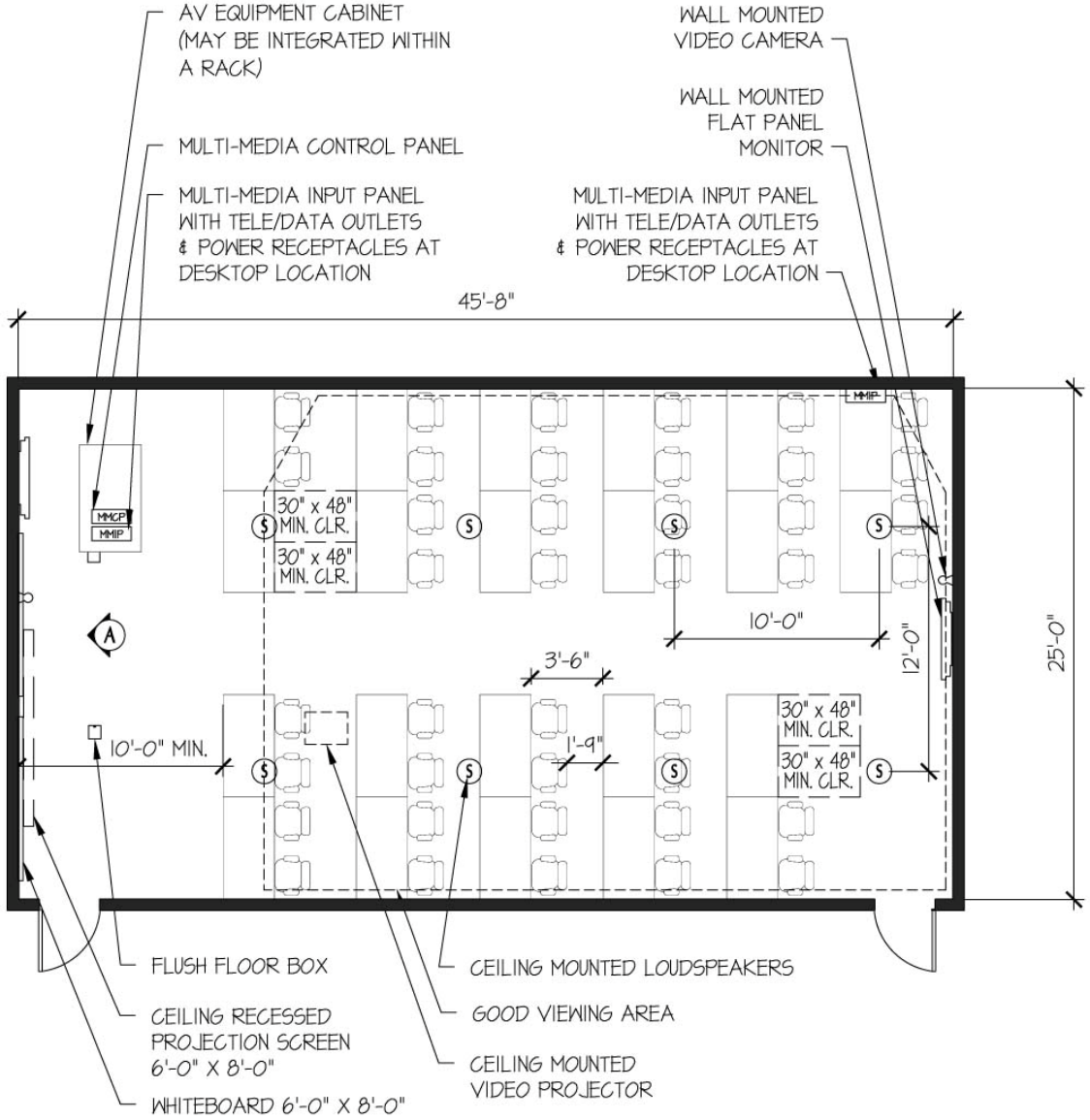
Videoconferencing Systems

- When specified, system should be high definition.
- Should be able to integrate campus phone system.
- Should be able to integrate audio/visual sources.
- Operated through a control panel.

Other Systems

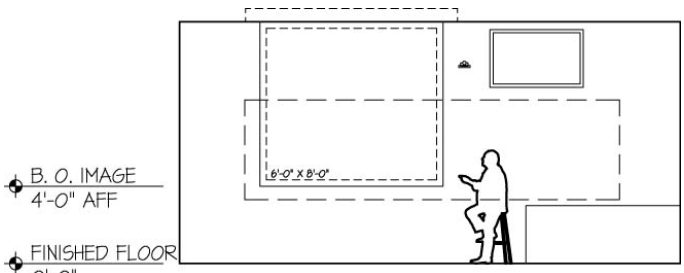
- A wireless student voting system will be capable of being provided in the Smart Classroom and Distance Learning Classroom. Students will be able to vote anonymously on questions presented by the Instructor, with options for multiple choice selections. Real-time statistics and graphing of the voting will be able to be displayed on the screen in the room.
- A software-based Proctoring system will be capable of being provided in the Distance Learning Classroom. Since this is a software-based system, no cable or conduit infrastructure will be required.

Smart Classroom
Room Diagram



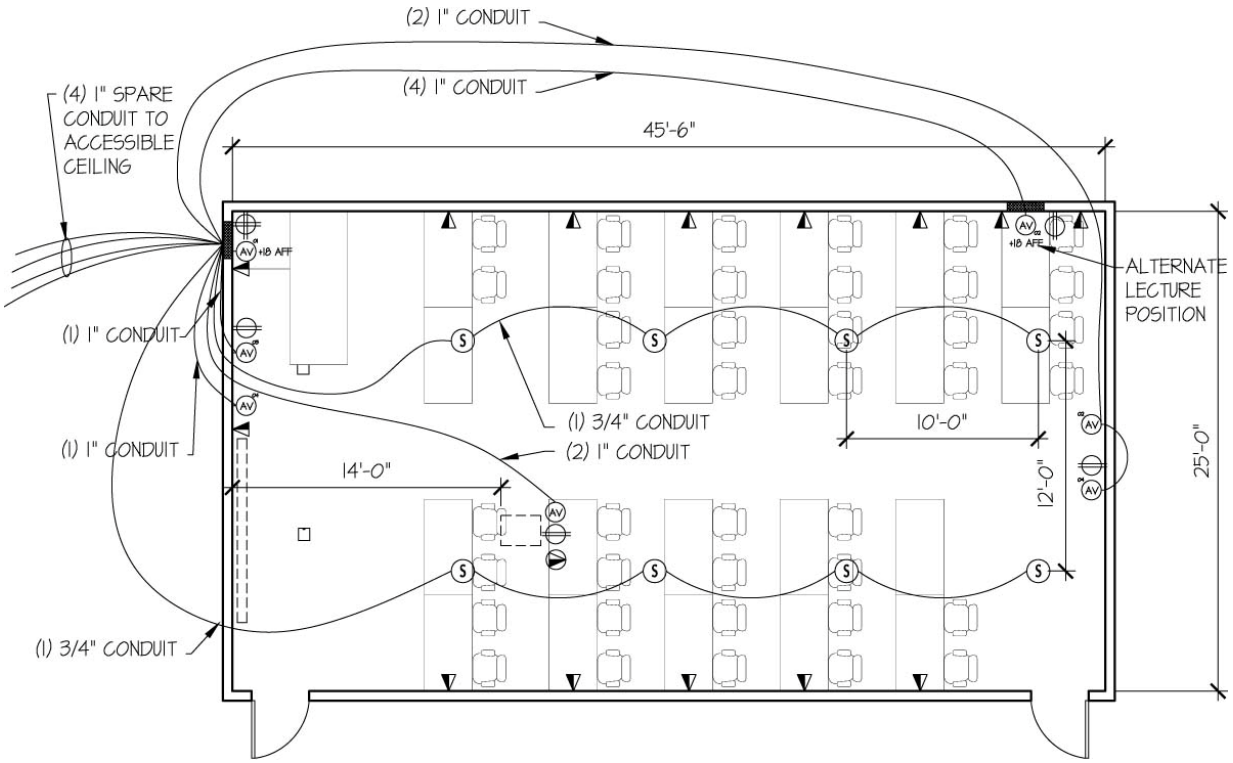
AUDIOVISUAL EQUIPMENT PLAN - 1140 SF

0 4' 8'



A - SMART CLASSROOM ELEVATION

Smart Classroom
Room Diagram



AUDIOVISUAL INFRASTRUCTURE PLAN

0 4' 8'

LEGEND:

- AV — CEILING MOUNT AV JUNCTION BOX, POWER AND DATA OUTLETS FOR PROJECTOR.
- AV 01 — AV JUNCTION BOX, PROVIDE 2 GANG BACKBOX WITH 1 GANG MUD RING.
- AV 02 — AV JUNCTION BOX, PROVIDE 4 GANG BACKBOX WITH 3 GANG MUD RING.
- AV 03 — AV JUNCTION BOX, PROVIDE 1 GANG BACKBOX.
- AV 04 — AV JUNCTION BOX, PROVIDE 2 GANG BACKBOX.
- AV PULL BOX AT AV EQUIPMENT CABINET LOCATION. PROVIDE 12" X 12" X 4" BOX.
- MMCP — INTEGRATED MULTI-MEDIA CONTROL PANEL WITH TELE/DATA OUTLETS & POWER RECEPTACLES.
- MMIP — MULTI-MEDIA INPUT PANEL. INTEGRATED WITHIN CONCEALED TABLE BOX WITH TELE/DATA OUTLET AND POWER RECEPTACLES.

Restrooms

ARCHITECTURAL FEATURES

Exterior

The restrooms are susceptible to vandalism. The finishes and fixtures should be exceptionally resistant to vandalism (e.g. stainless steel plumbing fixtures, shatter proof mirrors).

Interior

Interior restrooms are more secure so more attractive finishes and fixtures can be used in these spaces. A level of quality that improves the campus image should be specified. Use of colorful tile patterns in encouraged by the College. Although the existing restrooms have terrazzo, the plan is not to use terrazzo finishes in new restrooms due to the cost. Ease of maintenance should be considered while selecting finishes and fixtures.

Plumbing Fixtures

See Appendix A for Plumbing Fixtures information.

The design of the restrooms should accommodate a visual intrusion, man/trap area so there is no direct view into the sink and toilet area. As all the sinks must be accessible for new construction, the counter supports or sinks will be mounted at 32" on center to align with the 16 inches on center stud spacing, to help alleviate the need for extensive blocking in the walls. Wall mounted sinks will be used for all public/student restrooms.

The American Standard Lucerne model sink has the faucet set on the right side of center. The offset faucet will allow the foam soap dispenser to be placed to the left of center of the sink, thus allowing the soap to drip into the sink and not onto the floor. This will help with custodial clean up issues. Placing the towel dispenser to the right of center of the sink will allow two sinks to use one towel dispenser. The sink spacing will provide room for a rectangular trash can to be used at the sink area.

The campus prefers to have the mirrors closer to the door to reduce vandalism, and this will also help reduce hair from getting into the sink drains. This mirror will be designed into part of the entrance way.

Unisex Restrooms

The College will designate Unisex Restrooms for the use by those requiring assistance by opposite sex partners. The primary goal is to respond to the needs of the students to be served. For example, students with disabilities who have opposite sex personal attendants require a unisex, single unit restroom that would accommodate both genders.

Accessibility

Restrooms shall be designed in accordance with CBC Accessibility requirements to meet or exceed ADA Accessibility Guidelines. Accessible design will accommodate adequate maneuvering spaces, required clearances, accessible path of travel (POT), appropriate reach ranges and mounting heights of plumbing fixtures and washroom accessories.

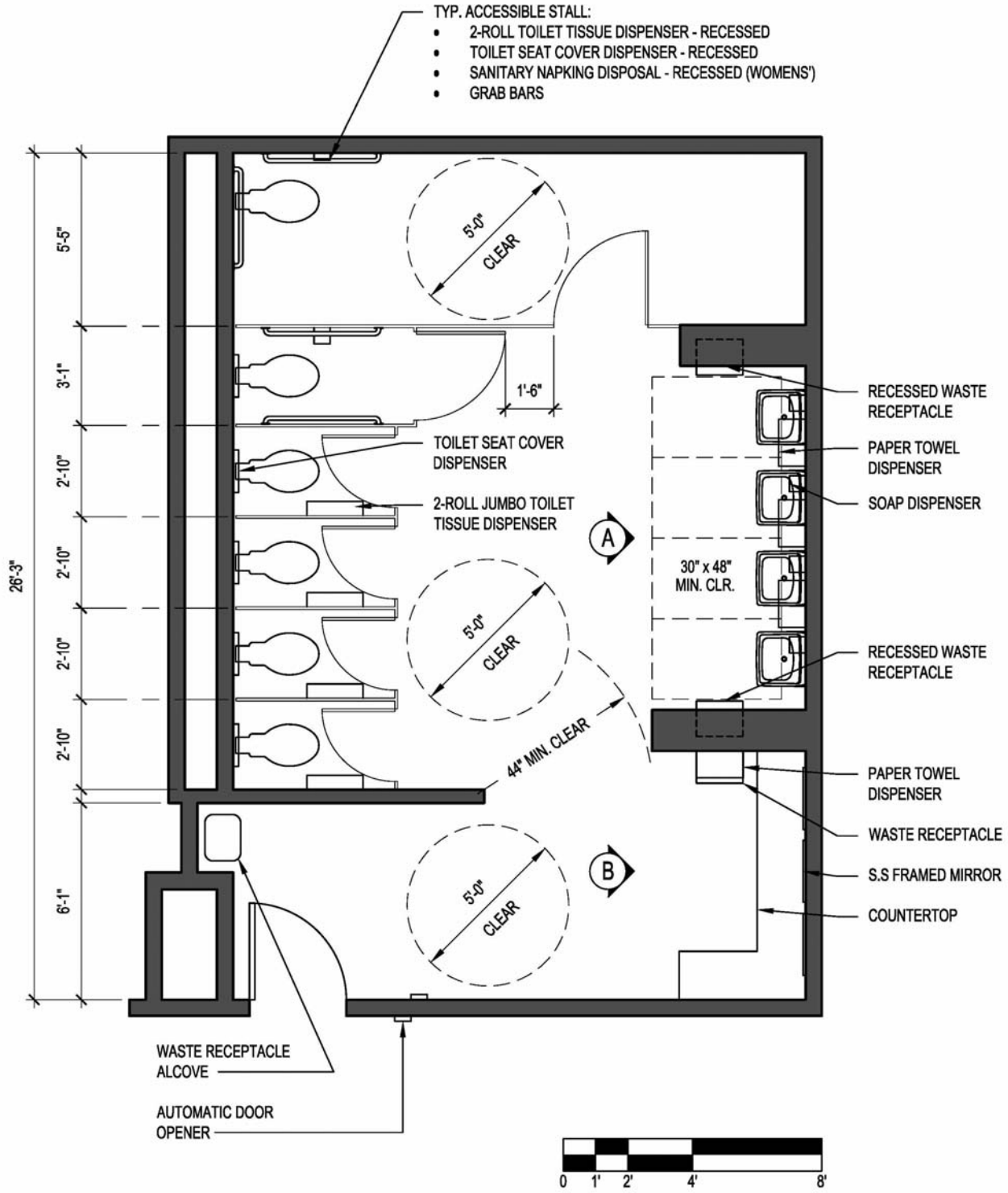
Washroom Accessories

Washroom Accessories such as paper towel dispensers, toilet tissue dispensers, waste receptacles, soap dispensers and mirrors are key elements in providing Accessible restrooms. Selection of appropriate washroom accessories must also take into account the College Facilities Maintenance & Operations department with respect to supplies and equipment. Proper selection of accessories will eliminate the need for multiple types of stored paper goods, equipment replacement parts, etc.

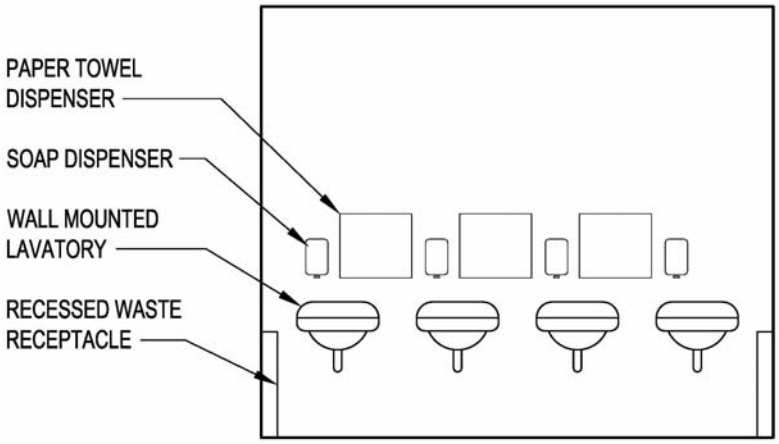
The College currently uses Kimberly-Clark as their standard vendor for washroom accessories and refill supplies. However, to meet CBC Accessibility requirements, other washroom accessories manufacturers will need to be specified. The Design Team will coordinate with the College to select the most appropriate equipment to comply with CBC while also accommodating the College standard supply goods and equipment. Acceptable manufacturers are:

- Bobrick, Bradley and American Standard.

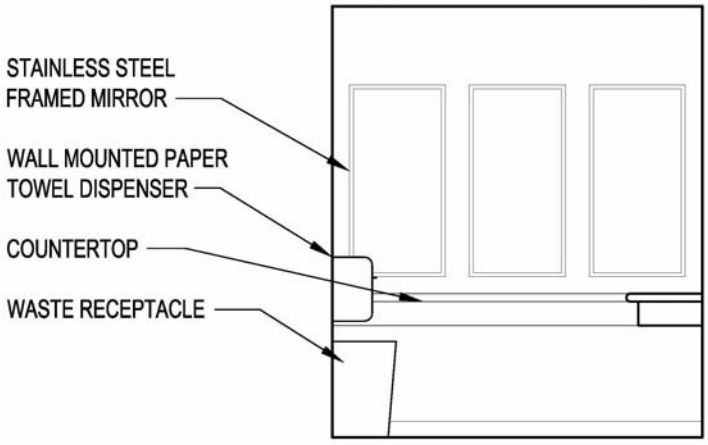
Restroom
Room Diagram



Restroom
Room Diagrams



'A' - ELEVATION
LAVATORY WALL



'B' - ELEVATION
MIRROR WALL

Custodial Rooms

Architectural Features

The custodial rooms should be at least 6 feet by 8 feet in size to allow for all the equipment and the mop sink, as well as shelving for paper goods and cleaning products. Space to store the janitorial cart will be required, and this cart is approximately 2'x 4' in size. Finishes in this utility room should be durable and water resistant, preferable FRP on all wet walls up to 8'-0" high. Provide one 4 foot wide shelving unit with 4 shelves for storage. Mount mop rack/hooks as required for storage of custodial equipment, with the hooks mounted above the janitor mop sink so that the mops can drip dry. Provide a floor drain. Provide concrete curb at perimeter walls. Provide room occupancy sensors.

Plumbing Features

Refer to the Plumbing System Design section of the *Specific Design Criteria* for information on plumbing fixtures.

Provide a cast iron floor mounted mop sink with an industrial faucet that has supports for buckets. A hose will be mounted on the wall above the mop sink so that the buckets can be hosed clean.

Mechanical Rooms

Mechanical Rooms and Equipment Locations
The Architect/Engineer shall, in the earliest stages of design development, be responsible for establishing and/or verifying programmatic requirements for mechanical rooms in order to:

- Provide adequate safe access and manufacturer's recommended working clearances for all equipment.
- Provide 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 handling units, zone control devices, such as VAV boxes, mixing boxes, reheat coils, etc., shall also be located to provide unobstructed access to filters, bearings, manual valves, zone control devices and automatic control equipment.

Mechanical rooms shall be ventilated by a thermostatically controlled fan.

Mechanical rooms shall have a floor drain in the sealed concrete floor.

Ventilation
Outside air intakes shall not draw in exhaust air from adjacent systems, loading docks, parking lots, emergency generators, chemical storage, sewer manholes, etc.

Cooling Coil Condensate

- Cooling coil condensate shall be piped to sanitary drains.
- Cooling coil condensate lines shall have cleanouts, which allow access to all branches of the condensate drain system.
- AHU cooling coil condensate lines shall be minimum 1 ¼ inch ID.
- Slope condensate piping down in direction of flow.
- Lines less than 1 ½ inch shall be copper.

Lighting
The lighting shall be fluorescent tubes lights with metal cages to protect from damage. The lights shall be ceiling hung with chains. Provide room occupancy sensors.

Space Inventory

The District is responsible for assigning a building numbers and room numbers for the purposes of maintaining the Space Inventory in conformance with the Space Inventory Handbook published by the State Chancellor's Office.

BUILDING NUMBERS

New Buildings

- Assign the next consecutive, never before-used building number starting with "1" according to the Summary Building Report for each designated campus.
- Assign a new building number to a new or replacement building located on the site as a demolished or removed building.

Renovated Buildings

- Continue to inventory a renovated building under the existing building number.

Demolished or Removed Buildings

- Permanently retire and never reuse the building numbers of buildings deleted from the District's Space Inventory.

Room Identification

Each room (except data rooms) shall be named and rooms shall be numbered using the three digit standard according to the following criteria:

Room Numbers in Buildings

Assign prefixes, room numbers and suffixes according to the Space Inventory Handbook. District conventions for room numbers in existing multi-story buildings have not been consistent across the campus and do not conform to the Space Inventory Handbook.

- Use the prefix 'B' for rooms on the basement level. Do not use another prefix for any room on any floor.
- Each room number shall have three digits. Basement room numbers shall range from '00' to '99', first story room numbers from '100' to '199', second story room numbers from '200' to '299', and so on. Mezzanine rooms shall be numbered in the same way as other levels (except the basement) to maintain a consistent pattern in all multi-story buildings.
- Use consecutive letters to denote suffixes.

Acceptable Room Designations - Buildings

	Prefix	Room Number	Suffix
Basement	B	00	
	B	01	
	B	01	A
	B	01	B
First Floor	--	100	
	--	101	
	--	101	A
	--	101	B
Second Floor	--	200	
	--	201	
	--	201	A
	--	201	B
Second-level Mezzanine	--	200	
	--	201	
	--	201	A
	--	201	B

Building Names

There are no guidelines for the names of buildings for the purposes of the District's Space Inventory because records for each facility are organized by Building Number.

Structural Systems and Considerations

General Requirements

Structural Engineering Design of Cerritos College is governed by the requirements of the Field Act beginning in Section 17280 of the Education Code and the current edition of the California Building Code (CBC—part of the CCR, Title 24, California Building Standards Code), with modifications by the Division of the State of Architects/ Structural Safety Section (DSA/ SS) for school design and construction.

The requirements of CBC provide minimum standards with the objective of maintaining life safety in the event of strong ground shaking caused by the design earthquake.

The structural engineer shall be responsible for the design, or review of design, of connections to the basic structure of such building elements as veneer materials, window walls and steel-stud assemblies, decorative block screens, mechanical and electrical equipment and components, library shelving, and similar items.

Testing and inspection requirements shall meet Title 24 requirements.

Design Criteria

The requirements of the California Building Code and DSA shall govern except where specifically defined below.

Deflection: Maximum allowable deflection for structural members shall be that defined in the CBC. In order to reduce long-term deflection and cracking of finished surfaces, where floor members of the engineered-wood support floor finishes of ceramic tile, terrazzo, or similar materials, maximum deflection shall be limited to 1/540.

Roof design loads shall provide for the weight of one re-roofing if the roofing designed can be re-roofed without removing the original roofing.

Several prior geotechnical engineering reports have revealed that the site of the Cerritos College is subject to high potential of liquefaction during a seismic event. Structural design shall accommodate such liquefaction risk to ensure the project design objective of life-safety. Structural schemes may include deep piles, mat foundations, and/or spread footings as long as the appropriate differential movement are considered and shown to be resisted by the structural system. Experience from several recent projects in the Campus indicated the feasibility of using drilled caissons (18" to 24" diameters) with limited construction problems.

Structural Systems Consideration

The following criteria and suggestion reflect the policies and preferences of the College derived from experience with economy and durability. Exception may be made with justification and specific authorization of the College's project manager.

Structural systems should be limited to conventional building systems that are widely used in seismically active areas of the United States and accepted by the DSA. Additional consideration should be made for local market in Southern California, considering materials, skill sets, and cost. Building systems that provide higher levels of seismic performance should be considered for projects that have special considerations such as contents that far exceed the cost of the building.

The structures of all buildings, including non-bearing partitions, shall be of incombustible materials. Wood structures may be acceptable for one story structures, but with special permissions from the College.

In general, avoid moment frames, which generally are expensive and produce large drift that makes it hard to prevent damage to typical wall finishes.

Structural systems should be redundant, capable of continued resistance and protection of structure and contents after seismic events.

Structural plan and vertical irregularities should be avoided whenever possible. Lateral force resisting systems should be continuous from roof to foundation and should be evenly distributed to develop regular response of the building. Soft stories are not allowed. Short columns should be avoided whenever possible.

Discontinuous shear walls over braced frames should not be used. Use of transfer girders or other design elements that limit gravity system redundancy should be avoided.

Concrete and Masonry Structures
Use a minimum concrete ultimate compressive strength of 3000 psi at 280 days. Grout should be high strength non-shrink grout whenever possible.

Concrete mix design must comply with CBC Section 1905A.2.3; Method B. Use admixtures as required to improve concrete performance. Consider mixing, placing, and curing methods to accommodate weather conditions at the time of casting concrete at site. Avoid early strength concrete that may result in cracking.

Specify size of aggregate and slumps. Use 1-inch or 3/4 –inch minimum aggregate size, with smaller sizes only in very special cases.

Control cracks in concrete by joints, construction joint separations at 10′ on center with caulking. Do not use plastic Keycold joints!

Avoid thin sections or projections that may crack off when forms are removed. Chamfer column corners.

In concrete masonry walls, fill all cells except on free-standing site walls retaining no earth. Avoid bars larger than #8.

Clearly show the minimum concrete cover required for the intended fire protection rating and protection against severe weather change.

Exposed concrete surfaces should be free of cracks and complies with treatment specified by the Architect.

Foundations Consideration
All footing design should adhere closely to the requirements of the site-specific Geotechnical engineering report. All excavation should be checked by the project Geotechnical engineer before the placement of reinforcing steel.

Building foundations should be located below the loose layer and into undisturbed native material.

Slab-on-Grade shall be supported on a properly prepared subgrade as specified in the Geotechnical report. Slab-on-grade shall be reinforced by adequate steel reinforcements in both directions.

Seismic Strengthening of the existing Buildings

A detailed seismic evaluation of existing building should be considered as remodels, additions or alterations are planned. Comply with requirements of CBC.

Refer to the seismic screening study report prepared by Integrated Design Services, Inc (IDS) dated March 2006, as a guideline that outlines the results of preliminary evaluation of the seismic performance of the buildings to remain in the campus. This reports use the ASCE-31 Tier 1 method in the seismic assessment. ASCE Tier 2 and 3 would be required for future seismic upgrade in addition to any other requirements specified by DSA and CBC.

Plumbing System Design

The mechanical engineer shall prepare plumbing drawings and specifications in conformance to the design guidelines outlined in this document. A criterion is established for plumbing systems design, and other plumbing requirements to be covered in the Plumbing drawing and specification bid package. Specific design submittal requirements for project are also highlighted, along with specific engineering responsibilities. In the event that design guidelines are in conflict, or a need arises during the project, design phase to modify requirements, it is the Mechanical Engineer's responsibility to notify Owner in writing prior to continuing with the design effort.

Codes and Standards (the latest Adopted Edition)

- California Building Code
- California Mechanical Code
- California Plumbing Code
- California Code of Regulations, Title-24
- California Electric Code (NEC)
- American National Standards Institute (ANSI)
- International Association of Plumbing and Mechanical officials (IAPMO)
- National Electrical Manufacturers Association (NEMA)
- National Fire Protection Agency (NFPA)

Design Conditions

All Plumbing fixtures, materials and equipment shall conform to Sate of California standards and be acceptable to IAPMO.

Building utility systems will include: Domestic Hot and Cold Water, Tempered Water, Industrial Water, Sanitary Waste and Vent, Storm Drainage, and Special Waste and Vent where applicable.

Domestic cold water will be supplied from the campus water loop, through a water meter and reduced pressure principle backflow preventer.

Tempered water (an energy conservation measure) will be supplied to showers from hot and cold water systems through thermostatic mixing valve(s).

Industrial water will be supplied to HVAC equipment from domestic cold water system through appropriate backflow preventers.

Sanitary sewer will discharge to the campus sewer system.

Storm Drain system rainfall intensity will be determined during schematic design and will be verified by the mechanical engineer. If at all possible, a gravity drainage system shall be used. If required, a lift station with duplex pumps, high and low level alarms, an annunciator panel in the building and a force main to campus storm drain system will be provided. The Owner must be notified immediately if it is determined that a gravity system cannot be used.

Domestic Water, Sanitary Sewer, Storm Drain, and Firewater piping will be designed with flexible assemblies to accommodate the horizontal seismic movement defined during schematic design. Flexible assemblies will be located under the building (by the base isolators if that type of structural system is proposed) near exterior building walls and/or at seismic separations.

Seismic bracing for piping shall conform to Title 24 Guidelines for Seismic Restraints of Mechanical Systems by SMACNA. Calculations and details will be signed by a Licensed Structural Engineer with California registration.

Fire Suppression Systems

Overview

The mechanical engineer shall prepare fire protection drawings and specifications in conformance to the design guidelines outlined in this document. A criterion is established for fire protection systems design, and other requirements to be covered in the fire protection drawings and specifications bid package. Specific design submittal requirements for projects are also highlighted, along with specific engineering responsibilities. In the event that design guidelines are in conflict, or a need arises during the project design phase to modify requirements, it is the Mechanical Engineer's responsibility to notify Owner in writing prior to continuing with the design effort.

Codes and Standards

- California Building Code
- California Mechanical Code
- California Plumbing Code
- California Code of Regulations, Title-24
- California Electric Code (CEC)
- American National Standards Institute (ANSI)
- American Society of Mechanical Engineers (AMSE)
- American Society for Testing Materials (ASTM)
- American Welding Society (AWS)
- American Water Works Association (AWWA)
- National Electrical Manufacturers Association (NEMA)

National Fire Protection Agency (NFPA)

- NFPA 13 – Installation of Sprinkler Systems
- NFPA 14 – Standard for the Installation of Standpipe, Private Hydrants and Hose Systems.
- NFPA 24 – Installation of Private Fire Service Mains and Their Appurtenances.

Design Conditions

The entire system for each building shall be hydraulically designed. The mechanical engineer shall provide drawings indicating riser diagrams and connections to the campus fire water loop, size and location of fire pumps if required, and design criteria for a licensed fire sprinkler contractor to design/build the sprinkler system.

The contractor shall provide hydraulic calculations for fire department and DSA approvals, layout of sprinkler heads and coordinate with reflected ceiling plans, and submit plans to Architect and Engineer for approvals

Fire Alarm and Mass Notification Systems

(See Section V for Mass Notification & Fire Alarm System specification)

Overview

The existing campus-wide fire alarm system is an addressable system manufactured by Simplex. All new buildings shall utilize the Simplex fire alarm system and components conforming to DSA standards.

The Mass Notification System is interconnected to the fire alarm system, including initiating devices, notification appliances, controls and supervisory devices.

Panels

4100U Control Panel

- Provide (2) data outlets near control panel

DEVICES

Smoke/Heat Detectors

- Use Addressable/ Analog smoke detectors # 4098-9714

Pull Stations/Monitor Modules

- Use Single Action addressable pull stations # 4098-9001

Horns/Strobes

- Use Multi-Candela Strobe # 4906-9101
- Multi-Candela Horn/Strobe # 4906-9127
- Outdoor Horn # MT-12-24-R

HVAC System Design

Overview

The mechanical engineer shall prepare mechanical heating ventilation and air conditioning (HVAC) drawings and specifications in conformance to the design guidelines outline in this document. A criterion is established for air systems design, and other mechanical requirements to be covered in the Mechanical HVAC drawing and specification bid package. Specific design submittal requirements for project are also highlighted, along with specific engineering responsibilities. In the event that design guidelines are in conflict, or a need arises during the project design phase to modify requirements, it is the Mechanical Engineer's responsibility to notify Owner in writing prior to continuing with the design effort.

Codes and Standards

- California Building Code
- California Mechanical Code
- California Plumbing Code
- California Code of Regulations, Title-24
- National Electric Code (NEC)
- American Air Balance Council (AABC)
- American National Standards Institute (ANSI)
- Air Conditioning and Refrigeration Institute (ARI)
- American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
- National Electrical Manufacturers Association (NEMA)National Fire Protection Agency (NFPA)
- Sheet Metal and Air Conditioning Contractors National Association (SMACNA

Load Calculations

The following information shall be used in the cooling load calculations and design of this project. Where authorities having jurisdiction have applicable design limitation requirements, those design requirements shall prevail. Allowable design safety factors permissible by code shall be applied to equipment selections to ensure adequate cooling capability. Example: T-24 indoor and ambient design criteria may take precedence over table below per State of California Regulatory requirements).

Outdoor Design
Location: Norwalk/Cerritos, Los Angeles County, California.
Climate Zone: 9.
Latitude: 33.90 North.
Longitude: 118E 10' West.
Elevation: 34 feet above mean sea level.
Outdoor design dry bulb temperature (cooling): 92 EF.
Outdoor design wet bulb temperature: 69 EF.
Outdoor design dry bulb temperature (heating): 33 EF.
Indoor (Space) Design

Room	Summer	Winter	RH	Pressurization
Office Space	75 F	70 F	(30-60)	Positive
Conference Room	75 F	70 F	(30-60)	Positive
Rest Rooms	78 F	68 F		Negative
Locker Rooms	78 F	68 F		Negative
Janitorial	78 F	68 F		Negative
Mechanical Room	80 F	68 F		Positive
Battery Room	75 F	70 F	**	Negative
Electrical Room	75 F	70 F	**	Positive
UPS Room	72 F	68F(max)	**	Negative
Corridor	78 F	70 F	(30-60)	Postive
Telecomm.	72 F	68F(max)	(30-60)	Positive

** Specific manufacturer's recommendations.

Building Envelope
Insulation R-value shall not be directly used to determine the assembly R-value. The R-value shall be calculated from each assembly material, and the thermal bridging effect of assembly framing, mullions, cladding, and other through conduction paths shall be used to determine the construction assemblies actual R-values.

Building Operation
The building operation schedule shall be verified with the Owner to allow for appropriate occupancy, lighting, and office equipment loads.

Cooling and Heating Load
Perform HVAC cooling load and heating load calculations per the ASHRAE method. And in keeping with current California Code of Regulations T-24 requirements, including safety factors. Cooling and heating load calculations shall be provided in formal submittal format for review.

Ventilation
Occupant density will be defined within the program documents for the facility, and an additional 15% shall be added to the occupant count to incorporate the high density of people associated with future growth.

If data is unavailable from program documents, refer to ASHRAE Standard 62 and add 15%.

Reasonable assumptions (diversity, etc) should be used in keeping with industry standards to determine the population for purposes of calculating the ventilation air quantity. Assumptions must be documented and understood by the Owner.

Space ventilation rates for the facility shall comply with the CMC, CBC, and the California Code of Regulations, T-24 . Where spaces become unoccupied, the minimum requirements shall be maintained during off-peak cooling and heating cycles at 15 cubic feet per minute per 100 square feet per T-24, or per latest applicable code at time of drawing plan check submittal.

Locker rooms and toilet room exhaust shall be no less than 12 air changes per hour.

Conference rooms, and meeting rooms shall be equipped with demand ventilation controls using combination oxygen sensor and thermostat.

Building Pressurization
The outside air requirement shall be based on the greater of the ventilation requirement, or the positive air balance requirement as compared to the total rate of building exhaust. The building shall be kept under positive pressure via building static pressure sensors and the building supply fan VFD's. The equipment rooms shall receive air from the main office air conditioning system to satisfy the ventilation requirement, and to pressurize the equipment room.

Air Filtration
Filtration requirements: 4" deep 30% efficient pleated prefilters, 18" deep 95% bag filters or 95% micro-pleat cartridge type filters, 12" deep. Filters shall be 24"x24" only. Airtight blank-off panels shall be required for irregular modular perimeter panels. Face velocity shall not exceed 550 feet per minute. Filter racks shall be of the face loaded

type, and not the slide-in from end type. Filters shall be 24″x24″, with blank-off panels as required for an airtight seal at irregular perimeter areas.

Energy Management System Design

The Energy Management System (EMS) shall monitor and control all building mechanical systems and equipment. Each mechanical system shall be complete with factory controls, and shall be specified with accessory integration modules, hardware, computer cards, and software required for full and complete integration to the Campus EMS.

The EMS shall monitor mechanical equipment for failure alarms, and all operating set point variables shall be capable of being reset.

Additional integration modules, hardware, software, and programming shall be provided by the EMS vendor as required to complete system integration.

The lighting control panels shall be integrated into the EMS.

The emergency generator, UPS, Battery Plant, main circuit boards, transfer switch, electrical gear, and other building electrical systems and subsystems shall be integrated, and or monitored.

The security system and fire alarm control system are not part of this system. They will be separately monitored by the Campus Police staff.

The EMS system shall be compatible with existing client system which is the Invensys Building Systems. This system is currently operated from the HVAC shop in the Facilities building, but the Campus would like to make it an Internet Based system, so it can be remotely monitored for off-hours maintenance. For specific building design it will be necessary to coordinate all requirements with each discipline, and with the client requirements.

At the delivery of each building to the Campus, part of the close-out requirements will be to provide 2 sets of as-built prints to the Facilities Manager, along with 3 copies of all service and maintenance manuals for each system. The documents should be accompanied by a compact disk (CD) listing the Building name and number and containing the drawings in PDF format.

A minimum of 40 hours of Training shall also be included with each new building and major temperature control renovations.

Electrical Systems Design

Overview

The building's Main Electrical Distribution Room can be located off the main hallway, or accessed from the exterior if there is a need to use a fork lift to replace equipment such as transformers or large panel boards. If it is located with access from the exterior, it will be necessary to have a 6" or 8" pavement sidewalk up to the door with a level path of travel from a vehicle access route. The doors should be over-sized or be a pair of extra tall doors or have 7'-0" doors with a removable transom above to allow for clear access. This room will not have a ceiling to allow for the installation of conduit, cables, cross-connects, rack- and wall- mounted equipment. This room will serve as the point between the campus power distribution backbone and the pathways to the floors of the building.

Electrical Room Requirements

Size and Location of Electrical Rooms

Depending on the size and technical requirements of the building, there may be one main electrical room with the Switchboards, transformers and panel boards, and there may be other panel distribution rooms on other floors. These rooms may contain Fire Alarm panels and other low voltage cabinets.

Size Requirements

Electrical Rooms shall be sized per the California Building Code (CBC), with the necessary clearances for all equipment.

A minimum of 36 in. of clear working space in front of and behind equipment and patch panels.

A minimum of 6 in. depth off wall for wall-mounted equipment. Aisles shall be a minimum of 36 in. wide.

Architectural Requirements

To permit maximum flexibility and accessibility of cabling pathways, there will be no ceilings provided in the Electrical Rooms.

Doors

Technology Rooms shall have lockable doors that are at least 3.0 ft. wide and 84 in. tall. Door sills are not recommended because they impede the movement of equipment. NOTE: Doors that open outward provide additional usable space and reduce constraints on room layout.

Dust and Static Electricity

Provide anti-static floor tiles in each Electrical or Technology Room. Imbed 2 in. copper tape between the anti-static tile and the conductive adhesive 1.5 feet from the wall. Leave 12 in. of copper tape exposed above the anti-static tile for grounding to copper signal ground busbar in each Electrical Room.

Flood Prevention

Locate these rooms above any threat of flooding. Avoid locations that are below or adjacent to areas of potential water hazard (e. g., restrooms and kitchens). If it is a concern for flooding, then a concrete curb shall be poured with the slab, around the entire room, except for the door, and all equipment shall be placed on a 6" tall concrete curb. Coordinate the design of the curb to the equipment face, allowing for bolting and other requirements.

Floor Loading

Provide a minimum floor loading of 2.4 kPa (50 lbf/ ft. 2).

Wall Requirements

Technology Room walls shall extend from the finished floor to the structural ceiling (e.g., the slab), be covered with two layers of 5/8" Type X gypsum board, to be fire-rated as required by the applicable codes and regulations. Apply two coats of fire-retardant white paint on the walls. These types of rooms should not have exterior windows, nor is it desirable to locate them on the perimeter or curtain walls where windows comprise the entire surface of the wall. No only would this be a breach of security, it creates a major environmental control issue. These rooms should have HVAC as required for the optimum operating condition of the equipment. This unit should be placed outside the room, or off to the side so no condensate water or overflow drain problems can result in water on the equipment. If the HVAC unit is installed inside the room, it should have a piped overflow drain to a floor sink, located in the

corner of the room. This room may require a floor drain and the floor sloped to the drain if there is a concern about ground water intrusion.

Backboard

Provide AC- grade or better plywood, 8 ft. high with a minimum thickness of 0.75 in. around the perimeter of the Electrical or Technology rooms. Plywood shall be either fire- rated or treated on all sides with at least two coats of fire- resistant paint. The bottom of the plywood shall be mounted 6 in. (AFF above finished floor).

Mechanical System (HVAC) Requirements

Provide HVAC that will maintain continuous and dedicated environmental control (24 hours per day, 365 days per year). Maintain positive pressure in the Electrical Room. Provide:

- Temperature 70 degrees F +/- 10 degrees
- Relative humidity 50% +/- 20%

Estimated Heat Loads: 5,000 to 7,500 BTU per equipment cabinet or rack. Verify exact equipment loads and room requirements with actual equipment being provided.

Electrical System Requirements

Lighting

Provide a minimum equivalent of 500 lux (50 footcandles) measured 1 m (3 ft) above the finished floor. Locate light fixtures a minimum of 2.6 m (8.5 ft) above the finished floor. Emergency lighting systems which operate on trickle-charge storage batteries are desirable as a safety precaution in the event of an inadvertent power outage.

Power

Electrical and Technology Rooms shall be equipped to provide adequate electrical power not only for the designed equipment, but for convenience outlets. Provide two (2) dedicated non-switched 3-wire, 20A, 120-volt (V) alternating current (ac) duplex outlets for equipment power at each equipment rack location. Provide (1) 120/30 receptacle, NEMA L5-30R, for a dedicated rack-mountable UPS.

Provide separate duplex 120 V AC convenience outlets (NEMA 5-15R or 5-20R) on all walls for tools, test sets, etc., located at least 18 in. above the finished floor, placed at approximately 6 ft. intervals around perimeter walls and identified and marked as such. All outlets must be on non- switched circuits.

Bonding and Grounding

Provide a copper signal ground busbar in each Technology Room. The ground lead shall be a minimum 6AWG stranded copper cable with green insulation, cad-welded to the Ufer Ground or building steel.

Fire Suppression System Requirements

Provide a dry-pipe system with sprinkler heads set at 500 degrees for building protection. At that temperature, the equipment in the room will be ruined, and the water will protect the facility. All sprinkler heads should have wire cages to prevent accidental operation or damage.

Telecommunications Systems Design

(See Appendix for Cerritos College Information Technology – Network Infrastructure Support Requirements For New Construction)

Introduction

The information included in this section is provided as reference for the project's architects, engineers and other consultants in order to establish an initial understanding of how integrated technologies will impact architectural designs and construction for the new and renovated building projects on campus.

This document addresses minimum guidelines for the design of Technology Rooms, pathways (inter-building and intra-building), and structured cabling system.

Technology Rooms

There are a number of names used to describe Technology Rooms, including Telecommunications Rooms (TR), IDF Closet, Tele/ Data Network Closet, Equipment Rooms (ER), BDF, MDF etc. For the purpose of this document relevant to the individual building projects, the College has standardized on Network Equipment Rooms (ER) for the designation of their technology rooms. The College reserves the use of the MDF, Main Distribution Frame and Data Center to spaces that support the entire Campus.

Equipment Rooms provide an environmentally suitable and secure space for installing cable, associated hardware, rack and wall mounted technology equipment.

Cerritos College currently prefers to terminate all horizontal cabling in one ER if the cabling length is 270' or less. This applies to single story and multi story buildings. In a multi-story building with three floors, the middle floor ER will be used.

Space for ERs will be provided on each floor of a multi-story building for future use. These rooms should be stacked over or under the active ER, and have the ability to be upgraded to have 24 hour HVAC and power added in the future.

The Design Team must meet with the College IT department to discuss and understand the College's program needs to determine the required size of the equipment rooms.

Ladder Rack

Provide Ladder Rack 18 inches wide within the ER to route cable to or from wall-sleeves, risers, ducts and cable trays to termination fields within equipment racks or mounted on walls. This cable ladder

system shall be contained within the confined rooms.

Ladder Rack Materials and Applications
Cable ladder, acting as a Cable Runway, shall be mounted horizontally over equipment cabinets and racks. Provide vertical ladder rack on the wall, feeding into up to four 4-inch EMT conduits to support riser cable from the ceiling thru the slab to the floor above. The Cable Runway system shall be mounted to walls, the top of equipment rack, or hung with threaded rods for bracing and support. Refer to Local Building Codes for additional seismic bracing for code compliance.

Ladder Rack Bonding and Grounding
The ladder rack system shall be bonded to the Telecommunications Ground Bus with 6AWG stranded copper wire.

Equipment Racks
Provide a minimum of (3) equipment racks in a standard ER. (1) Equipment rack will be designated for the termination of horizontal voice cabling, (See specification).

Size and Construction
Each rack shall be black in color with RMU markings. The rack shall consist of a modular EIA 19" mounting frame, with a minimum of 77" (44U) space for equipment in the vertical plane.

The rack shall be manufactured from extruded aluminum / steel with a minimum load-carrying capacity of 1000 lbs. (450 kg.).

Each rack will have 2U horizontal cable management between each 48 port patch panel. The contractor will also provide and install additional horizontal cable management for the management of cabling for the active network equipment. Consultant shall coordinate quantity of additional cable management with College.

Vertical side-mounted cable management will be provided on both sides of each rack. This vertical cable management shall be 6" wide or wider. Provide strain relief and cable management at the rear of each rack to ensure tidy routing of all feeder and horizontal cables. Review the wiring procedures with the Owner – see specification.

Installation Requirements
Provide all mounting components and accessories to securely fix racks to floor and supporting walls. Provide appropriate seismic transverse and longitudinal bracing per any local codes and the current NUSIG (National Uniform Seismic Installation Guidelines), and fix each rack

to the overhead ladder rack.

Provide cable bend management fixtures (cable spillways) to maintain the proper bend radius as the cables drop into the rack. Do not allow cables to be unsupported as they run from conduit or cable tray to equipment cabinets.

Bonding and Grounding
The equipment racks shall be bonded to the Telecommunications Ground Bus with 6AWG stranded copper wire.

Communication Cable Distribution Infrastructure

The horizontal communication cable distribution infrastructure includes the pathway and support hardware which concentrates supports and protects horizontal cable between its origination point in the ER and the workstation outlet location. It also provides a permanent pathway that facilitates the addition or replacement of cable over time.

Communication Distribution Cable Tray
Distribution cable tray shall be installed above the accessible ceiling and used as a main pathway for the management of high volumes of cable through corridors, and, where applicable, for access and egress to ERs.

Construction
Cable tray shall be the wire basket type manufactured of ASTM A510 high strength steel wires or equal, and comply with NEMA VE1 or the proposed IEC 61537 standards. The cable tray shall be UL (Underwriters Laboratory) listed.

Dimensions
The cable tray shall typically be 18 in. wide, with a depth of 4 in. Narrower / shallower cable tray may be used for locations with lower volumes of cable.

Support Requirements
A trapeze-style support shall be used along the span of the cable tray. The trapeze shall be constructed of channel stock (i.e.Unistrut) and 5/8 in. threaded rod. The trapeze support elevation should allow a minimum of 12 in. clearance between the top edge of the cable tray and the slab above, or any other continuous obstruction (such as mechanical ductwork) above. This clearance can be reduced if absolutely necessary at the ductwork, but only for a distance not to exceed 5’-0”. Appropriate threaded rod anchors shall be selected and approved by the Project Structural Engineer. Trapeze supports shall

be placed a minimum of every 10 ft. and at cable tray intersections and terminations.

Seismic bracing for the cable tray as required by code, shall be installed along cable tray routes. Coordination of lateral and oblique bracing locations shall be coordinated with the other disciplines whose equipment and systems share the area above the suspended ceiling.

Bonding and Grounding Requirements
The cable tray shall be bonded to the Telecommunications Grounding Bus Bar in the ER(s) on the same floor. All non-contiguous segments of the Cable tray shall be bonded together using 6AWG stranded copper wire, with crimp-on lugs bolted to each segment of the cable tray to ensure electrical continuity throughout the length of the cable tray system.

Firestopping Requirements
Cable trays that penetrate fire-rated walls shall be equipped with wall penetration sleeves at each location, and have appropriate firestopping materials installed after the placement of cable has been completed. Conduit sleeve penetrations shall be used in lieu of cable tray penetrations for fire barriers of two hour or greater.

Communications / Power Raceway
Provide Wiremold® 5400TBWH white finish two-compartment surface raceway with 5400CWH covers, 5450WH device brackets, CM-EPLA-WH end plates, 5507DWH duplex faceplates (for electrical duplex), 5507BWH blank covers, and all additional required fittings. Install one 1 ½" conduit as raceway feed for up to 12 ft of surface raceway. Data conduits are to feed the top raceway compartment. Starting 3ft. from the end, place device brackets every 6ft. If the furniture has a self-contained power/data raceway system, all wiring must comply with the furniture manufacturer's requirements and applicable codes.

Communications / Power Floorbox
Provide Wiremold® RFB4-series floor boxes, or equal, with duplex brackets for power and data, and S36CCTCAL flanged activation kits with matching floor material installed in trim recess.

Communication Cable System Conduit
Provide communications cable conduit in locations where access to cable tray is unavailable or where portions of the pathway span are inaccessible (i.e. embedded in walls or inaccessible ceilings). Provide conduit for small quantities of cable where cable tray is impractical. Conduit may be used to house non-rated cables between end points to

ensure NEC Code compliance.

Conduits serving individual workstation outlets from the cable tray shall be a minimum of 1 1/4 in. The 1 1/4 in. conduits shall be connected to double-gang, 5S deep device boxes (2-7/8 in. deep), equipped with a single-gang mud ring at the outlet location. This will allow for the use of 10 gig cable. The 5S box should have a standard angled face plate to prevent cable damage due to furniture.
Individual workstation conduits are to be dedicated to only one outlet box each, and shall not be "daisy-chained" together. The following conduit type shall be utilized as described below:

Rigid Galvanized Steel (RGS)
Rigid conduit shall be used in areas exposed to the outside elements above ground and used for the containment of non-rated cable as specified in the NEC.

RGS shall be installed using threaded couplers and fittings with plastic bushings at open ends.

Thinwall Electrical Metallic Tubing (EMT)
EMT shall be used for installations within the confines of an environmentally-controlled building. EMT conduit is not acceptable for non-rated cable installations. EMT conduit may be used, however, to carry riser-rated cable and innerduct in vertical and horizontal cable applications. EMT conduit may be used as sleeves for wall penetrations, and for floor core riser penetrations.
EMT conduit connectors and fittings shall be installed using "Set-Screw" type or air-tight "Compression" type fittings with plastic bushings at open ends.

Flexible Conduit ("Flex")
Flexible conduit shall not be used for communication cable installation when EMT conduit is available. Flex conduit may be used for connections into modular furniture systems. When using Flex conduit, increase the diameter of the Flex by one trade size over the equivalent requirement using smooth-wall conduit.
Flexible conduit runs may not exceed 5 feet without approval.

Plastic Conduit/Polyvinyl Chloride (PVC)
Plastic and PVC conduit shall be used for underground duct construction between buildings and vaults. PVC conduit shall not be used within buildings per NEC Code and UBC (Uniform Building Code). The PVC conduit shall be a minimum of Schedule 40 PVC. Plastic.

Conduit Installation Guidelines

Support Requirements

Conduits shall be installed with support systems such as channel stock/threaded rod trapeze supports. Individual conduits may be supported using threaded rods with clamps. Conduits may be attached to the underside of cable trays and affixed to walls where practical. Seismic bracing shall be installed as required by local building codes, DSA, and NUSIG (National Uniform Seismic Installation Guidelines). Accommodations for lateral and oblique bracing struts must be coordinated with the other disciplines that vie for critical ceiling space.

Bonding and Grounding

Bonding of conduits to the Telecommunications Grounding System is required. At the termination of conduit runs within Equipment Rooms, attachment of a ground wire between the

Telecommunications Ground Bus to grounding rings installed on conduit box connectors should be accomplished to ensure electrical continuity of the conduit system.

Firestopping

Partially filled and empty conduits that pass through fire-rated walls or through floors shall be firestopped in accordance with Local Fire Codes. Material shall be flexible firestopping putty or pillows.

Innerduct

Innerduct shall be used for the protection of fiber optic cabling in cable trays, exposed areas in ceilings and ERs. It shall also be installed in large (3" or greater) conduits to facilitate the future installation of cabling in the same conduit.

Communication Cable System Pull Boxes

A pull box shall be installed in conjunction with conduit installations to provide access to cables at appropriate locations for distribution to tributary locations, and to facilitate cable installation.

A pull box shall be installed after 100 feet of conduit has been placed, and/or after 180 degrees of directional change in the conduit pathway has been affected. A pull box shall not be used to facilitate a directional change.

Materials

For indoor use, use NEMA Type 1 pull boxes. For areas exposed to heavy moisture, chemicals or weather elements, NEMA Type 3 or 4 pull boxes shall be installed.

The pull box shall be equipped with hinged covers, or removable covers which are screwed or bolted on. The pull boxes shall have hardware for supporting and securing cabling and pulling eyes to facilitate cabling installation.

Support Requirements
Pull boxes shall be attached directly to the ceiling slab, or suspended by 4-point threaded rod supports anchored to the ceiling. Pull boxes require seismic bracing to comply with Local Building Codes. Seismic bracing shall be installed as required by local building codes, DSA, and NUSIG (National Uniform Seismic Installation Guidelines).

Accommodations for lateral and oblique bracing struts must be coordinated with the other disciplines that vie for critical ceiling space.

Horizontal Cable Support Hardware (Non-Continuous)
Horizontal Cable Support Hardware such as J-Hooks shall be used in locations where the communication cable is not supported by continuous systems such as cable trays or conduit. J-hooks shall be used only when absolutely necessary. Provide J-Hooks every 48" at a minimum, attached to threaded rod or ceiling hangers to provide support for cable bundles or innerduct. The J-Hooks shall be metal stampings configured in a "J" form providing a broad cradle or saddle for supporting for of cable.

Inter-Building Communication Ductbanks and Transition Structures

Inter-building Communication Infrastructure Ductbanks shall be installed to carry communication cables between campus building locations. The duct shall be constructed of contiguous segments of PVC conduit. The ductbanks shall be encased in slurry.

Transition Structures, such as manholes, shall be installed as required to allow technicians access to cable and splices to perform maintenance or to modify distribution configurations. The size of the Transition Structures shall be determined by the number of ducts and potential cable count the structure must contain.

The following provides general requirements for all Inter-building Communication Duct Banks and Transition Spaces as components of the overall communication cable system infrastructure.

Inter-building Communication Ductbanks
Inter-building Communication Ductbanks shall be designed to provide a permanent and durable pathway system which is available for the routing of entrance cabling from the campus connection point

into the building.

Configuration
There shall be minimum of (3) 4" conduits between the building and the campus connection point. The Ductbanks shall be configured in arrays, with several rows stacked together such as 1 x 4, 2 x 2, 3 x 4 and shall correspond to the arrangement of duct openings in pre-cast concrete vaults and manholes where transitions occur. Install rubber caps (LSP Products Cap-All or equal) on all conduit stubs from campus connection point and on all unused conduits in the campus connection termination structure.

Construction Materials and Methods
Ductbanks shall be encased in slurry. Where ductbanks share underground pathways with other underground infrastructure components such as water lines, gas lines, sanitary systems, it is critical that the communications infrastructure be installed with the highest level of durability.

The duct material itself shall be Trade Size 4 (4-inch diameter), PVC Schedule 40 or equal, and suitable for contact with concrete. Conduits shall be cut square, with the cut ends reamed and deburred. Plastic bushings are to be installed over the each end of every conduit. Place a ¼"nylon or polyethylene pull rope in each conduit from end to end. Install conduit plugs in each empty outside plant conduit to prevent the introduction of noxious gases or water into the building.

Ductbank Placement
Duct routing shall be coordinated with the Campus Master Plan Infrastructure project, with consideration for distance between Transition Structures and difficulty of cable pulls, particularly when high-count multipair copper cables are necessary.

Slurry-Encased Ductbank Dimension Guidelines

Ground Cover	Minimum of 24 inches
Top Level of Slurry	Minimum 3 Inches above top duct
Slurry on Outer Sides of Ductbank	Minimum 3 inches
Slurry Between Ducts and Bottom Level of Slurry	1.5 inch (above, below and to each side) Minimum 3 inches

Ductbank Marking
A metallic warning tape, detectable with magnetic location equipment, should be buried directly over the path of the Ductbank approximately 18" below the surface.

Ductbank Termination At The Building
Communication Ducts should be terminated with bell-end connectors, flush with the inner surface of the wall.

Communication Transition Structures
Ductbank Transition Structures shall be provided to allow access to cable installed within underground ductbanks. The transitions structures shall provide a location for the storage of splice cases and 15-20 ft loops of cable. The transition structures shall facilitate the distribution of cable to multiple locations by providing a junction point for ducts radiating in several directions.

Selection of Transition Structure Type
The type of structure chosen for installation shall be dependent on the number of ducts in the span. The ductbank transition structure shall be preformed concrete structures have weight-bearing cover/lid capacities that range from light pedestrian traffic to deliberate heavy vehicular traffic. The appropriate rating should be selected based on the anticipated exposure of the structure to these differing traffic types.

Placement of Transition Structures
Structures shall be placed after 180 degrees of directional change has been affected in the ductbank route. In straight or relatively straight runs, there shall be no more than 400 feet between structures. Structures shall not be used as the apex of 90-degree change in duct direction. Sweeps and structures shall be planned such that the sweep occurs outside of the structure, allowing straight cable pulls through the structure itself.

Transition Structure Accessories and Equipment
Transition structures require the following equipment:

- A sump, or gravel drainage in the case of small hand holes
- Corrosion-resistant pulling eyes
- Cable racking
- Grounding cables installed per applicable codes or practices
- Ladders and steps
- Watertight duct plugs

Communication Cabling

Cabling System Requirements

The communications-cabling system will be based on the following design guidelines:

- The cabling system will be standards compliant (EIA/TIA 568A)
- The cabling system will provide a high level of flexibility, capability and resilience.
- The cabling system shall include high performance copper and optical fiber cabling, as well as infrastructure for wireless systems where appropriate.
- Communications Outlets will be provided throughout the facility. Each outlet will support voice, data and digital media connectivity.

Cabling System Overview

All data communications station cable shall be blue and is terminated on blue RJ45 connectors at the faceplate and RJ45 patch panels in the ER. All voice communication station cable shall be gray terminated on gray RJ11 connectors at the faceplate and 110 blocks in the ER. While all communications cabling will be terminated on RJ45 patch panels in the ER, voice and data cable will be terminated on separate patch panels. Voice cable shall be gray and data cable shall be blue. Any other low voltage cable for EMS, alarm etc. shall be another color.

Cerritos College has standardized on the Belden / CDT structured cabling system, installed by certified installers. Contractor should be directed to review the cabling system and installation procedures with the Owner prior to installation.

Communications Outlet Configurations

All communications outlets will support a combination of voice, data and media applications. The table below describes the typical outlet configurations.

Standard Wall Mounted Outlet	Standard wall mounted outlets will be the typical outlet configuration throughout the buildings. Standard outlets consist of two Category 6 cables terminated on one RJ45 connectors at the faceplate for data and one RJ11 for voice. In the ER, one cable will be terminated in the data rack and one cable will be terminated on the voice rack. In locations where two or more data connections are required, a data only symbol will be used and

	all terminations in the ER will terminate on the data rack
Wall Mounted Phone Outlet	Wall mounted phone outlets will consist of one Category 6 unshielded communications cable terminated on RJ45 connectors at the faceplate. In the ER the cable will be terminated on the voice rack. The faceplate will be mounted 48" above the finished floor and capable of supporting a wall-mounted handset, unless directed otherwise by the Architect.
Floorbox / Poke-through	In areas that need communications outlets in the floor, the typical floorbox and poke though will consist of three Category 6 unshielded communications cables terminated on 2 - RJ45 connectors for data and 1 – RJ11 for voice in the floor devices. In the ER, two cables will be terminated in the data rack and one cable will be terminated on the voice rack. (This quantity should be confirmed with the project specific requirements)
Audiovisual Comm. Outlets	At instruction or presentation locations, AV outlets will consist of three blue Category 6 unshielded communications cables terminated on blue RJ45 connectors in a wall or floor device. In the ER all cables will be terminated in the data rack unless voice functionality is specifically required. These communications outlets are dedicated to the audiovisual presentation system. If no audiovisual system exists, the AV communications outlet will still be provided at the instructor's location. Also reference the Technology Classroom section in this book for additional requirements.

Ceiling Mounted Outlet	At video projection locations, ceiling mounted power outlets will be provided, along with one Category 6 unshielded communications cable terminated on RJ45 connectors at the faceplate. In the ER all cables will be terminated in the data rack.
Wireless Access Point	Communication outlets that support wireless access points will be located at a location above the ceiling or 10' A.F.F. This should be adjacent to a duplex 120 v power outlet. The outlets supporting the wireless access points will consist of <u>two</u> Category 6 unshielded communications cables terminated on RJ45 connectors at the faceplate. In the ER these cables will be terminated in the data rack.

Backbone Cable (Inside Building)

Cerritos College currently utilizes one ER per building if the maximum horizontal cabling distance from ER to outlet is 270' or less. In this case there will be no internal backbone cabling, only backbone cabling connecting the building to the campus.

In buildings with multiple ERs backbone connectivity will be supported by optical fiber cable for data and voice communications when the distance is greater than 270 feet. Optical fiber will be run from the Primary ER in the building (typically the one on the ground floor that also supports the campus connection) to each of the other ERs consisting of (6) singlemode and (6) high performance (10 Gigabit Ethernet compatible) 50 micron Multimode elements terminated on SC connectors rack mounted in optical fiber patch panels.

Category 6 cable shall be run between ERs located less then 270 feet apart and shall consist of (6) Category 6 cables terminated on RJ45 connectors terminated in patch panels.

Backbone Cable (Campus Connection)

Optical Fiber consisting of (12) Single-mode and (18) 50 micron high performance, laser optimized, (10 Gigabit Ethernet compatible), multi-mode elements shall be installed for each building. The fiber will originate from the campus optical fiber MDF location to all ER equipment rooms. Use Corning Cable Systems fiber cable as a standard.

Labeling

Labeling shall be consistent across all projects. The labeling shall correspond to standard District labeling as provided by the IT Department, (see below).

ER Rooms

Use an alpha character to identify the ER room such as "A", "B", "C", etc.

Patch Panels

All patch panels will be uniquely numbered in each closet as follows:

- Patch Panel 1- XX
- Patch Panel Jack Numbers 1-48 (for 48 port patch panels)

Workstation Outlets

All workstation outlets will be clearly labeled as follows:

A XX YY, YY, YY	ER Room Number Patch Panel Number (1 – 48) Patch Panel Jack Number Example: A XX-YY A 02-24 ER Room A "Patch Panel 02, Jack # 24.

Technology Equipment Rooms

Design Criteria For The Equipment Room
The Equipment Room (ER) will act as the entrance facility for the connection to the campus optical fiber data network and telephone system backbone. The ER will support the centralized data and communications equipment and the termination of the campus backbone and building cabling system that supports the entire building. The ER will also support the termination of all horizontal cabling throughout the building and may house other building information systems such as media distribution and security.

Cerritos College currently prefers to terminate all horizontal cabling in one ER if the maximum cabling length from ER to outlet is 270' or less. This applies to single story and multi story buildings. In a multi-story building with three floors, the middle floor ER will be used.

Space for ERs will be provided on each floor of a multi-story building for future use. These rooms should be stacked over or under the active ER, and have the ability to be upgraded to have 24 hour HVAC and power added in the future.

Architectural and Building System Requirements in the ER
Room Size
The room must be sized to accommodate all the equipment and the code required clearances for ease of operation and maintenance of the equipment. For the Active ER, the minimum space allocated to this room shall be 135 sq. ft. with a minimum dimension of 15ft in one direction.

For the inactive ER the minimum space allocated to this room shall be 80 - 120 sq. ft. with a minimum dimension of 8ft in one direction.

Room Location
Locate the ER as close as possible to the center of the building to minimize cable lengths. Per EIA/TIA standards, Data Network cabling length MUST NOT EXCEED 295 ft, therefore; the cabling from the ER to the outlet should not exceed 270 ft to allow 25' of cabling in the ER and cabling at the station end (from outlet to devices).

The ER shall be accessible for the delivery of large equipment.

Locate the ER far enough away from sources of EMI (Electro-Magnetic Interference) to reduce interference with the telecommunications cabling, including EMI from electrical power supply transformers, motors, generators, radio transmitters, radar transmitters, and induction heating devices. It is preferred that the ER not be located adjacent to the electrical room, due to this potential RF interference.

In cases where ERs must be located adjacent to the Electrical Room, coordinate the layout of the Electrical Room to ensure that the transformers are not located on the adjacent wall. Also when laying out the ER, do not wall mount equipment on the adjacent wall. In addition, route communications cabling away from exposed conduit leading to the Electrical room. (Reference ANSI/TIA/EIA-568-B.1, 569-B).

Do not locate ERs in any place that may be subject to water infiltration, steam infiltration, humidity from nearby water or steam, heat (e. g., direct sunlight) or any other corrosive atmospheric or adverse environmental conditions. Avoid locations that are below water level unless preventive measures against water infiltration are employed. DO NOT locate the ER below ground as this may lead to ingress of water from the conduit infrastructure. As ERs are frequently occupied by technicians and sensitive electronic equipment, the room location should not be adjacent to sources of constant, excessive, low or high frequency noise, such as air-handling equipment, pumps, generators, etc.

Room Use

The ER shall be dedicated solely to Information Technology and related facilities and services. Equipment that does not support the Data/ Communications/ Security systems, (e. g., pipes, duct work, distribution of building power) shall not be located in or pass through the ER.

Architectural Requirements

Ceiling Height

This room shall have no false ceiling, allowing for clear space to the structural deck above in order to provide space over the equipment frames for cables and suspended cable trays. (Reference ANSI/TIA/EIA-569-B).

Doors
ERs shall have a standard campus locking device on the door(s). The door is to be at least 3′-0″ wide and 7 ft. tall. Door sills are not recommended because they impede the movement of equipment.

NOTE: Doors that open outward provide additional usable space and reduce constraints on the room layout. These doors should have the ability to be locked in the open position.

Flood Prevention
Locate ERs to prevent any threat of flooding. Avoid locations that are below or adjacent to areas of potential water hazard (e. g., restrooms and kitchens).

Floor
Provide anti-static floor tiles in each ER, if the budget allows. Imbed 2 in. copper tape between the anti-static tile and the conductive adhesive 1.5 feet from the wall. Leave 12 in. of copper tape exposed above the anti-static tile for grounding to copper signal ground busbar located in each ER.

If anti-static tile has not been provided, provide vinyl tile floor in the ER to reduce dust.

Wall Requirements
ER walls should extend from the finished floor to the structural ceiling (e. g., the slab). The ER should not have windows, nor is it desirable to locate this room on perimeter/curtain walls where windows comprise the majority surface of the wall.

Backboard
Provide ¾″ A-C fire-rated plywood backboard over the drywall in the ER to fully cover three adjacent walls, (the back, and 2 sides), starting at 12 inches above the finished floor. Plywood shall be painted with white paint (2 coats minimum, or per manufacturer's directions), with fire rating seal unpainted and visible at the top, or rating verified by the building inspector, (Reference: ANSI/TIA/EIA-569-B).

Structural Requirements
The floor rating under distributed loading must be greater than 4.8 kPa (100 lbf/ ft. 2) and the rating for concentrated loading must be greater than 8.8 kN (2000 lbf) in areas that will support

telecommunications equipment such as batteries and UPS equipment.

Mechanical (HVAC) Requirements
Provide the ER with dedicated HVAC equipment that will operate 24 hours per day, 365 days per year. If an emergency power source, such as a generator, is available in the building, connect the HVAC system that serves the ER to it.

The HVAC system that serves the ER should be tuned to maintain a positive air pressure differential with respect to surrounding areas with a minimum of one air change per hour inside the room. The HVAC system must maintain the following conditions:

- Temperature 70 degrees F +/- 10 degrees
- Relative humidity 50% +/- 20%

The campus standard unit for these rooms will be a Mr. Slim by Mitsubishi with the condensate line run in the wall to a drain appropriately.

Estimated Heat Loads: 5,000 to 7,500 BTU per equipment rack. UPS and stand-alone air conditioning systems produce additional heat, and should be factored into the design.

Electrical Requirements
Lighting
Provide adequate and uniform lighting that provides a minimum equivalent of 50 foot-candles when measured 3 ft. above the finished floor level. Locate light fixtures a minimum of 8′-6″ above the finished floor. Locate light switches near the entrance to the room.

Emergency lighting systems which operate on trickle-charge storage batteries are desirable as a safety precaution in the event of an inadvertent power outage.

Coordinate the lighting layout with the equipment cabinet layout, (see the lighting plan). Light fixtures should be placed parallel to the equipment racks with fixtures provided in front of the racks and in back of the racks.

Coordinate placement of the light fixtures with overhead cable trays, to ensure the light is not obstructed. Power for the lighting should not come from the same circuits as power for the technology equipment.

Equipment Power
Provide individual branch circuits serving a single load from the feeder panel directly to a branch circuit receptacle (for cord- and-plug connected equipment), or equipment power terminal (for hardwired equipment). Provide branch circuits for equipment power that are protected and wired for 120V, 20A

As a minimum, provide (2) duplex 120V, 20A (NEMA L5-20R) dedicated circuits mounted on the wall at +10" AFF at the rear of every equipment cabinet. Also provide (2) 220V, 30A (NEMA L6-30R) dedicated circuits mounted at the wall at +10" at the rear of the center equipment cabinet.

It is recommended that a surge suppression device be installed at the electrical breaker panel, with indicators, alarm, and diagnostics, (currently use Hubbell HBL4P100).

Convenience Power
Provide separate duplex 120 V, 15A convenience outlets (NEMA 5-15R) for tools, test sets, etc., located at least 18 in. above the finished floor, placed at approximately 6 ft. intervals around side and front walls. These are to be identified and labeled as such.

Backup Power
Modular UPS equipment will be provided by the Owner along with the data network equipment as Group I equipment. This UPS will need to support a minimum of 15 minute battery capacity at full load.

Wall Mounted Telephone
Install a wall phone outlet at 52" in the ER, next to the door.

Bonding and Grounding
Provide a Telecommunications Main Grounding Busbar in the ER. This shall be a pre-drilled copper 6mm thick, electro-tin plated busbar. Place at 102" above the finished floor, on the left side of rear wall, (as viewed from the doorway), behind the first communications rack, (Reference ANSI/TIA/EIA J-STD-607-A).

Conduit Sleeve Penetrations
Provide horizontal 4 "conduit sleeves passing through the wall of the ER for the distribution of the horizontal cable from the building cable tray. Extend the conduit to above the cable ladder over the equipment racks and use cable spillways on the end of the conduit to provide a supported radius transition from a horizontal to vertical direction.

Fire Suppression

Provide high temperature sprinkler heads in wire cages to prevent accidental operation. Coordinate the layout of fire protection systems with the equipment layout to avoid obstructing sprinklers, access to the alarm, or other protective measures.

Mount portable fire extinguishers (with appropriate ratings) in the ER as close to the entrance as possible, mounted to the strike side of the door.

Sound Isolation and Acoustical Treatments

Overview

The acoustical criteria included herein address the following acoustical aspects of the various campus projects:

Speech privacy in rooms with confidential conversations,

Freedom from distraction due to intruding sounds in rooms where such intrusions would disrupt the room's main functions,

Control of reverberation and echoes to permit adequate speech intelligibility in assembly rooms of various sizes, as well as good sound quality in performance, rehearsal and multimedia rooms.

It is recommended that the design team retain the services of a qualified acoustical consultant to assist in complying with the guidelines included herein. Such an individual should be experienced with the acoustical requirements for a wide range of higher educational facilities.

Exterior Sound Isolation

The façades of buildings near the campus perimeter should be designed and glazed to control the intrusion of traffic noise and other environmental noise. The design of each building's exterior envelope (e.g., walls, roof, windows, doors, etc.) should control the intruding environmental sound levels to maximum values of L_{eq} = 35 dBA and L_{10} = 40 dBA during any contiguous 60-minute time period. L_{eq} is the energy-averaged, A-weighted sound level over a contiguous 60-minute time period. L_{10} is the A-weighted sound level that is exceeded only 10% of time during any contiguous 60-minute time period. Rooms with extreme sensitivity to noise should not have a perimeter exposure and should be surrounded with quiet "buffer" zones, such as corridors, etc.

Interior Sound Isolation & Speech Privacy

Interior partitions, doors and windows should be selected to provide appropriate levels of speech privacy and freedom from distraction. Tables 1 & 2 below gives the minimum recommended Sound Transmission Class (STC) ratings for partitions that separate various room-pair adjacencies. Table 1 applies for room-pairs that are not interconnected with a door, while Table 2 applies where there is a door in the interconnecting partition. Note in Table 2 that there are many room-pair adjacencies that should not have an interconnected door.

TABLE 1 **Minimum Partition STC Rating between Room-Pairs without a Door in the Common Partition**	Classroom, Small Group Instruction	Lecture Room	Science Lab	Lab Prep Room	Computer Lab	Private office, Conference Room	Open Office Area	Office Support Room	Lobby, corridor	Toilets	Storage Room	Mech/Elec/Elev Equipment Room
Classroom Small Group Instruction	50	55	50	50	50	55	50	50	45	50	50	AR
Lecture Room	55	55	55	55	55	50	50	45	50	50	AR	
Science Lab	50	45	45	55	45	45	45	50	40	AR		
Lab Prep Room	---	40	50	40	40	40	50	40	AR			
Computer Lab	---	50	40	40	40	50	40	AR				
Private office, Conference Room	50	50	50	50	50	45	NR					
Open Office Area	---	40	---	50	40	AR						
Office Support Room	---	---	50	40	AR							
Lobby, Corridor	40	50	---	AR								
Toilets	50	45	AR									
Storage Room	---	AR										
Mech/Elec/Elev Equipment Room	---											

Legend

--- = Architect's choice

NR = Not recommended

AR = As required to meet other acoustical criteria

Note: Ratings higher than STC-40 require slab-to-slab construction

TABLE 2 **Minimum Partition STC Rating between Room-Pairs with a Door in the Common Partition**	Classroom, Small Group Instruction	Lecture Room	Science Lab	Lab Prep Room	Computer Lab	Private office, Conference Room	Open Office Area	Office Support Room	Lobby, corridor	Toilets	Storage Room	Mech/Elec/Elev Equipment Room
Classroom Small Group Instruction	NR	NR	NR	NR	NR	NR	NR	NR	40	NR	---	NR
Lecture Room	NR	NR	NR	NR	NR	NR	NR	NR	40	NR	NR	NR
Science Lab	45	40	40	NR	NR	NR	40	NR	---	AR		
Lab Prep Room	---	40	NR	NR	NR	35	NR	---	AR			
Computer Lab	---	NR	---	---	40	35	---	AR				
Private office, Conference Room	NR	35	NR	40	NR	---	NR					
Open Office Area	---	---	---	35	---	NR						
Office Support Room	---	---	NR	---	NR							
Lobby, Corridor	---	40	---	AR								
Toilets	NR	35	AR									
Storage Room	---	---										
Mech/Elec/Elev Equipment Room	---											

Legend

--- = Architect's choice

NR = Not recommended

AR = As required to meet other acoustical criteria

Note 1: Ratings higher than STC-40 require slab-to-slab construction

Note 2: STC rating of door to be at least "partition STC rating minus 5 points" (e.g., STC-30 or higher door in an STC-35 partition)

Proper detailing of the partitions is critical for maintaining their expected acoustical performance. The following guidelines will help with the specification and detailing of interior partitions selected in accordance with Tables 1 and 2.

1. Pay specific attention to stud gauge and o. c. spacing when selecting partition STC ratings. Light gauge studs with 24" o. c. spacing provide higher STC ratings than heavier studs and closer stud spacings. Where heavy gauge studs are needed, use ½" thick, 25 gauge, single-leg resilient channels on one side of the partition to improve its STC rating, installed per the channel manufacturer's written instructions.

2. Separate all room-pairs rated at STC-45 and higher with full height, slab-to-slab partitions.

3. All interior partitions with insulation batts in their stud cavities should be considered "acoustical" partitions. All "acoustical" partitions should be designed and installed in complete conformance with the latest revision of ASTM E497 "Standard Practice for Installation Sound-Isolating Lightweight Partitions".

4. Seal all perimeters, including the ends, head and bottom, of all "acoustical" partitions with a continuous bead of acoustical sealant. Install the sealant at both sides of the partition.

5. Seal all intersections of "acoustical" partitions airtight to the building perimeter. Dog-leg partitions to intersect the perimeter at drywall or masonry, not at glass or window mullions. Avoid major dog-leg partitions for space efficiency.

6. Seal all penetrations (e. g., conduits, pipes, ducts, etc.) through "acoustical" partitions with a continuous bead of acoustical sealant. Install the sealant at both sides of the partition.

7. Avoid back-to-back, recessed electrical, telephone, data or other wired service outlet boxes in all "acoustical" partitions. Separate the boxes by at least 16 inches. Backwrap all recessed electrical, telephone, data, etc., boxes with box pads; in fire-rated partitions use a product similar to Manville Firetemp Putty Pads; in non-rated partitions use a product similar to Lowry's Outlet Box Pads.

8. For an enclosed space that is completely surrounded by slab-to-slab partitions provide a sound-isolating, internally-lined return air "Zee-boot" located above the entry door to the space.

9. Where an occupied space occurs above, below or next to an equipment room or duct shaft, select and detail the partitions, slabs and shaft-walls so that the background sound level criteria specified in the table below are not exceeded.

10. Operable accordion partitions provide very little sound isolation. For divisible rooms needing a moderate amount of sound isolation select operable panel partitions with a laboratory STC rating not less than STC-49. Design and install the operable panel partition assembly in complete accordance with ASTM E557, "Standard Practice for Architectural Application and Installation of Operable Partitions" such that the Noise Isolation Class (NIC) rating across the assembly is not less than NIC-42.

11. The door in an "acoustical" partition should have an STC rating that is within 5 points of the partition's STC rating, i.e., the door in an STC-45 partition should be rated at STC-40 or higher.

Recommended Noise Criterion – NC Ratings

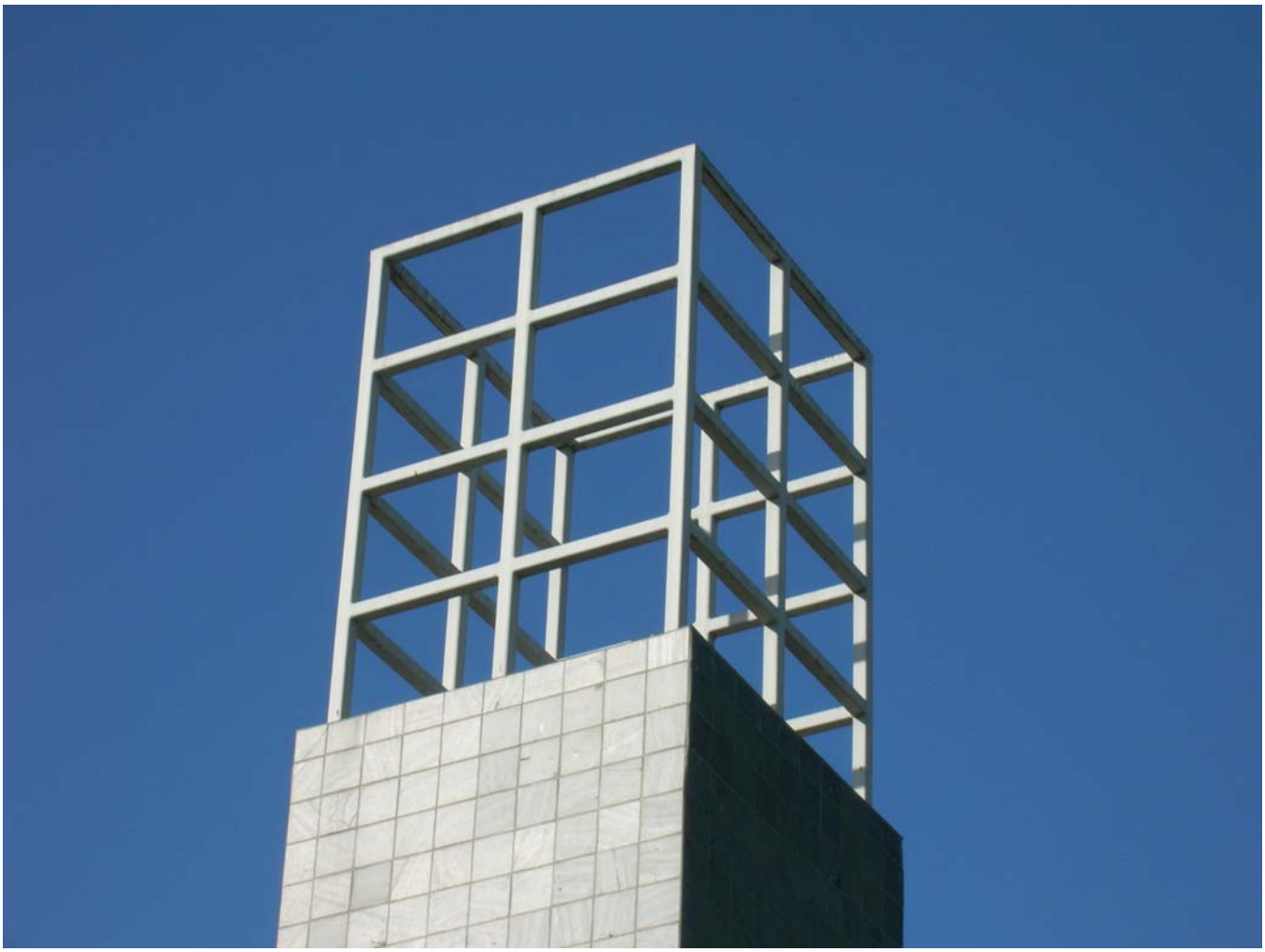
Room Function	NC Rating	Equivalent Sound Level (dBA)
Lecture and classroom	25-35	35-40
Open-plan areas	35-40	45-50
Motion picture theater	30-35	40-45
Library	35-40	40-50
Legitimate theater	20-25	30-65
Private residence	25-35	35-45
Restaurant/Cafeteria	40-45	50-55
TV broadcast studio	15-25	25-35
Recording studio/Concert Hall/Sound broadcasting	15-20	25-30
Sports coliseum	45-55	55-65
Office	30-35	40-45
Conference room	25-35	35-40
Business machines/computers	40-45	50-55
Halls, corridors, lobbies	35-40	50-55
Storage/Restroom	40-45	50-55

Reverberation and Echo Control

Select and locate sound-absorbing surface finish treatments at the ceilings and walls, as needed, such that the Reverberation Times (RT) in the octave bands from 125 to 4000 hertz do not exceed the values given in Table 3 below. Locate the sound-absorbing acoustical treatments to preclude the presence of perceptible flutter, echo and discrete, late, sound reflections.

Table 3 Maximum Reverberation Time in Seconds	**Octave Band Center Frequency**					
	125	250	500	1000	2000	4000
Classrooms, Private Offices, Small Group Instruction Rooms, Conference Rooms, Study Rooms	0.8	0.7	0.6	0.6	0.6	0.5
Laboratories, Multimedia Rooms, Large Group Instruction Rooms, Library	0.9	0.8	0.7	0.7	0.7	0.6
Large Music Rehearsal Rooms, Theater, Auditorium	1.3	1.2	1.0	1.0	1.0	0.8
Small Music Practice Rooms	0.6	0.5	0.4	0.4	0.4	0.3
Gym	2.0	1.8	1.5	1.5	1.5	1.

Section IV – Specifications



- Master Outline Specifications

Master Outline Specifications

PROJECT : **CAMPUS STANDARDS**
CERRITOS COLLEGE

OWNER: **Cerritos College**
11110 Alondra Boulevard
Norwalk, CA 90650

DATE: **August 23, 2013**

ARCHITECT: COMPANY NAME / INFORMATION
Address
City/State/Zip
Phone

STRUCTURAL ENGINEER: COMPANY NAME / INFORMATION

MECHANICAL ENGINEER: COMPANY NAME / INFORMATION

ELECTRICAL ENGINEER: COMPANY NAME / INFORMATION

CIVIL ENGINEER: COMPANY NAME / INFORMATION

LANDSCAPE ARCHITECT: COMPANY NAME / INFORMATION

ACOUSTICAL CONSULTANT: COMPANY NAME / INFORMATION

HARDWARE CONSULTANT: COMPANY NAME / INFORMATION

PROJECT DESCRIPTION:

Describe project Scope of Work

BIDDING AND CONTRACT REQUIREMENTS
Coordinate with College Construction Management Team for documents provided by Cerritos College for the New Project.

SECTION 00 00 00 PROCUREMENT AND CONTRACTING REQUIREMENTS

00 31 00 AVAILABLE PROJECT INFORMATION

00 31 21 SURVEY INFORMATION

00 31 24 ENVIRONMENTAL ASSESSMENT INFORMATION

00 31 26 EXISTING HAZARDOUS MATERIAL INFORMATION

00 31 32 GEOTECHNICAL DATA

00 60 00 PROJECT FORMS

SECTION 01 00 00 GENERAL REQUIREMENTS

01 11 00 SUMMARY OF WORK

1.1 Contract Type: General Contractor / Multiple Prime Contracts
1.2 Work Under Separate Contracts:
A. Hazardous Abatement
1.3 Work Sequence
1.4 Work will be executed during school session.
1.5 Owner-Furnished/Contractor-Installed Items:
1.6 Owner-Furnished/Owner-Installed Items:
A. Vendor Provided Washroom Accessories

01 15 00 LABOR COMPLIANCE PROGRAM

01 22 00 SITE SAFETY PROGRAM

01 23 00 ALTERNATES

1.1 Schedule of Alternates

01 26 00 CONTRACT MODIFICATION PROCEDURES
- 1.1 Change Order Proposal Requests
- 1.2 Construction Change Document (CCD) Category A or B
- 1.3 Minor Changes in Work
- 1.4 Change Order Procedures

01 29 00 PAYMENT PROCEDURES

01 31 19 PROJECT MEETINGS

01 31 13 PROJECT COORDINATION

01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION

01 33 00 SUBMITTAL PROCEDURES
- 1.1 Product Data
- 1.2 Shop Drawings
- 1.3 Samples
- 1.4 Warranties
- 1.5 Project Closeout

01 35 43 ENVIRONMENTAL PROCEDURES

01 41 00 REGULATORY REQUIREMENTS
- 1.1 Title 24, California Code of Regulations, California Building Code, latest adopted edition.
- 1.2 City of Norwalk.
- 1.3 Los Angeles County Fire Department

01 42 00 REFERENCES
- 1.1 Definitions
- 1.2 Industry Standards

01 45 00 QUALITY CONTROL
- 1.1 Payment: Owner will pay for Quality Control Services.
- 1.2 Payment of Design Laboratory costs by Contractor.
  - A. Payment of other testing and inspection by Owner.

01 52 00 CONSTRUCTION FACILITIES

01 59 00 STORM WATER POLLUTION PREVENTION PLAN

01 60 00 PRODUCT REQUIREMENTS

01 71 23 FIELD ENGINEERING

01 73 29 CUTTING AND PATCHING

01 77 00 CLOSEOUT PROCEDURES

1.1 Substantial Completion
1.2 Final Inspection
1.3 Contractor's Closeout Submittals to Architect
1.4 Final Application for Payment

01 78 33 BONDS

01 78 36 WARRANTIES

SECTION 02 00 00 EXISTING CONDITIONS

02 41 16.13 BUILDING DEMOLITION

1.1 Removal of Above Grade Improvements
1.3 Removal of Below Grade Improvements
1.4 Disposal of Waste Materials

SECTION 03 00 00 CONCRETE

03 30 00 CAST-IN-PLACE CONCRETE

1.1 Concrete Types: Reinforced concrete with compressive strength as required by Soils Investigation Report and Structural Engineer.
1.2 Under Slab Vapor Retarder: Heavy-duty type, equal to 15 mil Stego Wrap. (Not polyethylene).
1.3 Finish of Formed Surfaces:
  A. Rough formed at unexposed surfaces.
  B. Smooth formed at exposed surfaces.
1.4 Slab Finish:
  A. Interior Floor Slab: Steel troweled.
  B. Slabs to Receive Setting Bed for Tile: Scratch finish.
  E. Penetrating Liquid Floor Treatment (Sealer/Hardener).

03 46 60 CAST-IN-PLACE DRILLED PIERS

1.1 Type:
  A. Bored and belled reinforced concrete piers.
  B. Straight drilled reinforced concrete piers.
1.2 Temporary Steel Casings required.
1.3 Unit Prices required.

SECTION 04 00 00 MASONRY

04 22 00 CONCRETE UNIT MASONRY

1.1 Concrete Masonry Units:
- A. Precision Units.

1.2 Color of Concrete Masonry Units: Gray

1.3 Mortar Color: Gray

1.4 Masonry Assembly:
- A. Full Block Wall.

1.5 Bond Pattern: 1/2 running bond

1.6 Jointing: Tooled concave

SECTION 05 00 00 METALS

05 05 13 SHOP-APPLIED COATINGS FOR METAL

1.1 Provide factory applied coating systems suitable for application to aluminum extrusions, roll-formed aluminum, and coil coated galvanized steel sheet.

1.2 Basis-of-Design:
- A. High Performance Coatings are based on following systems as manufactured by PPG Industries, or approved equal by Valspar:
  1. Type A: High Performance Fluoropolymer Coating System for Extruded Aluminum.
     - a. Manufacturer's standard 3 coat system, consisting of primer, color coat and clear topcoat.
     - b. Provide 10-year warranty.
  2. Type B: High Performance Fluoropolymer Coating System for Coil-Coated Steel Sheet.
     - a. Manufacturer's standard 3 coat system, consisting of corrosion inhibitive primer, barrier coat, 0.75 fluoropolymer color coat, and clear topcoat.
     - b. Provide 20-year warranty.

05 12 00 STRUCTURAL STEEL FRAMING

1.1 Codes and Standards:
- A. American Institute of Steel Construction: (AISC) "Specifications for Design, Fabrication, and Erection of Structural Steel for Buildings", including "Commentary" and Supplements issued thereto.
- B. American Welding Society (AWS): Structural Welding Code, latest edition.
- C. Title 24, CCR, Part 2.

1.2 Materials:
- A. W-Shapes: [ASTM A 992.] [ASTM A 572, Grade 50.] ***- Verify***
- B. Steel Plates, Shapes and Bars: ASTM A 36.
- C. Steel Pipe Columns: ASTM A 501 or ASTM A 53, Grade B. ***- Verify***

D. Steel Tube Columns: ASTM A 500, Grade B. ***- Verify***
E. Architecturally Exposed Structural Steel (AESS); including shop and field preparation and painting.
   1. Architecturally exposed steel describes members and connections that will remain exposed to view from exterior and to interior occupied and public areas of completed building.

1.3 Galvanizing: ASTM A 123, hot-dip process.
1.4 Workmanship:
A. Structural steel fabrication and erection per AISC as a minimum standard.
B. Welding: AWS Specification, as a minimum standard.
C. Galvanizing: exterior metals galvanized.
D. Shop Cleaning and Prime Painting of Architecturally Exposed Structural Steel (AESS)
   1. Field Painting of Architecturally Exposed Structural Steel (AESS) is specified under Section 09960

05 30 00 METAL DECKING

1.1 Project includes following deck types:
A. Roof deck.
1.2 Finish:
A. Galvanized.
1.3 Accessories:
A. Sump pans.
B. Metal closure strips.
C. Ridge and Valley Plates

05 50 00 METAL FABRICATIONS

1.1 Includes items fabricated from metal shapes which are not part of structural metal or other metal systems.
A. Rough hardware.
B. Miscellaneous Framing and Supports.
C. Miscellaneous steel trim.
D. Steel Grating.
E. Steel Pipe Railings.
F. Angle Thresholds.
G. Steel framing and supports for countertops.
H. Metal Ladders
1.2 Railings:
A. Handrails Aluminum Pipe:
   1. Interconnect members by:
      a. Welding with internal connectors.
      b. Non-welded connectors.
   2. Form changes in direction:
      a. By bending.

b. By welding in prefabricated flush fittings.

3. Finish:
   a. Mill Finish and Sanded

05 58 00 FORMED METAL FABRICATIONS

1.1 This Section includes:
- A. Formed closures and trim.
- B. Filler panels.

SECTION 06 00 00 WOOD, PLASTICS, AND COMPOSITES

06 10 00 ROUGH CARPENTRY

1.1 Section includes:
- A. Framing with dimension lumber.
- B. Wood block, nailers.
- C. Wood furring.
- D. Wood roof crickets.
- E. Sheathing.
- G. Plywood backing panels.
- H. Building paper.
- I. Preservative treated wood.
- J. Fire retardant treated wood.
- K. Parallel Strand Lumber

06 40 00 ARCHITECTURAL WOODWORK

1.1 Quality Standard: Woodwork Institute (WI) Manual of Millwork, latest edition

1.2 Section includes:
- A. Plastic Laminate-faced Casework; WI Section 15
  1. Grade: Custom, unless noted otherwise.
  2. Casework Design: Flush Overlay.
  3. Construction Style: Style A, frameless.
  4. Construction Type: Type 1, multiple self-supporting units fastened together to form a larger unit.
- B. Countertops: Standard Plastic Laminate; WI Section 16
  1. Grade: Custom, unless noted otherwise.

1.3 Cabinet hardware and accessories:
- A. WI Standards for Cabinet Hardware:
  1. Exposed Hardware Finish: Satin Stainless steel.
  2. Grommets:
  3. Wire Management:

1.4 Fiberglass Reinforced Panels (FRP)
- A. Use as wainscot wall panels.
- B. Fire Resistance Class: Class A.
- C. Trim: Manufacturers standard vinyl moldings in color matching panels.

06 61 16 SOLID SURFACING FABRICATIONS

1.1 See Campus Interior Finish Standards following this Master Outline Specification

SECTION 07 00 00 THERMAL AND MOISTURE PROTECTION

07 14 16 COLD FLUID-APPLIED WATERPROOFING

07 16 16 CRYSTALLINE WATERPROOFING

07 19 23 SILOXANE WATER REPELLENTS

1.1 Provide clear exterior water-repellent coating for following vertical surfaces:
- A. Concrete Unit Masonry.

07 65 26 SELF-ADHERING SHEET FLASHING

07 21 00 THERMAL INSULATION

1.1 Section includes:
- A. Thermal Insulation for:
  1. Concealed building insulation in wall studs, rafter spaces, and elsewhere as indicated.
  2. Vapor Barriers.
- B. Sound Insulation in wall studs and elsewhere as indicated.

1.2 Extent of each type of insulation is indicated on drawings.

1.3 Required thickness and thermal resistance (R-value) indicated on drawings.

1.4 Materials:
- A. Concealed Building Insulation: Inorganic fiber blanket or batt with foil facing at exterior surface, fire retardant foil where required.
- B. Vapor Barrier: Reinforced-polyethylene, fire retardant where required.

07 52 00 MODIFIED BITUMINOUS MEMBRANE ROOFING

1.1 Roof System Basis-of-Design: Styrene Butadiene Styrene (SBS) modified bitumen membrane system with finished surface of granular cap sheet torch applied to ply sheet, torch applied to glass mat roof board, fastened to polyisocyanurate rigid insulation, fastened to metal deck. complying with energy requirements of Title 24.
- A. Paradiene 20 TG/30 CR FR TG Roof System as manufactured by and installed under supervision of Siplast, Inc.
- C. Roof Slope: 3/8 inch per 12 inches.

1.2 Fire-Test Exposure: Class A.

1.3 Roofing Manufacturer's Warranty Period Required: 20 years.

1.4 Type of Roof Deck: Metal

1.5 Number of ply felts: 2.

1.6 Finished Surface: Mineral granule surfaced cap sheet; cool roof rated.
- A. Cap Sheet Granite Color: White

1.7 Auxiliary Materials:
- A. Walkway Pads: Required
- B. Cants: Fiber.
- C. Roof Cover Board: Dens-Deck Prime

07 62 00 SHEET METAL FLASHING AND TRIM

1.1 Section includes:
- A. Reglets
- B. Gutters
- C. Downspouts
- D. Roof-Penetration Flashing
- E. Exposed trim, gravel stops, fascia
- F. Copings
- G. Base flashing
- H. Counterflashing

1.2 Fabricated and installed in accordance with Sheet Metal and Air Conditioning Contractor's (SMACNA) "Architectural Sheet Metal Manual".

1.3 Metal Materials:
- A. Minimum Flashing Gage: 22 gage.
- B. Typical: Pre-finished (coil-coated) galvalume.
- C. Roof-penetration flashing

07 72 33 ROOF HATCHES

1.1 Roof Hatches: Curb mounted single leaf type of galvanized steel with insulated walls and cover complete with hardware.
- A. Basis-of-Design: Type S, Model S-50 as manufactured by Bilco Company.

07 84 00 FIRESTOPPING

1.1 Through-Penetration Firestop Systems for:
- A. Roofs
- B. Walls
- C. Smoke Barriers

07 92 00 JOINT SEALANTS

1.1 Expansion and control joints, joints between metal frame and concrete, joints between concrete sections: One or two component silicone sealant.

1.2 Exterior sills, jamb, and heads of window frames, door frames, louvers and similar openings, and where metal, wood or other materials abut or joint masonry, concrete or each other: One or two component silicone sealant.

1.3 Horizontal joints in pavement and sidewalks: Two component polyurethane sealant.

1.4 Joints between plumbing fixtures and other elements: Silicone mildew-resistant sealant.

1.5 Backer Rod or Backup: As recommended by sealant manufacturer.

07 95 13 EXPANSION JOINT COVER ASSEMBLIES

1.1 Basis-of-Design: Design for expansion joints is based on products as manufactured by Construction Specialties, Inc.
- A. Provide expansion joints of types indicated on Drawings.
- B. Subject to compliance with specified requirements, provide named product or comparable product by one of the following manufacturers:
  1. Architectural Art Mfg. Inc.
  2. Balco, Inc.
  3. MM Systems, Inc.
  4. Watson Bowman Acme

SECTION 08 00 00 OPENINGS

08 11 00 METAL DOORS AND FRAMES

1.1 Section includes:
- A. Steel doors.
- B. Steel door frames.
- C. Vision panels in doors.
- D. Louvers in doors.

1.2 Standards: Steel Door Institute "Recommended Specifications, Standard Steel Doors and Frames" (SDI-100).

1.3 Door types required.
- A. Full flush.

1.4 Exterior Door Performance:
- A. Level 3: 16 gage, extra heavy duty.

1.5 Door Frames: Match door performance requirements.
- A. Frame Construction: Welded.

1.6 Finishes:
- A. Interiors Door Frames: Prime finish
- B. Exterior Doors and Frames: Prime finish

08 14 00 WOOD DOORS

1.1 Section includes:
- A. Solid Core Doors with medium density overlay faces.
- B. Factory fitting to framing and factory machining for hardware.

1.2 Standards: WDMA I.S.1, "Industry Standard for Wood Flush Doors published by Wood Door and Window Manufacturer=s Association".

1.3 Thickness: 1-3/4".

1.4 Door Construction:
- A. Solid Core: Structural Lumber Core
- B. Construction: Five ply.

08 31 00 ACCESS DOORS AND PANELS

1.1 Provide access doors occurring in walls and ceilings.

08 41 13 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

1.1 General: Provide inside-outside matched resilient flush-glazed system with provisions for glass replacement.
   A. Basis-of-Design: Design for interior storefront system is based on A400 Series, 1-3/4 inch by 4 inch Center Glazed System for 1/4 inch glass by Arcadia, Inc.
   B. Shop-fabricate and preassemble frame components where possible.

1.2 Doors: Provide 1-3/4 inch thick center hung doors with stile and rail dimensions of nominal 5-1/8 inch wide top rail, 5 inch vertical stiles, and minimum 10 inch high bottom rail, of design as based on Arcadia WS512 Series Wide Stile Door.

1.3 Finish: High Performance Coating System Type A specified in Section 05 05 13.

08 44 00 GLAZED ALUMINUM CURTAIN WALLS

1.1 Basis-of-Design: Design for Curtain Wall System Type A is based on T-500 Series, nominal 2-1/4 inch by 5-1/2 inch (OPG-1500) Pressure Plate Glazed System for 1 inch insulating glass, as manufactured by Arcadia, Inc.

1.2 Basis-of-Design: Design for Curtain Wall System Type B is based on T-500 Series, nominal 2-1/4 inch by 10 inch (OPG-3000) Pressure Plate Glazed System for 1 inch insulating glass, as manufactured by Arcadia, Inc.

1.3 High Performance Coating System Type A, as specified in Section 05 05 13

08 62 50 TUBULAR DAYLIGHTING DEVICES

1.1 Tubular daylighting device, consisting of roof dome, reflective tube, and diffuser assembly; configuration as indicated on Drawings.

1.2 Basis-of-Design: Tubular Daylighting Devices as manufactured by Solatube International, Inc., Vista, CA

08 71 00 DOOR HARDWARE (See Appendix B Catalog Cuts for Cerritos College)

1.1 Template hardware throughout.

1.2 Fastenings as required or recommended by manufacturer, furnished with hardware.

1.3 Finish: BHMA 626 Satin Chromium.
   A. Push-plates, pulls and protection plates: BHMA 630, Satin Stainless Steel.

1.4 Finish hardware material per Hardware Schedule. Compliant with ADA and CBC Accessibility Standards.

1.5 Keying: Masterkey as directed by Owner.

1.6 Hardware:
   A. Door Hinges: doors with door closers to have concealed ball bearing hinges. Outswing exterior doors to have non-removable pins.
      1. Exterior: bronze.
      2. Interior: steel.
   B. Stops and Holders: Bronze metal, generally floor type with three connections to floor.
   C. Seals and Weatherstrip: Aluminum extrusions with neoprene seals.
   D. Thresholds: Maximum 1/2" high, and approved by State of California accessibility requirements.

08 71 13 AUTOMATIC DOOR OPENERS

1.1 Basis-of-Design: Design for automatic sliding door operators is based on Profiler Series, 2000 Linear Drive operator as manufactured by Horton automatics division of Overhead Door Corporation

1.2 Basis-of-Design: Low energy power operated door system for swinging doors based on HD-Swing7 Series 4000LE Automatic Door Operator as manufactured by Horton automatics division of Overhead Door Corporation.

08 80 00 GLAZING

1.1 Standards and Codes:

A. ASTM C 1036, Standard Specification for Flat Glass.
B. Glass Association of North America (GANA) Glazing Manual.
C. California Building Code.
D. Consumer Product Safety Commission, Safety Standard for Architectural Glazing Materials, 16 CFR 1201.

1.2 Schedule of Glass Types:

A. Glass Type **G1**:
   1. Clear heat treated glass, fully tempered, nominal 1/4 inch overall thickness.

B. Glass Type **G2**:
   1. Laminated clear, heat strengthened, glass unit of nominal 3/8 inch overall thickness
      a. Outer Light: Uncoated, clear clear float glass; nominal 3/16 inch thick
      b. Clear PVB interlayer; 0.030 inch thick.
      c. Inner Light: Uncoated, clear float glass; nominal 3/16 inch thick

C. Glass Type **G3**:
   1. Laminated translucent glass unit, heat strengthened, of nominal 3/8 inch overall thickness
      a. Outer Light: Uncoated, clear float glass; nominal 3/16 inch thick
      b. White (Arctic Snow) PVB interlayer; 0.030 inch thick.
      c. Inner Light: Uncoated, clear float glass; nominal 3/16 inch thick

D. Glass Type **G4**:
   1. Insulating vision glass unit of nominal 1 inch overall thickness:
      a. Outer Light: Coated, tinted, heat treated glass, fully tempered, nominal 1/4 inch thick with low-e coating on number 2 surface.
      b. Air Space: 1/2 inch
      c. Inner Light: Uncoated, clear, heat treated glass, fully tempered, nominal 1/4 inch thick.
      d. Normal Performance Characteristics:
         1) Visible Light Transmission: 35%
         2) Solar Heat Gain Coefficient (SHGC): 0.24
         3) Shading Coefficient: 0.28
         4) Outdoor Visible Light Reflectance: 6%
         5) Winter U-Value: 0.29

6) Summer U-Value: 0.26

2. Basis-of-Design Assembly: VNE 12-63 by Viracon.

E. Glass Type **G5**:

1. Insulating spandrel glass unit of nominal 1 inch overall thickness:
   a. Outer Light: Coated, tinted, heat treated glass, fully tempered, 1/4 inch nominal thickness with low-emissivity coating on number 2 surface.
      1) VNE 12-63 by Viracon, or approved equal
   b. Air Space: 1/2 inch
   c. Inner Light: Uncoated, clear, heat treated glass, fully tempered, 1/4 inch nominal thickness with V175 High-Opacity White ceramic frit on #4 surface
2. Provide products for both outer and inner lights by same manufacturer.

F. Glass Type **G6**:

1. Insulating translucent spandrel glass unit of nominal 1 inch overall thickness:
   a. Outer Light: Coated, tinted, heat treated glass, fully tempered, 1/4 inch nominal thickness with low-emissivity coating on number 2 surface.
      1) VNE 12-63 by Viracon, or approved equal
   b. Air Space: 1/2 inch
   c. Inner Light: Uncoated, clear, heat treated glass, fully tempered, 1/4 inch nominal thickness with Acid Etch on number 3 surface
      1) Screen #3058, full coverage silk-screen in V-1085 Acid Etch by Viracon, or approved equal.
2. Provide products for both outer and inner lights of same manufacturer.

G. Glass Type **G7**:

1. Clear heat treated glass, fully tempered, nominal 1/2 inch overall thickness.
   a. Etched finish on Number 2 surface with 4 inch clear border on 4 sides
   b. Etch Sealer factory-applied to etched surface

1.3 Glazing Sealant: One-part silicone.

SECTION 09 00 00 FINISHES

09 24 00 PORTLAND CEMENT PLASTERING

1.1 Section includes:

A. Metal lath.

B. Portland Cement Plaster, 3-coat with acrylic-based polymer-modified finish coat.

C. Mock-ups for each finish.

1.2 Standards:

A. California Building Code (CBC)

B. ASTM C 1063; Installation of Lathing and Furring for Portland Cement-Based Plaster.

C. ASTM C 926; Application of Portland Cement-Based plaster.

1.3 Materials
- A. Metal Lath and Weather-Resistive Barrier:
  1. Expanded-Metal Lath: Self-furring diamond mesh with hot-dip galvanized zinc coating.
  2. Vapor-Permeable Paper Backing: Tyvek or Typar spun-olefin sheet.
- B. Accessories:
  1. Foundation Weep Screed: Hot-dip galvanized steel sheet.
  2. Cornerite.
  3. External-Corner Reinforcement: Metal lath with hot-dip galvanized zinc coating.
  4. Metal Trim: Bead and joint trims, zinc or zinc-coated (galvanized) steel.
- C. Fiber for base coats.

1.4 Finishes:
- A. Exterior: Machine applied, integral color finish coat, medium dash texture; acrylic-based polymer-modified finish coat.

09 29 00 GYPSUM BOARD

1.1 Section Includes:
- A. Interior Gypsum Board: Type X.
- B. Mold-Resistant Gypsum Board: Type X.
- C. Tile Backer Board for thinset wall installations.

1.2 Thickness: 5/8".

1.3 Metal Accessories: Manufacturer's standard galvanized steel trim accessories.

1.4 Joint Treatment: ASTM C 474 and C 475.

1.5 Finish Levels (per ASTM C 840):
- A. Plenum and concealed areas: Level 1.
- B. Substrate for acoustical tile: Level 2.
- C. Substrate for heavy textured finish or heavy duty wall coverings: Level 3.
- D. Substrate for light texture wall covering and flat paint over light texture: Level 4

09 30 00 TILING

1.1 See Campus Interior Finish Standards following this Master Outline Specification

1.2 Materials and Tile:
- A. Install tile per latest edition of Tile Council of America (TCA) Handbook for ceramic tile installation.
- B. Floor Tile: Ceramic mosaic, sizes 2@ x 2@.
  1. Floor tile to be slip-resistant.
  2. Floor tile to use chemical-resistant epoxy-grout.
- C. Wall Tile: Glazed Ceramic tile, size 4-1/4" x 4-1/4"
- D. Base Tile: 4" high, coved based type. Provide necessary trim shapes.
- E. Stone thresholds installed as part of tile work.
- F. Crack-Suppression (Cleavage) Membrane.

1.3 Placement Methods: Mortar bed on floors, thin set on walls.

09 50 00 ACOUSTICAL CEILINGS

1.1 Applied Acoustic Ceiling Tile (ACT):

A. Mineral fiber tile conforming to ASTM E 1264, Type III, Form 2, Pattern CE.

1. Size: 12 by 12 inches by 1/2 inch thick.
2. Edge: Beveled K4C4.
3. NRC: 0.55
4. CAC: 35
5. Fire Resistance: Class A, Flame Spread 25, Smoke Developed 25, ASTM E 1264.
6. Light Reflectance: 0.85
7. Color: White.
8. Adhesive applied.

B. Product: Armstrong Fine Fissured, Item No. 746, or approved equal by USG.

1.2 Acoustical Ceiling Panel (ACP):

A. Mineral fiber panel conforming to ASTM E 1264, Type III, Form 2, Pattern CE.

1. Size: 2 by 4 feet, 3/4 inch thick.
2. Fire Resistance: Class A, Flame Spread 25, Smoke Developed 25, ASTM E 1264.
3. NRC: 0.70
4. CAC: 40
5. Color: White.
6. Edge: Square.
7. Light Reflectance: 0.85

B. Product: Armstrong School Zone Fine Fissured, Item 1714, or approved equal by USG.

C. Suspension System: Exposed direct hung.

1. ASTM C 635 Classification: heavy duty.
2. Product: Prelude XL Exposed Tee System by Armstrong World Industries, meeting D.S.A. Product Acceptance Document PA-041.
3. Finish: White

D. Edge Moldings: Manufacturer's standard channel molding for edges and penetrations of ceiling, with single flange of molding exposed, baked enamel finish, color to match main runner.

09 65 00 RESILIENT FLOORING

1.1 See Campus Interior Finish Standards following this Master Outline Specification

1.2 Rubber Tile: ASTM F 1344, homogeneous solid color.

1.3 Linoleum Tile

1.4 Base: Homogeneous rubber, 4" high, 1/8" thick. Coved toe at hard surface floors; toeless at carpet floors.

09 68 00 CARPETING

1.1 See Campus Interior Finish Standards following this Master Outline Specification

1.2 Yarn: Provide District Standard carpet types based on Collins and Aikman.

A. Manufacturer/Quality: C&A Berkshires by Tandus US, Inc, or approved equal.
   1. Style: Sheffield #01932
   2. Face Yarn: 100% Antron Legacy Nylon, with Ensure Soil Protection.

1.3 Meet Federal Flammability Standard ASTM D 2859-70T.

1.4 Installation: Direct glue down over concrete floor.

09 68 13 TILE CARPETING

1.1 See Campus Interior Finish Standards following this Master Outline Specification

09 72 00 WALL COVERINGS

1.1 Vinyl Fabric: FS CC-W-408,Type IICMedium Duty.

09 77 23 FABRIC-WRAPPED PANELS

1.1 See Campus Interior Finish Standards following this Master Outline Specification

1.2 Acoustical absorption and diffusion at walls and ceilings consisting of following:

A. Fabric-wrapped, 6-10 pcf density rigid glass fiber acoustical panels. 1, 2 or 4 inches thick.

B. Fabric covered Glass Fiber Wall Panels. Acoustically-breathable fabric field-stretched and adhered via special plastic serrated extrusions over glass fiber core.
   1. No glue, backing or other stabilizers shall be permitted between fabric and faces of glass fiber panels. 3-6 pcf density core glass fiber.

09 91 00 PAINTING

1.1 See Campus Interior Finish Standards following this Master Outline Specification

1.2 Paints shall be top quality, commercial-line products, meeting or exceeding appropriate Federal Specification.

A. Systems to be predominantly water-based.

1.3 Comply with California Air Resources Board (CARB) and South Coast Air Quality Management District (SCAQMD) requirements for maximum Volatile Organic Compound (VOC) content.

1.4 Paint work shall be 3-coat after proper preparation.

A. Semi-Gloss: Toilet rooms, Janitor, Work Room, Kitchen, Mechanical, paint grade wood doors, hollow metal doors and frames.

B. Eggshell: Other.

09 96 00 HIGH-PERFORMANCE COATINGS

1.1 Section includes shop preparation, priming, and shop and field painting of following:

A. Architecturally Exposed Structural Steel (AESS) for exterior steel components
   1. High performance pigmented two component system consisting of cycloaliphatic amine epoxy primer and aliphatic acrylic polyurethane, which meets or exceeds following performance provisions:
      a. Resistant to abrasion, corrosion, and chemical exposure.
      b. Repel surface dirt and contaminates.

SECTION 10 00 00 SPECIALTIES

10 11 16 MARKERBOARDS

1.1 Markerboards: 1/2" thick porcelain-on-metal with finish intended for liquid markers.

1.2 Tackable Wallcovering: Resilient cork/linoleum tackable wallcovering.

A. District Standard: *Walltalkers, Tacwall; color: 04 Stone*

B. With perforated metal panel

1.3 Trim: Extruded aluminum, narrow style, satin anodized finish.

1.4 Provide chalktrough, map rail with hooks and flag holder.

1.5 Music Staff Lines: Enameled music staff on chalkboards where indicated; 1/8" lines, 1" center to center, 5" between staffs, 40" overall height.

10 14 00 SIGNAGE

1.1 Material:

A. Plastic Signs, raised character, tactile, room identification, exit door signs, and non-tactile signs.

1.2 Fabrication

A. Plastic Signs

1. Tactile plastic signs using Graphic Process Sand-Carved signs, with radius corners, and square cut edge, exterior-grad. Graphics, Braille and tactile copy required.
   a. Unframed Signs: Model ADA Systems Signs, M-311 Series by Mohawk Sign Systems or equal. Custom copy by Architect.
2. Non-tactile Plastic Signs: ¼ inch overall thickness, laminated acrylic plastic sheets, using sub-surface screen-print process graphics and symbols, exterior-grade at exterior locations, 3/8 –inch radius corners, square cut edge, drilled holes for countersunk screws, polished deges.
   a. Unframed Signs.
3. Apply UV inhibitor overcoat for exterior signs.

B. Fasteners: Stainless steel screws, flat head, pin-in-head torx screws for vandal-proof and clear silicone adhesive.

C. lettering Type Style: Helvetica Regular, uppercase letters only, refer to QUALITY ASSURANCE for letter-proportion compliance.

D. Color: per College Standards (See Appendixes)

10 14 16 PLAQUES

1.1 Dedication Plaque: Cast bronze. Provide plaque with Project Name, Board of Education Names, Architects and Contractor names and date of dedication ***- Verify***

10 14 19 DIMENSIONAL LETTER SIGNAGE

1.1 Exterior Building Sign and Address Numbers: Cast metal letters.

10 21 13 TOILET COMPARTMENTS

1.1 Material:
- A. Solid Phenolic
- B. Stainless Steel

1.2 Type:
- A. Floor mounted, overhead braced.

1.3 Institutional Hardware.

10 44 13 FIRE EXTINGUISHER CABINETS

1.1 Surface mounted and semi-recessed cabinets, factory finished, with minimum 10 lb. capacity fire extinguisher, type to suit project requirements.

10 28 13 TOILET ACCESSORIES

1.1 Manufacturer: Bobrick, Bradley, ASI, or approved equal.
- A. Mounting: Recessed or semi-recessed.
- B. Finish: Stainless steel.

1.2 Accessories: ***To Be Reviewed***
- A. Contractor Furnished/Contractor Installed:
  1. Sanitary Napkin Vendor, 254 Coin Operation, Recessed: No. B- 3500
  2. Sanitary Napkin Disposal, Surface Mounted: No. B-270
  3. Utility Shelf with mop/broom holder: B-224
  4. Toilet Tissue Dispenser, Recessed Multi-Roll: No. B-3888
  5. Stainless Steel Framed Mirror: No. B-290 series
  6. Stainless Steel Framed Mirror and Shelf: American Standard No. 0605 series
  7. Grab Bar: No. B-5806 series
  8. Shower Seat, Folding, Slatted Phenolic Seat, reversible: No. B-5181
  9. Underlavatory guards, molded vinyl covering for supply and drain piping with flip tops at valve to allow service access without removing coverings: Truebro Lav Guard, or approved equal.
  10. Hand Dryers
- B. Owner Furnished/Owner Installed:
  1. Paper Towel Dispenser, Roll, Surface Mounted
  2. Seat Cover Dispenser, Surface Mounted
  3. Toilet Tissue Dispenser, Surface Mounted, Jumbo Roll
  4. Soap Dispenser, Vertical Tank

SECTION 11 00 00 EQUIPMENT

11 52 13 PROJECTION SCREENS

1.1 Manufacturer=s standard flame resistant, glass-beaded, chemically coated screen fabric. **-** ***Verify***
- A. Electrically Operated: Equal to Da-Lite Screen Co.; Senior Electrol; remote control.

SECTION 12 00 00 FURNISHINGS

12 35 53 LABORATORY CASEWORK

1.1 See Campus Interior Finish Standards following this Master Outline Specification

1.2 Laminated plastic-faced casework complying with Woodwork Institute of California (WI) Manual of Millwork, Section 15.

A. Science Laboratory Casework: Laboratory Grade.
B. Open Cabinets and Cabinets with Glass Doors: Premium Grade.
C. Other Casework: Custom Grade.
D. Casework Design: Flush Overlay.
E. Construction Style: Style A, frameless.
F. Construction Type: Type 1, multiple self-supporting units fastened together to form a larger unit.

1.3 Countertops:

A. Standard Laminated Plastic: WI Section 16, Custom Grade.
B. Acid Resistant Laminated Plastic: WI Section 16.
C. Epoxy Resin: WI Section 18.

1.4 Hardware: Satin stainless steel finish.

A. Keying: Grandmaster key system.

1.5 Mechanical Service Fixtures

A. Provide for:
1. Air
2. Gas
3. Vacuum
4. Cold Water
5. Hot Water

1.6 Casework Accessories:

A. Drawer number plates.
B. Apparatus rods.
C. Metal tube legs.

1.7 Accessory Cabinets

A. Flammable liquids storage cabinet, vented.
B. Corrosive liquids storage cabinet.

1.8 See Appendixes for Campus Interior Finish Standards

12 21 00 WINDOW BLINDS

1.1 Horizontal louver blinds with 1" narrow aluminum louver blades, wand operation for tilting, cord operation for raising.

A. Hunter Douglas, Levolor Contract, or approved equal.

12 24 00 ROLLER SHADES

1.1 Quality Assurance

A. Fire-Test-Response Characteristics: Passes NFPA 701.

B. MechoShade Systems or equal. Provide mockups for each form of construction.

1.2 Components

A. Roller Shades [and motorized shade operators].
B. Shade Type: [Audiovisual light blocking]
C. Shade Operation: [Manual with spring roller lift operator] [Manual with continuous loop bead chain, clutch, and cord tensioner and bracket lift operator] [Manual with gear and crank lift operator] [Motorized operator].
D. Valance.
E. Mounting: [Inside] [Outside] [Ceiling] [Recessed in ceiling pocket] [Wall extension brackets] [Bottom-up brackets].
F. Motorized Roller Shade Operators; Remote Controls: [Keyed switch] [Toggle-style, wall switch] [Rocker-style, individual/group-control wall switch] [Timer] [Microprocessor].

12 93 00 SITE FURNISHINGS

1.1 Section Includes:

A. Recycling Receptors.
B. Benches
C. Bicycle Racks
D. Pedestrian Shelter

SECTION 13 00 00 SPECIAL CONSTRUCTION

SECTION 14 00 00 CONVEYING EQUIPMENT

SECTION 21 00 00 FIRE SUPPRESSION

21 11 00 FACILITY FIRE-SUPPRESSION WATER-SERVICE PIPING

1.1 The Fire Protection System shall be as follows:

A. The piping for the fire sprinkler system shall be black steel Schedule 40, ASTM-A53 for all piping with threaded joints and fittings
B. Heads shall be Reliable Model F1FR quick response sprinkler, recessed standard spray pendent with bright chrome finish.
    1. Pendent heads shall be Reliable Model F1FR quick response sprinkler, standard spray pendent with bright chrome finish.
    2. Escutcheons shall be Model F2.
    3. Equivalent products of Grinnell, Star, Viking or Central are acceptable.
    4. Corrosion-resistant finish shall be installed at exterior areas
        a. Finish shall be polyester or Teflon coating with matching escutcheon.
        b. Color and finish of all corrosion-resistant sprinklers shall be as approved by Architect.

SECTION 22 00 00 PLUMBING

22 30 00 PLUMBING EQUIPMENT

1.1 Provide domestic hot and cold water, sanitary waste and vent, storm drain and gaspiping systems, which comply with the requirements of the California Plumbing Code.

1.3 Multiple-toilet rooms shall have floor mount water closets, elongated bowl.

A. Complete with dual-flush manual type flushometer valves.

1. Lavatory in Boy=s and Girl=s toilet rooms shall be wall hung with tempered water only ADA faucet and P-trap.
2. Urinals shall be the waterless type.
3. Hose bib with vacuum breaker shall be provided at each restroom.

1.4 All sinks shall be stainless steel construction that meet ADA requirements.

1.5 Drinking fountains inside the building shall be hi-low ADA accessible non-refrigerated, 14 gauge stainless steel wall mount type.

A. Electric water cooler inside the building shall be hi-low ADA accessible wall mount type.

1.6 Exterior hose bibs shall be lockable recessed box type located at maximum of 100 foot intervals.

1.7 Furnish and install complete hot and cold water supply piping.

A. All water piping shall be Type K copper pipe below grade, and Type L copper pipe above grade.

1. All hot water piping shall be insulated.
2. Electric water heater shall be provided for the hot water system.

1.8 Furnish and install complete waste and vent system.

A. All waste and vent shall be no-hub cast iron service weight pipe and fittings; asphaltum coated, free from defects, and shall comply with C.I.S.P.I. Standard 301-85 with "Husky" Series 4000 stainless steel four-band couplings.

1.9 Provide cleanouts as required per California Plumbing Code.

1.10 Furnish and install complete storm drain system.

A. All storm drain shall be no-hub cast iron service weight pipe and fittings; asphaltum coasted, free from defects, and shall comply with C.I.S.P.I. Standard 301-85 with "Husky" Series 4000 stainless steel four-band couplings.

1.11 Furnish and install complete condensate drain piping from mechanical equipment.

A. All piping shall be Type M copper. All condensate drain piping above the ceiling shall be insulated.

1.12 Concealed gas piping within the building shall be Schedule 40 black steel pipe conforming to ASTM A53 using 150 pound banded malleable iron screwed fittings.

A. Exposed gas piping outside the building shall be Schedule 40 galvanized steel pipe conforming to ASTM A53 using galvanized 150 pound banded galvanized malleable iron screwed fittings.

B. Underground gas piping shall be Schedule 40 SDR-11 Polyethylene PE2406 (Yellow) as manufactured by Plexco.

1. Fittings shall be socket fusion weld Polyethylene as manufactured by Plexco or Central, PE2406 (Yellow) complying with ASTM, D2513.

SECTION 23 00 00 HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

23 09 00 INSTRUMENTATION AND CONTROL FOR HVAC

1.1 The Music, Fitness and portable classrooms will be provided with a fully electronic Direct Digital Control (DDC) energy management and control system (EMCS) designed to provide designated remote building HVAC system control and monitoring functions together with the necessary local building system control.

A. The EMCS will be designed and specified to be compatible with the existing EMCS systems as per District standards.

23 30 00 HVAC AIR DISTRIBUTION

1.1 Work shall include furnishing and installing a year round air conditioning for spaces within building including ventilation of storage rooms, toilet rooms, janitor closets and other service areas.

1.2 Interior Loads:

A. People: Actual people occupancies used where available.
   1. In instances where actual occupancies are not provided standard 2005 C.E.C. (Nonresidential) Title-24 people densities are used.

B. Lights: Lighting densities shall not exceed 2007 C.E.C. (Nonresidential) Title-24 maximum lighting density values.
   1. Final lighting densities and controls shall be per electrical drawings.

C. Equipment: Actual equipment loads used where available.
   1. Electrical and Data room loads are as per electrical engineer.
   2. In instances where actual equipment loads are not available equipment loads are per ASHRAE and industry standards.

D. Ventilating Requirements: Ventilation rates for occupied spaces are per 2005 C.E.C. (Nonresidential) Title 24 standards.

E. Exhaust Requirements: All custodian rooms and restrooms are exhausted at a minimum rate of 12 air changes per hour.
   1. General storage rooms are exhausted at a minimum rate of 6 air changes per hour.

1.3 System Description:

A. Cooling for the portable classrooms will be provided by package heat pump units.

B. Cooling for the classrooms will be provided by package DX units located on the roof.

C. Heating for the portable classrooms will be provided by package heat pump units.

D. Heating for the classrooms will be provided by gas fired furnaces.

E. All A.C. units will be provided with economizers using outside air for cooling when temperatures permit.
F. All H.P. units will be provided with economizers using outside air for cooling when temperatures permit.
G. Powered exhaust systems will be provided for toilet rooms, custodian, storage areas and electrical rooms.

1.4 Design Criteria:
A. System will be designed in accordance with factors and practices as recommended by American Society of Heating, Refrigeration and Air Conditioning Engineers in their Guide and Data Book, latest edition.
B. Equipment and installation will conform with Uniform Building and Mechanical Codes.
C. System will be designed in accordance with 2007 California Energy Code and 2005 California Energy Commission T-24 Non-Residential Standards.

1.5 Equipment:
A. Package A/C Units:
1. A/C units to be Aaon or approved equal.
B. Package H/P Units:
1. H/P units to be Airedale or approved equal.
C. Rooftop Exhaust Fans:
1. Rooftop exhaust to be Greenheck or approved equal.
D. Ceiling Exhaust Fans:
1. Ceiling exhaust to be Greenheck or approved equal.
E. Split System A/C Units:
1. Split system A/C units to be Mitsubishi or approved equal.
F. Air Distribution:
1. Air Distribution to be Price or approved equal.

SECTION 26 00 00 ELECTRICAL

ELECTRICAL GENERAL PROVISIONS

1.1 Agency Review
A. The cost of Federal, State and Local Agency (Building Department) review, inspection and construction permit costs, shall be paid directly by the DISTRICT to the respective Agencies.

1.2 Electrical/Telecommunications Services to the Expansion.
A. Power:
1. The electrical power service to the Expansion will originate from the existing 800 Ampere 277/480V. 3 phase 4 wire w.p.
2. Distribution Switchboard added at the time of the interim housing project.
3. The existing 800 Ampere Distribution Switchboard is fed from the existing 2000 ampere 277/480V. 3PH 4 wire Main Service Entrance Switchboard "MSJ" located in Buiding J (SCE Meter #P0826-10133).

4. Panelboards, transformers, feeders, will be provided in the new Music/Fitness Building electrical room to serve the new construction.

B. Telecommunications
   1. Data Network, and Telephone services will be extended from the existing headend room located in the Administration Building D, through the existing and new underground conduit system to the new signal room located at the Music/Fitness Building
   2. Public address/clock and fire alarm service will be extended from Building D via conduits installed below the covered walkways in the Modernization Project.
   3. New rack mounted equipment, control panels, terminal cabinets, will be provided in the new Music/Fitness Building signal room to serve the new construction.

1.4 Contract Standards and Qualification Compliance - work and material shall comply with:
   A. Underwriter's Laboratory - UL
   B. California Code of Regulations - Title 24
   C. California Electrical Code - CEC, Title-24 and California Division of Industrial Safety - Title 8.
   D. The National Electrical Code - NEC NFPA-70.
   E. National Fire Protection Agency - NFPA
   F. California State Fire Marshals - Fire Alarm System Requirements.
   G. National Electrical Manufacturers Association (NEMA); American National Standards Institute (ANSI); Institute of Electrical and Electronic Engineers (IEEE).
   H. National Electrical Contractors= Association (NECA) and as described in NECA-NEIS.
   I. Manufacturer=s recommendations for the installation, testing and operation of material and equipment provided as part of this Contract.
   K. State and Local Government Agencies applicable laws and regulations.
   L. EIA/TIA B 5688 for Telephone/Data Network

1.5 HVAC and Plumbing (Division 15 - Coordination of Systems)
   A. Electrical Work for Heating Ventilation and Air Conditioning (HV/AC) and Plumbing Control Systems
      1. Control circuit conduit, control circuit, outlet boxes, control wire, control power transformers, control relays, time switches, programmable logic controllers, thermostats, sensors, control software and the labor to install said materials are not included in Division 16 electrical drawings and specifications.
      2. The work and material for HV/AC and Plumbing control systems, specification of electric motors and heater devices, shall be shown and specified as part of Divisions 15.
      3. The work, material and controllers for variable speed drive controllers (VSD) and variable frequency drive controllers (VFD) for HV/AC electric motors shall be shown and specified as part of Division 15.

a. VFD and VSD units shall be specified with internal disconnect short circuit protection, integral harmonic voltage filtering, electric input line isolation and automatic or manual bypass controllers as part of Division 15.
b. Recommend VFD/VSD controllers should be physically located within 25 feet and within direct line of site of the respective motor.

B. Electrical Work for HV/AC Line Voltage Systems
1. Material and work for line voltage electric motor starters, line voltage electric motor starter disconnects and line voltage electrical connections to HV/AC electric motors and electric heaters shall be shown and specified as part of Division 15, at each equipment unit location shown on Division 15 drawings.
2. Motors larger than 0.5HP shall be 480 volt three phase operation.
a. Motors less than 0.5 HP shall be 120 volt operation.
3. Division 15 drawings shall show each HV/AC and Plumbing equipment location and device location requiring fire and/or smoke detection monitoring and/or activation including operating voltage, type and fire/smoke action to occur when activated.

1.6 Electrical Distribution Voltages
A. Electrical Utilization Voltages:
1. Electrical voltages available for use in the facility will be 60HZ, AC Asolid grounded wye@ as follows:
2. 480 volt - three phase; 480 volt - single phase; 277 volt - single phase; 208 volt B three phase; 208 volt B single phase; 120 volt B single phase.
3. The Campus and Utility Company source electrical services voltages may frequently and randomly vary from nominal rating ∀5% or greater, over any 24-hour time period.
a. The Utility Company electrical services will experience unpredictable random disruptions of normal voltage, voltage spikes and harmonies of variable duration.

B. Electrical Voltages Provided for the Following Systems:

System Description:	Design Operating Voltage:
1. Lighting Systems:	
a. Incandescent	120 volt B single phase
b. Fluorescent	277 volt B single phase
c. HID	277 volt B single phase
2. HV/AC Systems	
a. Motors 0.5 HP and larger	480 volt B three phase
b. Motors smaller than 0.5 HP	120 volt B single phase
3. Electrical Outlets	
a. Duplex convenience outlets	120 volt B single phase
b. Specialty outlets	120 and 208 volt single or three phase

26 05 00 COMMON WORK RESULTS FOR ELECTRICAL

1.1 Grounding

A. Electrical Service Entrance Grounding
   1. A service entrance grounding bus shall be provided with a copper grounding electrode conductor to each of the following:
   2. Grounding electrode resistance shall be 5 ohms or less to earth potential.

B. Panelboards, switchboards and switchgear shall be provided with a internal (non-isolated) ground bus, bonded to equipment metal housing in each equipment section.

C. Reference Asolid@ ground neutral of each transformer shall be bonded to building service grounding bus.

D. A dedicated independent ground conductor, 1.0@ conduit 1#1 copper minimum size, from building main service ground bus to each telephone backboard and data/network backboard shall be provided.

E. Branch Circuit Grounding:
   1. A separate equipment ground wire, code sized, entire length shall be provided in all feeder and branch circuit conduits including:
      a. Flexible metal conduit over 0.75@ in size, flexible metal conduit exceeding 6 ft. in length, flexible metal conduit containing circuit
      b. Non-metallic raceway/conduit.

F. Branch circuit 120 volt circuits.

G. A separate equipment ground wire, code sized, shall be provided in all feeder and branch circuit conduits including each metallic or nonmetallic raceway/conduits such as:
   1. Receptacles supplying network, computer, data processing equipment.
   2. Receptacle with internal ground fault protection.
   3. Multioutlet surface mounted raceways.
   4. Internal floor raceway systems (underfloor duct, cellular floor).

H. Feeder grounding: A separate equipment ground wire, entire length, shall be provided in each feeder raceway/conduit.

1.2 Wiring Device Outlet Boxes

A. Placement quantity and type of interior outlets will be based on door, window, cabinets, counter tops, furniture/equipment locations, desk locations and interior wall elevations shown on the Architectural Drawings.

B. Outlet boxes for each wiring device shall be provided as follows at installation locations as shown on the drawings:
   1. Duplex convenience receptacles and light switches minimum size, 4@ Sq. x 1.5@D., (increase size to 4.69@ Sq. x 2.125@D. where conduit Ahome run@ or a conduit Abranch@ of 3- way or greater conduit quantity occurs) with single gang wide extension ring, larger sizes as required for wiring devices.
   2. Telephone - 4.69@ Sq. x 2.125@D. with single gang plaster ring.
   3. Computer/data - 4.69@ Sq. x 2.125@D., with single gang plaster ring.
   4. Fire alarm devices - 4.69@ Sq. x 2.125@D., with single or two-gang wide extension ring to match device.

5. Lighting fixture outlet boxes B 4-inch octagonal, 4-inch square, 2.125@D. or larger.
6. For local switch outlets provide 4-inch square 2-1/8-inch deep, boxes for single gang, 5-inch square boxes for two-gang, and special solid gang boxes with gang plaster ring for more than 2 switches.

C. Recessed combination power/signal floor boxes shall be cast iron, UL listed for concrete installation with leveling screws.
1. Floor box will contain four independent barriered wiring compartments.
2. Box cover shall be flush with floor and shall provide wire/cable egress through cover notches. Walker AResource@ RFBA-CI series or equal with Walker ARAKMTR-BUFF@ series cover.

D. Recessed outlet boxes - stamped steel construction; surface mounted outlet boxes - cast metal construction.

E. Wiring Device Outlet Box Coverplates
1. All coverplates shall be natural finish, stainless steel.
2. PVC plastic white finish color for signal systems devices including data network/telecommunication in special combination outlet devices.

1.3 Wiring Devices

A. General:
1. Color - white, unless otherwise requested.
2. Specification grade.

B. Lighting Control Switch Wiring Devices
1. Manual lighting control switches, rated 277 volt - 20 ampere.
2. Lighting automatic daylight controls, 24 volt DC; controlling solid state electronic ballasts with photocell sensors and manual override controls will be provided inside each room directly adjacent to entry door into respective room.
a. Typical for rooms with skylight and/or window wall daylight functions.
b. Lutron Eco Systems or approved equal.
3. Occupancy motion sensor lighting automatic "off" lighting controls in all rooms with fluorescent lighting.

C. Receptacle Wiring Devices
1. Duplex convenience receptacles - 15 ampere NEMA 5-15R configuration, 3 wire grounding type.
a. Where only a single receptacle is installed on a circuit, the voltage and ampere rating of the receptacle shall match the circuit.
2. Duplex convenience receptacles with internal ground fault protection in each receptacle shall be provided at the following locations:
a. Within 5 feet of sinks.
b. Restrooms, all locations.
c. Custodian storage closets.
d. Outdoor convenience receptacle, all locations.
e. In any designated Awet@ area.
3. Receptacle Branch Circuit Switching Control

a. Electric power for convenience receptacles shall be controlled (overload, short circuit and on-off) from branch circuit breakers, located in individual branch circuit panelboards.

4. Special purpose receptacles as required for specific equipment locations, shown on Architectural drawings.

1.4 Transformers (Under 600 Volt)

A. Air-cooled, vented, dry type, aluminum windings, 480 volt to 120/208 volt three phase, 4-wire solid ground configuration, in NEMA metal enclosure.

B. Class AH@ insulation, 150 degree Fahrenheit temperature rise, Energy Star TP-1 compliant.

C. Full capacity no load, 2.5% voltage taps, two-FCAN and three-FCBN.

D. Harmonic voltage IEEE-K4 rated, with electrostatic 100% shield between line and load windings.

1.5 Voltage Surge Protection

A. Transient voltage surge protection (TVSS) shall be parallel line operation, comply with IEEE-C62.41 Category-AA, B and C@ (location specific), UL 1283 and 1449 for surge and EMF noise suppression; line to line; line to ground; line to neutral; neutral to ground.

B. Provide TVSS protectors rated and connected in locations as follows:

1. Computer grade panelboards.

1.6 Identification

A. Permanent identification names, with permanent mechanical fastening (adhesive only attachment is not acceptable).

B. Each wiring device coverplate, disconnect switch, circuit breaker and motor starter shall be engraved with source circuit number and panel name and end load identification.

C. Equipment/circuit names identification shall be Awelded@ on each pullbox cover.

D. Source circuit number, panel name and phase/neutral color coding shall be provided on each phase and neutral conductor at each termination, junction box, outlet box, pullbox location, typical for power and signal circuits.

E. Equipment voltage capacity and circuit nameplate on each equipment section; each device and conductor termination in the equipment.

F. Manual switch devices rated over 20 ampere and all switch devices where more than 2 switches are installed within 24@ of each other.

26 05 23 CONTROL-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

1.1 Wire Conductors

A. Wire, Conductor Types for Power Circuits

1. Circuits smaller than #2 AWG (solid), copper conductors only.
2. Circuits #2 AWG and larger (stranded), copper conductors only.
3. Circuits over 600 volt, copper conductors only.

B. Wire, Insulation Types for Power Circuits

1. THHN/THWN (circuits under 600 volts).

C. Neutral Conductors: Special considerations and definitions.

1. Electrical circuits connecting to electrical loads employing Aphase conductor to neutral@ 120 volt connections and demonstrating high harmonic voltage loading conditions, will be installed with modified neutral conductors as follows:
   a. Computer/data workstations and printers
   b. Computer/data network equipment racks
   c. Computer/data network servers
   d. Telephone equipment
2. Neutral conductors modifications for special consideration circuits shall be provided as follows:
   a. 120/208 volt computer grade panelboard feeders - Asuper neutrals@ for feeders and Adedicated neutrals@ for branch circuits.
3. Special Note - Neutral Definition
   a. ASuper Neutral@ - is a 175% oversize neutral for shared common neutral on circuit phases AA, B and C@, installed in the same conduit/raceway.
   b. ADedicated Neutral@ - is a separate standard size neutral for each circuit phase, no shared common neutral in the same conduit/raceway.
4. Wire Splicing
   a. Threaded, insulated Awire-nuts@ for splicing electric power conductors, smaller than #8 AWG over 100 volts and under 600 volts.
   b. Insulated, inline-compression, for splicing electric power conductors, #8 AWG and larger over 100 volts and under 600 volts.
      1) Tape insulation (dry locations only) heat shrink insulation (dry or wet locations), or insulation boots over each splice.
      2) Splicing outdoor locations and wet locations epoxy encapsulated (under 600 volts).
   c. Manufactured kits are to be used for in-line splicing.
5. All wire for electrical power circuits over 100 volts, install in conduits/raceways, minimum conductor sizes as follows:
   a. Under 600 volts minimum #12 AWG.
   b. 600 volts - 4800 volts #4 AWG #2 AWG, minimum wire size.

26 05 33 RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

1.1 General

A. Traffic rated AASHO-H20, flush metal covers and steel reinforced concrete structures.

B. Sectional, precast steel reinforced concrete construction walls, floors and ceilings with Agrade rings, conduit Aintercept style, water tight installation with water drain sump in floor.

C. Full height (floor to ceiling) vertical non-metallic cable racks installed on each wall, 18" on center.

D. Inside clear size as shown on drawings but not less than stated minimum.

1.2 Conduit

A. Conduit Types
   1. Polyvinyl chloride (PVC) schedule 40 nonmetallic conduit underground, with rigid steel PVC coated conduit elbows and risers.
   2. Electric metallic tubing (EMT) conduit above grade where concealed.
      a. EMT shall not be installed in concrete, underground, outdoors, below 6 feet above finished surface, where subject to damage.
   3. Rigid galvanized steel conduit (RGS), exposed locations; exposed on roofs; for circuits exceeding 600 volts installed above grade; flammable/explosive hazardous material areas; inside cast in place concrete structural construction; inside masonry structural construction.
   4. Flexible metal steel conduit (FMC) continuous non-spliced and only where permitted by code; however, (FMC) lengths shall not exceed 15 ft. between outlets and or FMC termination end points; liquid tight in wet areas and at each transformer and motor connection.
      a. FMC shall not be used for circuit Ahomerun@.

B. Conduit Fittings:
   1. PVC conduit - preformed PVC fittings with Aglue@ bonded joints.
   2. EMT and FMC compression fittings, set screw fittings are not allowed.
   3. RGS and IMC - threaded fittings.
   4. Termination fittings - provide with factory installed insulated throat bushings.

C. Conduit Locations
   1. Conduits in public areas, install concealed in-and-where walls, ceilings, floors and building structural elements provide adequate interior space for concealed conduit installation.
   2. Conduits in mechanical/plumbing rooms, electrical equipment rooms/closets may be exposed or concealed as required to connect to equipment located in these areas.

D. Conduits shall be stubbed (size as indicated on drawings) with end bushing fittings, concealed in walls and onto the nearest from each respective outlet box, for the following systems.
   1. The wire/cables for these systems will be installed within conduit:
   2. Public address/intercommunication/telephone
   3. Computer/data network B In walls.
   4. Television B In walls.

E. Encase (minimum 3@ coverage all sides) in Ared mix@ (10 pound red oxide coloring per yard of concrete mix) concrete 2,000 PSI 28-day cure strength.
   1. All conduit installed below grade for power and signal circuits extending beyond building "footprint", except 15 and 20 amp, 120/277 volt branch circuits.
   2. PVC type AEB@ conduit for all circuit types shall be fully concrete encased, entire length.
   3. Conduit installed below grade for circuits operating over 600 volt shall be concrete encased entire length.

F. Pullropes shall be provided in all empty spare conduits.

G. Minimum bending radius of conduit shall not be less than the following:
   1. Power circuits over 100 volts - 8 times conduit diameter.
   2. Power circuits over 600 volts - 12 times conduit diameter.
   3. Non power, signal, fiber optics, circuits under 100 volts - 10 times conduit diameter.

1.3 Pullboxes
   A. Minimum length not less than 1.5 times the pull hole depth.
      1. Minimum width not less than 1.0 times the pull hole depth.
   B. Flush bolt down cover.

26 24 00 SWITCHBOARDS AND PANELBOARDS

1.1. General
   A. Fully enclosed in metal housing, unitized construction.
   B. Wall or floor mounted as indicated on the drawings with seismic restraint anchors to building structure.
   C. Provide equipment located in public areas and work areas with full height hinged, locking doors, tamper resistant equipment.

1.2 Bussing
   A. Silver plated UL rated copper for phase, neutral and ground busses.
   B. Equipment ground bus in each equipment section, bonded to equipment metal enclosure.
   C. 175% oversize neutral bus for harmonic loads 120/208 volt computer grade panels (see description of Asuper-neutral in Awire conductors@.)

1.3 Circuit Protection Devices
   A. Branch circuit panelboards - front accessible group mounted, circuit breakers - bolt on fixed mounting type.
   B. Distribution panelboards - front accessible group mounted, circuit breakers - bolt on fixed mounting type.
   C. Switchboards/unit substations (main service entrance and distribution) - front accessible group mounted, circuit breakers - bolt on fixed mounting type.
   D. Main circuit breakers and feeder circuit breakers in distribution panelboards, switchboards and switchgear, molded case and insulated case styles; over 400 ampere, shall be solid state adjustable electronic trip; 400 ampere and smaller, solid state electronic or thermal magnetic trip.
   E. Individual circuit numbers and Apad lock-off@ device on each circuit breaker and switch/fuse.
   F. Engineered trip and coordination protection settings shall be provided by the Contractor in shop drawing submittal, for all devices, including time current curves showing Acoordinated@ trip setting curve overlays and engineered coordination trip setting recommendations.

1.4 Equipment Enclosures - Metal
   A. NEMA-1 enclosures, for indoor dry locations. ANSI #49 or 61 finish color.
   B. NEMA-3R enclosures, for outdoor wet locations, tamper resistant, Munsel #7GY3.29/1.5 olive green finish color.

C. Concealed tamper resistant trim cover attachment on branch circuit panelboards.

1.5 Individual combination motor starter feeder tap disconnect types:
A. Switch and fuse or Motor circuit protector.

1.6 Individual Combination Motor Starter Types:
A. Electromechanical, magnetic full voltage non-reversing (FVNR)-motors smaller than 30 Hp (240-600 volt).
B. Electromechanical [and/or soft start electronic solid state], reduced voltage non-reversing (RVNR)-motors 30 Hp and larger.
1. RVNR starters shall be auto-transformer type or solid state soft start type.

1.7 Motor Starter Configuration:
A. Motor starters (0.5 HP and larger), install in unitized motor control centers (MCC), using individual mounted, horizontal drawout, combination motor starters; NEMA size 1 thru 4, (fixed mounted non-drawout larger than NEMA size 4), NEMA type 2C internal (MCC) control wiring.

1.8 Motor Starter Sizes
A. Electromagnetic magnetic - NEMA 1, minimum starter size to be used.
B. Manual - NEMA 0 and 00 starter size to be used.

1.9 Motor Starter Enclosures - Metal
A. Style
1. NEMA-1 enclosures for indoor dry locations, ANSI #61 or 49 finish color.
2. NEMA-3R enclosures for outdoor, wet locations, tamper resistant, Munsel #7GY3.29/1.5 olive green finish color; automatic, electric resistance, anti-condensation heaters with T-Stat control, each section.
B. Miscellaneous:
1. Separate fused, motor rated disconnect switch installed at each motor, where motor starter is not located within sight of motor and motor is 0.5 Hp or larger.
2. Internal control power transformer in each electromechanical, magnetic motor starter, for 120 volt or 24 volt 60Hz AC motor starter control voltages as directed by Division 230000.
3. Single phase prevention motor protection for starters larger than NEMA-size 1.

26 31 00 PHOTOVOLTAIC COLLECTORS

1.1 Photovoltaics will be attached to the new shade structure located outdoors in the center of the Music/Fitness Building.
A. The PV system will convert solar (sunlight) energy to electrical energy.
1. The PV system generated electrical energy will be consumed on the campus during normal open campus operation hours.
2. PV systems energy, not consumed on the campus, will be automatically sent out to the electrical utility company grid for use by other electric utility company customers.
3. The Grid Tie PV systems will not store electrical energy for delayed use.

1.2 PV combiner boxes will interconnect and collect the DC electrical circuits from the individual PV modules.

1.3 PV inverters will be take the DC electrical energy captured by the PV module and PV combiners.

A. The inverters will convert the DC electrical energy to AC electrical energy.

1. A data logger monitors and controls the PV system and provides BAS interface and public kiosk interface.

1.4 PV inverter will be located in the Music/Fitness Building main electrical room.

26 50 00 LIGHTING

1.1 General

A. Placement, quantity and type of interior lighting fixtures and lighting control switches shall be based on door, window, furniture/equipment locations, wall locations, reflected ceiling plans and interior wall elevations shown on the Architectural Drawings.

B. Lighting design will utilize alternate approaches and daylighting options as addressed in the Collaborative for High Performance Schools (CHPS).

C. Classroom lighting will consist of a minimum of three rows of direct/indirect suspended luminaires.

1. Wall wash fluorescent light fixtures will be wall mounted mounted at the teaching walls in the classrooms.
2. Lighting control switches will be located at entry doors for multiple levels of lighting control.
3. Suspended light fixtures will be Focal Point "Verve III" or approved equal.

D. Office lighting will consist of recessed 2' x 4' "basket" style indirect fluorescent light fixtures.

1. Focal Point "Luna" series or approved equal.

E. Exterior Building mounted lighting will consist of sharp cutoff wall lights with a compact fluorescent light source.

1. Selective wall lights will be connected to the inverter for emergency egress lighting.

1.2 Lighting Level Intensities

A. Indoor light level intensities, based on recommendations from Illuminating Engineering Society (IESNA) handbook, unless specifically requested otherwise. 1. New outdoor lighting intensities shall comply with Local Authority requirements and IESNA handbook.

2. Interior spaces:

1.	General spaces/offices	35FC Fluorescent
2.	Classrooms/Music Rooms	35FC Fluorescent
3.	Fitness Rooms	35FC Fluorescent
4.	Equipment Room	20FC Fluorescent
5.	Custodial Rooms	20FC Fluorescent
6.	Corridor/Stairways (1FC min. Emergency)	10FC Fluorescent
7.	Restrooms	20FC Fluorescent

3. Exterior Spaces:

LIGHTING APPLICATION	ALLOWED AREA	WATTS PER SQ. FT., UNLESS OTHERWISE NOTED
a. Hardscape for automotive vehicular use, including parking lots, driveways, and site roads	Method (i.) Actual paved area plus 5' perimeter of adjacent unpaved land. Includes planters and landscaped areas less than 10' wide that are enclosed by hardscape on at least three sides.	0.15
b. Hardscape for pedestrian use, including plazas, sidewalks, walkways and bikeways.	Method (i.) Actual paved area plus 5' of unpaved land on either side of path travel. Shall include all continuous paved areas before including adjacent grounds.	0.17
c. Hardscape for driveways, site roads, sidewalks, walkways and bikeways.	Method (ii.) 25' wide path incorporating as much of the paved area of the site roadway, driveway, sidewalk, walkway or bikeway as possible.	4.0 W/lf
d. Building Entrances (without Canopy)	Width of doors plus 3 ft. on either side times a distance of 18 feet outward.	0.70

1.3 Lighting energy densities shall comply with State of California Title 24 (CEC-24) Energy Code, as well as the following:

A. Indoor automatic daylighting control by dimming of lighting fixtures with photo-sensor monitoring for roof skylight and exterior window wall spaces.
B. Federal EPA Energy Star TP-1 compliant transformers.
C. Automatic occupancy motion sensor lighting "off" controls in dedicated enclosed rooms.
D. Solid State electronic lamp and ballast combinations for fluorescent lighting fixtures.
E. Automatic photoelectric "on-off" control of outdoor lighting.
F. "LED" B internally illuminated "EXIT" signage.
G. Federal EPA Total Threshold Limit Concentration (TTLC) compliant lighting fixture lamps.

1.4 Lighting Controls

A. Local manual on-off switches override in each Room shall provide at least two lighting intensity switching levels to comply with CEC-24.
   1. Automatic lighting controls for automatic AOFF@, manual switch AON@ (energy conservation occupancy sensor type) control of lighting in selected rooms with manual override control in each dedicated room of 1,200 SF or less with defined walls and doors.
   2. "Day lighting" automatic control of lighting in areas provided with architectural Asky-lights and/or "window" walls.
      a. Automatic controls with lighting-intensity sensor control, to dim lighting when sunlight is available and restore lighting when ambient sunlight is not adequate.
      b. Lutron Eco Systems or approved equal.
   3. Automatic Lighting Photo Electric Switch and Time Switch Control Outdoor Lighting
      a. Security Lights, dusk to dawn operation; photoelectric switch Aon and off@ controlled.
      b. Night Lights, dusk to 11PM (actual Ashut-off@ time will be adjustable); operation photoelectric switch Aon@.
         1) Outdoor lighting systems
         2) Interior corridors
         3) Sign lights
   4. A lighting control relay system shall be provided to control interior and exterior lighting as indicated above.
      a. System shall be as manufactured by Lutron, LC&D or approved equal and will be integrated with the Building Management System.

1.5 Lighting Sources

A. Fluorescent Lighting Sources
   1. Fluorescent lamps (48@ length) shall be Osram Sylvania OCTRON XPS Extended Performance ECOLOGIC lamps (F028,) having medium bi-pin bases.
      a. Lamp(s) shall be designed to pass the Federal TCLP test in force at the time of manufacture.
      b. Lamp(s) shall have a correlated color temperature of 4100K and CRI of 85.
      c. Lamp(s) shall have a 95% lumen maintenance at 8,000 hours and an average rated life of 30,000 hours on dedicated QUIKTRONIC PSX high frequency ballasts.
      d. XPS/PSX system shall be provided with a complete warranty from one manufacturer covering both lamp(s) and ballast(s).
   2. Compact Fluorescent Lamps (CFL) lamps shall be Osram Sylvania 4-pin triple tube Ecologic compact fluorescent lamps for use with dimming and solid state, electronic ballasts with a correlated color-temperature of 4100K and CRI of 82.
   3. Fluorescent lamp color will be 4100 degree Kelvin (4100?K) unless specifically directed otherwise.

B. High Intensity Discharge (HID) Lighting Sources HID lighting sources will be as follows:
   1. Exterior sports lighting B Metal Halide.
   2. Indoor locations (where specified) - Metal Halide lamps.

C. Exit signs-light emitting diode lamps (LED)

D. Lighting Fixture Ballasts Energy Saving Type, To Comply With CEC Title-24
   1. Fluorescent lamp ballasts shall be electronic type parallel lamp operation and shall operate lamps at a frequency above 40 kHz.
   2. Ballast manufacturer must have a minimum of 10 years experience manufacturing electronic ballasts.
   3. Minimum starting temperature shall be B18 degrees C.
   4. Ballasts shall be guaranteed against service failure for 5 years and shall be UL listed.
   5. Ballasts shall be Sylvania Quiktronic Prostart PSX programmed rapid start electronic ballasts, universal voltage and shall be used with Octron XPS 4100K lamps.
   6. Ballasts shall be as follows:
      a. Osram Sylvania No. 51420, QTP 1X32T8/UNV PSX-TC, 120/277V., 1 lamp, 22 input watts, 0.71 ballast factor, less than 10 percent THD.
      b. Osram Sylvania No. 51425, QTP 2X32T8/UNV PSX-TC, 120-277V., 2 lamp, 41/40 input watts, 0.71 ballast factor, less than 10 percent THD.
      c. Osram Sylvania No. 51430, QTP 3X32T8/UNV PSX-TC, 120-277V., 3 lamp, 64/62 input watts, 0.71 ballast factor, less than 10 percent THD.
      d. Osram Sylvania No. 51435, QTP 4X32T8/UNV PSX-TC, 120-277V., 4 lamp, 82/80 input watts, 0.71 ballast factor, less than 10 percent THD.
   7. HID lamp ballasts shall be constant wattage auto-transformer (CWA) high power factor, fully encapsulated electromagnetic Acore and coil@.
   8. Fluorescent ballast sound ratings shall be Class AA@.
   9. HID lamp ballasts sound rating will be industry standard.

1.6 Unit Equipment

A. Emergency egress lighting with lighting fixtures and exit signs connected to a centralized emergency battery inverter to provide 90 minutes of continuous emergency illumination.

B. Emergency exit illumination of one footcandle (IFC) minimum will be provided at the following areas:
   1. Interior and exterior corridors and exterior paths of travel for exiting.
   2. Any rooms with an occupant load of 50 or more.
   3. Other occupancies required by code.

C. Emergency lighting will be normally off and will come on only in the event of a power failure.

SECTION 27 00 00 COMMUNICATIONS

27 20 00 DATA COMMUNICATIONS

1.1 Public Address/Clock and Class Signaling Systems

A. System shall interface with master clock system for class change signaling utilizing PA speakers.

B. The existing Intercom and PA rack is located in the LAN/Communication Equipment room in the existing Administrative Building D.

C. Each Classroom and office space will be provided with a PA speaker and clock.

D. The Public Address/Clock and Class/Passing Systems will be specified Dukane Star Call to match the existing system on campus.

E. Flush in wall mounted weatherproof speakers will be provided outdoors for public address and class-passing.

SECTION 28 00 00 ELECTRONIC SAFETY AND SECURITY

28 30 00 ELECTRONIC DETECTION AND ALARM

1.1 Summary

A. This section covers mass notification system interconnected to the fire alarm system, including initiating devices, notification appliances, controls and supervisory devices.

B. The Mass Notification and Fire Alarm System shall consist of all necessary hardware equipment and software programming to perform the following functions:

1. Mass Notification of both pre-recorded and live messaging.
2. Fire Alarm and detection operations.
3. Control and monitoring of elevators and other equipment as indicated in the drawings and specifications.

1.2 Requirements

A. This performance specification provides the requirements for the Fire Life Safety and Mass Notification System. The work provided shall include, but not limited to furnishing all equipment, materials, delivery, labor, documentation, testing, inspections by Inspector of Record (IOR) and services necessary to furnish and install a complete, operational Fire Alarm and Mass Notification System.

B. At the time of bid, all exceptions taken to these Specifications, all variances from these Specification and all substitutions of operating capabilities or equipment called for in these Specification shall be listed in writing and forwarded to the Architect and Engineer. Any such exception, variances or substitutions that were not listed at the time of bid and are identified in the submittal, shall be grounds for immediate disapproval without comment.

A 100% functional test of the existing Campus Fire Alarm Fiber Backbone system shall be performed by the contractor prior to the start of any construction. All alarm, supervisory, trouble and mass notifications systems conditions shall be tested for proper operation reported to Campus Police and Facilities building via existing TSW station. A copy of the fiber test results shall be provided, prior to construction, in the same NFPA 72 certification format as required for the

certification. Provide new fiber patch cord from building BDF to new Fire Alarm panel. Provide tie-in and test entire fiber network prior to final acceptance. Contractor assumes full responsibility for stability and operation of the fiber network. The contractor shall notify Campus regarding any pre-existing conditions that are not noted in their pre inspection documents. A cost associated for the repair of any pre-existing conditions that would not be corrected by the installation of the new system shall be provided with the report which relates to Campus fire alarm fiber backbone network. Any reused, conduit, boxes, wire, fiber or devices shall be accepted and warranted as new by the contractor.

C. Provide 1" C with 4 strand multimode fiber jumper/patch card from building BDF to Fire Alarm Control Panel. The Fiber jumper connectors shall be tested and installed by Simplex. Any required testing of jumpers or testing from a Simplex FACP thru Data Center to another Simplex FACP (Channel) must be provided by Simplex.

D. Contractor shall provide 120 volt dedicated circuits for synchronized Clocks and Security system. Clocks and Security system are monitored by an Individual Monitor Module (IAM) located adjacent to FACP.

1.3 References

A. All work and materials shall conform to all applicable Federal, State and local codes and regulations governing the installation.

B. Fire alarm system, equipment, installation, and wiring materials and methods used shall comply with the following codes and standards:

1. System components proposed in this specification shall be UL 9th edition listed for its intended use.

2. California State Fire Marshall Listed Components

31 00 00 EARTHWORK

31 10 00 SITE CLEARING

1.1 Site Clearing: Remove from the entire site existing plants and organic material, debris, large rocks and other material. Grub and scrape clean. Materials removed from the surface shall be wasted from site.

31 20 00 EARTH MOVING

1.1 Geotechnical (Soils) Report: For information of bidders, extracts from Soils Report will be inserted in contract documents.

1.2 Site Clearing Within Scope of Work Boundary:

A. Remove existing plants and organic material, debris, large rocks or other material.
   1. Grub and scrape clean.
   2. Materials removed from surface shall be wasted from site.

B. Remove existing asphalt paving

1. Place removed materials in designated recycling bin, complying with Division 01 requirements.

31 31 00 SANITARY UTILITY SEWERAGE PIPING

1.1 By Civil Engineer to point 5 feet from building line.

1.2 By Plumbing Engineer from building to point 5 feet from building line.

31 31 16 TERMITE CONTROL

1.1 Soil treatment for control of subterranean termites.

32 00 00 EXTERIOR IMPROVEMENTS

32 12 16 ASPHALT PAVING

1.1 By Architect: Conform with Geotechnical Report Recommendations

1.2 Standard: Provide aggregate base, asphaltic concrete and installation complying with Standard Specifications for Public Works Construction, latest edition.

1.3 Wood Headers.

1.4 Base Course: Standard Specifications, Section 200-2.4, crushed miscellaneous base, rolled thickness as required.

1.5 Surface Course:

A. Vehicle Traffic: Per Special Provision of Standard Specification Committee, January 1, 2006, Performance Grade "PG 64-10", 1/2 inch maximum aggregate, "Medium" grading, rolled thickness as indicated

1.6 Seal Coat: Asphalt emulsion, SS-1H. Apply to asphalt paving

1.7 Pavement Marking Paint: Alkyd-resin type, ready-mixed, complying with

A. ASHTO M-248, Type N; VOC compliant.

1. Colors as indicated.

1.8 Precast Concrete Wheel Stops.

32 13 13 CONCRETE PAVING

1.1 Reinforcement: Conform with Geotechnical Report Recommendations

A. Reinforcing Bars

B. Wire Mesh

1.2 Control Joints:

A. Tooled.

B. Isolation joint with fiber joint filler.

C. Expansion joint with sealant.

D. Doweled joint.

1.3 Finishes:

A. Rock Salt Finish

B. Broom Finish.

C. Exposed Aggregate

1.4 Precast Concrete Splashblocks.

1.5 Precast Concrete Wheel Stops.

32 13 16.23 STAMPED CONCRETE PAVING

32 14 13.13 INTERLOCKING PRECAST CONCRETE UNIT PAVING

1.1 Manufacturer.
1.2 Model and Size.
1.3 Color
1.4 Installation: Over sand bed on compacted earth.

32 14 16 BRICK UNIT PAVING

1.1 Solid brick, 1-1/4" x 3-5/8" x 7-5/8", complying with ASTM C902, Class MX, Type II, application PS.
   A. Equal to Endicott Clay Products; Medium Iron Spot.
1.2 Set in mortar bed over concrete.

32 17 26 TACTILE WARNING SURFACING

1.1 Basis-of-Design: Design of Vitrified Polymer Composite (VPC) Cast-in-Place Tactile Panel is based on Armor-Tile as manufactured by Engineered Plastics Inc.
   A. Tile Style No. ADA-C-2436, in-line domes; Size: 24" x 36"@ x 1-3/8", unless indicated otherwise.

32 80 00 IRRIGATION

1.1 Landscaped areas shall have a sprinkler system consisting of PVC pipe and fittings with flex plastic risers and brass heads.
   A. System shall be automatically operated.
      1. Brass hose bibbs as necessary.
      2. Pressure type vacuum breaker with backflow preventer with point of connection before building pressure reducing station.
   B. Guarantee Period: One year.
   C. Maintenance Period: 90 days.

32 90 00 PLANTING

1.1 Plant Materials: Low maintenance hardy types selected for intended use. trees shall be staked or guyed and plants shall be fertilized with tablets.
1.2 Edging: Cast-in-place Concrete curbs or walks.
1.3 Soil Amendments: Based on soil analysis test prior to final design.
1.4 Maintenance Period: 60 days by Contractor.

33 00 00 UTILITIES

33 11 16 SITE WATER UTILITY DISTRIBUTION PIPING

1.1 By Civil Engineer to point 5 feet from building line.
1.2 By Plumbing Engineer from building to point 5 feet from building line.

33 40 00 STORM UTILITY DRAINAGE PIPING

1.1 By Civil Engineer.

1.2 Storm Drainage consists of:

A. Piping.
B. Catch Basins.
C. Area and Planter Drains.
D. Drainage Structure (junction boxes, manholes)
E. Downspout shoes.
F. Foundation Vent System (at raised floors).

1.3 Drain Pipe: Polyvinylchloride (PVC) pipe with fittings of same type and class of material as pipe.

1.4 Catch Basins and Drainage Structures: Minimum 2500 psi concrete.

1.5 Gratings and Frames: Traffic or standard weight, galvanized gratings and frames. Gratings shall be removable.

33 82 00 COMMUNICATIONS DISTRIBUTION

1.1 Fiber optic cable via underground conduits will be provided from the Main LAN room MDF to the new IDF at the Music/Fitness Building.

A. One (1) twelve strand 50/125 multi-mode OSP fiber optic cable shall be installed from the MDF to the IDF.

1.2 Computer network outlets will be provided at all administrative desk locations and elsewhere as determined during design.

A. Each outlet will connect to its respective building IDF with a dedicated 4-pair Category 6 unshielded twisted pair (UTP) copper cable.

1.3 Racks, power outlets, backboards, grounding, cable tray will be provided in the Music/Fitness Building IDF equipment room.

1.4 Data network hardware and electronics such as servers, UPS, will be District provided and purchased by the District under a separate contract.

A. Data network outlets with two network outlet connectors will be located throughout the Music/Fitness Building for wireless access points.

END OF OUTLINE

Appendix A

In order to apply current product development, new technology, energy saving devices, or enhance design elements, District staff may add, delete or update product specifications as needed to provide the best value engineered building or site systems.

- Interior / Exterior Materials & Finishes
- Washroom Accessories
- Plumbing Fixtures
- Lighting Fixtures
- HVAC Equipment
- Campus Signage Specifications

Interior / Exterior Materials & Finishes

(Reference Section II Material & Color Palette)

The materials and finishes listed herein have been approved by the College for use as Campus Standards. The following preferred materials and finishes will be the basis of design for the interior environment and the building exterior.

The approval of these items provides for consistent design and ease of maintenance throughout the campus. The number of materials and finishes will provide for flexibility in design, yet keep the level of quality that is desired.

See Section V Specifications for Campus Interior Finish Standards

Exceptions or substitutions to the Campus Standards are subject to District approval.

DESIGNATION	COLOR / SPECIFICATION	LOCATION
CPT-1	LEE'S - FACULTY REMIX GT154 885 LATEST SLATE	BLUE SCHEME DESIGNATED AREAS
CPT-2	LEE'S - TAKE NOTE GT090 311 PHENOMENAL	GREEN SCHEME DESIGNATED AREAS
FSLP-1	KI LAMINATED SURFACES TITANIUM EVOLV	CLASSROOMS (TABLE SURFACE)
FSMB-1	KI METAL BASE WARM GREY	CLASSROOMS (TABLE BASE)
FSMS-1	KI MOLDED SURFACE WARM GREY	CLASSROOMS (TABLE BASE)
FSMS-2	KI MOLDED SURFACE CAFE AU LAIT	CLASSROOMS (TABLE BASE)
FSSF-1	KI SEATING FABRIC ESPOSITO; 007 MOSS	CLASSROOMS FIXED SEATING (GREEN SCHEME)
FSSF-2	KI SEATING FABRIC DORAMAY; 1845 BLUE SPRUCE	CLASSROOMS FIXED SEATING (GREEN SCHEME)
FSSF-3	KI SEATING FABRIC ESPOSITO; 005 MIDNIGHT	CLASSROOMS FIXED SEATING (BLUE SCHEME)
FSSF-4	KI SEATING FABRIC AERIEL; 003 SEAWEED	CLASSROOMS FIXED SEATING (BLUE SCHEME) *PRIMARY @ SMALL CR'S / ALTERNATING @ LECTURE RMS.
FSSF-5	KI SEATING FABRIC DOROMAY; 1840 OCEAN	CLASSROOMS FIXED SEATING (BLUE SCHEME)
FSSF-6	KI SEATING FABRIC DOROMAY; 1843 TWILIGHT	OFFICE SEATING (OPTIONAL)
FWP-1	GUILFORD OF MAINE COASTLINE 3495, 070 BLUE GRASS	40% USAGE (BLUE & GREEN SCHEMES)
FWP-2	GUILFORD OF MAINE COASTLINE 3495, 032 BEACH GLASS	40% USAGE (BLUE SCHEME) 20% USAGE (GREEN SCHEME)
FWP-3	DESIGNTEX SINGING IN THE RAIN 6418-401 DUSK	40% USAGE (GREEN SCHEME)
FWP-4	DESIGNTEX SINGING IN THE RAIN 6418-402 INDIGO	20% USAGE (BLUE SCHEME)
GRT-1	MAPEI 27 SILVER, SANDED	MENS' / WOMENS' RESTROOM (FLOOR)
GRT-2	MAPEI 12 MIST, UN-SANDED	MENS' / WOMENS' RESTROOM (WALL)
LP-1	FORMICA 7481-58 NATURAL BIRCH	ALL CLASSROOMS, EXCEPT LABORATORY *CASEWORK - VERTICAL SURFACE
LP-2	FORMICA 4797-60 BURNISHED SPRUCE	ALL CLASSROOMS, EXCEPT LABORATORY *CASEWORK - HORIZONTAL SURFACE
LP-3	OCTOLAM BY OCTOPUS PRODUCTS METALLIC EFFECTS #483	OPTIONAL IN BLUE SCHEME CLASSROOMS *CASEWORK - HORIZONTAL SURFACE
M-1	MANUFACTURER	LABORATORY CLASSROOMS METAL HOODS

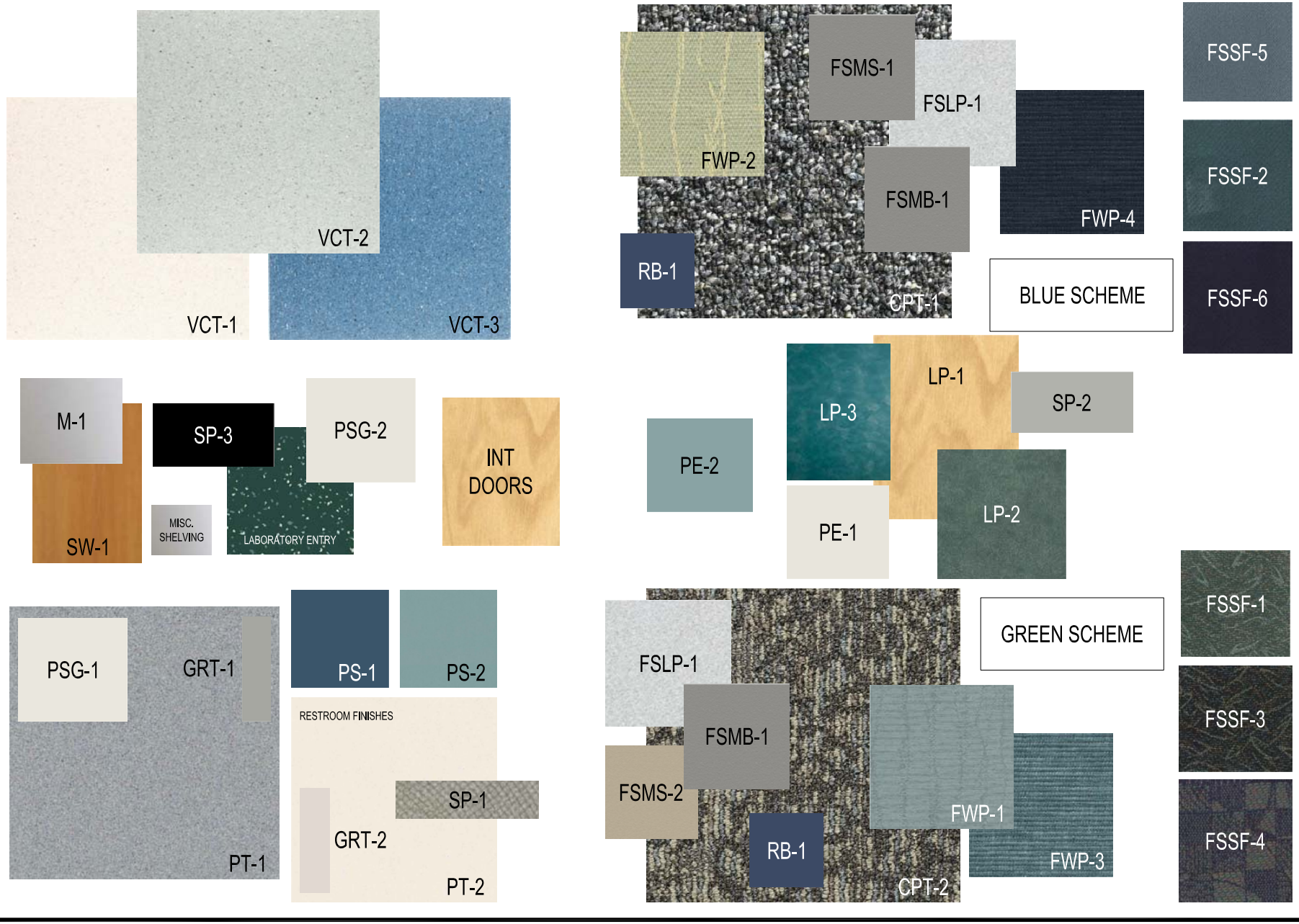
DESIGNATION	COLOR / SPECIFICATION	LOCATION
PE-1	DUNN EDWARDS DE6218 ANTIQUE PAPER; EGGSHELL	ALL CLASSROOMS (FIELD)
PE-2	DUNN EDWARDS DE5773 STONE SILVER; EGGSHELL	LECTURE CLASSROOMS (ACCENT) *TEACHING WALL ONLY
PS-1	CROSSVILLE; CROSS - COLORS B580 OCEANA	MENS' RESTROOM (ACCENT)
PS-2	CROSSVILLE; CROSS - COLORS C400 BAYBERRY	WOMENS' RESTROOM (ACCENT)
PSG-1	DUNN EDWARDS DE6225 FOSSIL; SEMI-GLOSS	MENS' / WOMENS' RESTROOM
PSG-2	DUNN EDWARDS DE6218 ANTIQUE PAPER; SEMI-GLOSS	LABORATORY CLASSROOMS
PT-1	DALTILE; PORCEALTO LABORADORITE CD49	MENS' / WOMENS' RESTROOM
PT-2	CROSSVILLE; CROSS - COLORS A215 EMPRESS WHITE (UNPOLISHED)	MENS' / WOMENS' RESTROOM (FIELD)
RB-1	JOHNSONITE 92-BLUE LAGOON	ALL AREAS WHERE CARPET OCCURS
SP-1	TRESPA ATHLON P1-1/QZ GRIT GREY	MENS; / WOMENS; RESTROOM *TOILET PARTITIONS
SP-2	TRESPA TOPLAB PLUS SILVER GREY T03.4.0 / CR	LECTURE ROOMS *DEMONSTRATION TABLE TOPS
SP-3	TRESPA TOPLAB PLUS BLACK T90.0.0 / CR	LABORATORY CLASSROOMS *TABLE TOPS / COUNTERTOPS
SW-1	FISHER HAMILTON NATURAL	LABORATORY CLASSROOMS (VERTICAL SURFACES)
VCT-1	MANNINGTON SOLIDPOINT 341 CAMEO WHITE	CORRIDORS (FIELD)
VCT-2	MANNINGTON SOLIDPOINT 340 BLUE RIDGE	CORRIDORS (ACCENT) LABORATORY CLASSROOMS (FIELD)
VCT-3	MANNINGTON SOLIDPOINT 320 NAVY	CORRIDORS (ACCENT)

INTERIOR MATERIALS & FINISHES SCHEDULE

CERRITOS COLLEGE

NORWALK, CALIFORNIA

tBP architecture planning interiors



INTERIOR MATERIALS & FINISHES BOARD

CERRITOS COLLEGE

NORWALK, CALIFORNIA

tBP architecture planning interiors

P1

EXTERIOR STUCCO FINISH
La Habra - Color Pack
Silver Gray X-16 (Base 200)

P2

CONCRETE FRAME
Pantone
Warm Gray 1 C

EXTERIOR GLASS

- Green reflective glass
- Transparent glass w/ green tint (match reflective glass)

P3

STEEL ACCENT
Pantone
444 C

P4

STEEL FRAME
Pantone
5425 C

P5

CERRITOS BLUE
Pantone
TCX Royal Blue 19-3955

EXTERIOR MATERIALS & FINISHES BOARD

CERRITOS COLLEGE
NORWALK, CALIFORNIA

tBP
architecture
planning
interiors

Washroom Accessories

The accessories listed herein have been approved by the Campus for use as Standards. The following preferred equipment will be the basis of design for the restrooms. The approval of these items will provide for consistent design and ease of maintenance throughout the campus.

Reference Section III Restrooms

BOBRICK

Technical Data

MIRROR WITH STAINLESS STEEL CHANNEL FRAME

B-165 SERIES

SNAP LOCKING DESIGN

(Rear View)

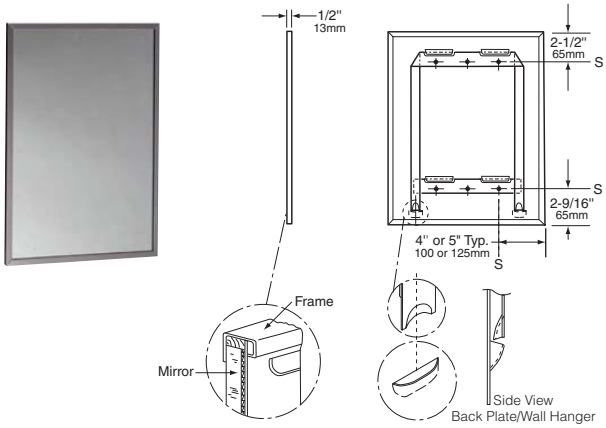


Figure: 1

STANDARD B-165 SERIES MIRRORS

MODEL NO.	OVERALL SIZE W	H
B-165 1824	18" (46cm)	24" (61cm)
B-165 1830	18" (46cm)	30" (76cm)
B-165 1836	18" (46cm)	36" (91cm)
B-165 2430	24" (61cm)	30" (76cm)
B-165 2436	24" (61cm)	36" (91cm)
B-165 2448	24" (61cm)	48" (122cm)
B-165 2460	24" (61cm)	60" (152cm)

SCREW LOCKING DESIGN

(Rear View)

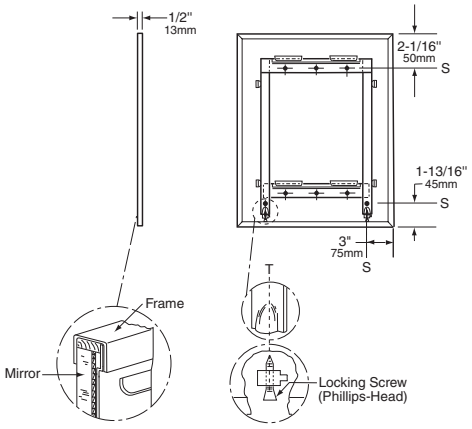


Figure: 2

STANDARD B-165 SERIES MIRRORS

MODEL NO.	OVERALL SIZE W	H
B-165 4836	48" (122cm)	36" (91cm)

All Other Size Mirrors

Designer's Notes:

1. Special-order sizes available on request.
2. Maximum size mirror available, 72" x 60" (183 x 152cm); minimum size, 12" x 12" (30 x 30cm).
3. All Bobrick framed mirrors are manufactured to overall width and height dimensions. EXAMPLE: A 24" x 36" (61 x 91cm) mirror will be furnished 24" x 36" (61 x 91cm) outside-of-frame to outside-of-frame.
4. To specify special sizes use Series Number followed by width then height in inches. EXAMPLE: B-165 2024.
5. Bobrick framed mirrors are manufactured to a tolerance 1/8" (3.2mm).
6. For sufficient space to lift mirror onto wall hanger(s), provide 3-1/4" (85mm) minimum clearance above center line of mounting screw holes.
7. Provide 1" (25mm) minimum clearance at bottom of mirror for engaging locking screws and 1" (25mm) clearance on each side.

MATERIALS:

Frame — Type-430 stainless steel, 1/2" x 1/2" x 3/8" (13 x 13 x 9.5mm) channel with 1/4" (6mm) return at rear with bright polished finish. One piece frame with 90 degree mitered corners. Galvanized steel back has integral horizontal hanging brackets near the top for hanging the mirror and near the bottom to prevent the bottom of the mirror from pulling away from the wall. Locking devices secure mirror to concealed wall hanger. In Screw Locking Design (see figure 2), concealed Philips-head locking screws securely fasten mirror to wall hanger.

Mirror — No. 1 quality, 1/4" (6mm) select float glass: selected for silvering, electrolytically copper-plated by the galvanic process, and guaranteed for 15 years against silver spoilage. Corners are protected by friction-absorbing filler strips; back is protected by full-size, shock-absorbing, water-resistant, nonabrasive, 3/16" (5mm) thick polyethylene padding.

Concealed Wall Hanger — 20-gauge (0.9mm) galvanized steel. Incorporates lower support member, forming rigid rectangle, which engages lower backplate louvers to keep bottom of mirror against wall.

continued . . .

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INSTALLATION:

Mount wall hanger on wall with screws (not furnished) at points indicated by an *S*. For plaster or dry wall construction, provide backing to comply with local building codes, then secure wall hanger with screws (not furnished) . When providing a concealed backing, allow backing to cover minimum range of mounting hole locations shown on drawing. For other wall surfaces, provide fiber plugs or expansion shields for use with screws (not furnished), or provide 1/8" (3mm) toggle bolts or expansion bolts. Hang mirror on wall hanger with all four backplate louvers engaged behind horizontal wall hanger members. Hang mirror on wall hanger with all four backplate louvers engaged behind horizontal wall hanger members. To do this, mirror must be centered in front of the wall hanger horizontally, pressed flat against the wall approximately 1" (25mm) above final position and then lowered into final position.

Snap Locking Design — Locking devices automatically secure mirror to concealed wall hanger when it is lowered into final position. Locking devices may be unlocked by inserting two flat blade screwdrivers behind each side of mirror near the bottom or under the bottom of the mirror and pulling mirror bottom forward and then up (see figure 3).

Screw Locking Design — Lock mirror to wall hanger by tightening Phillips-head locking screws that are concealed in the bottom of frame at points indicated by a *T*. Mirror may be unlocked from wall hanger by loosening locking screws and lifting mirror off of concealed wall hanger (see figure 4).

SNAP LOCKING DESIGN
(Front View)

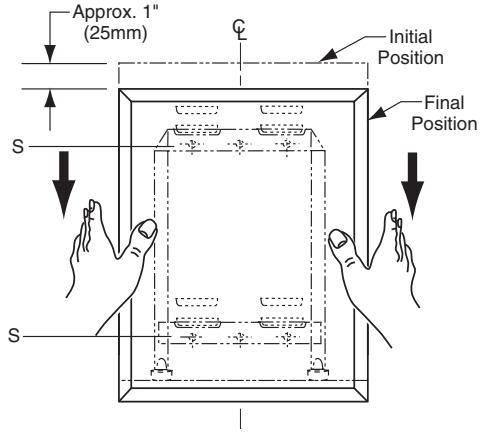

Figure: 3

SCREW LOCKING DESIGN
(Front View)

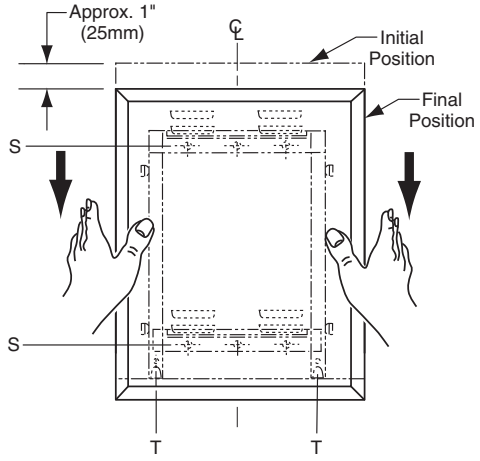

Figure: 4

SPECIFICATION:

Mirror shall have a one-piece type-430 stainless steel channel frame, 1/2" x 1/2" x 3/8" (13 x 13 x 9.5mm), with 90° mitered corners; all exposed surfaces shall have bright polished finish. Select float glass mirror shall be guaranteed for 15 years against silver spoilage. Corners shall be protected by friction-absorbing filler strips and the back shall be protected by full-size, shock-absorbing, water-resistant, nonabrasive, 3/16" (5mm) thick polyethylene padding. Galvanized steel back shall have integral horizontal hanging brackets located at top and bottom for mounting on concealed rectangular wall hanger to prevent the mirror from pulling away from the wall. Locking devices secure mirror to concealed wall hanger. Mirror shall be removable from the wall.

Framed Mirror shall be Model B-165 _____ (insert width and height) of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

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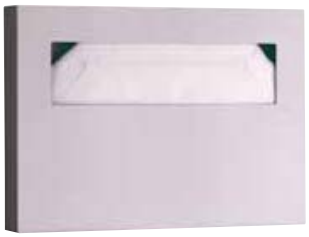
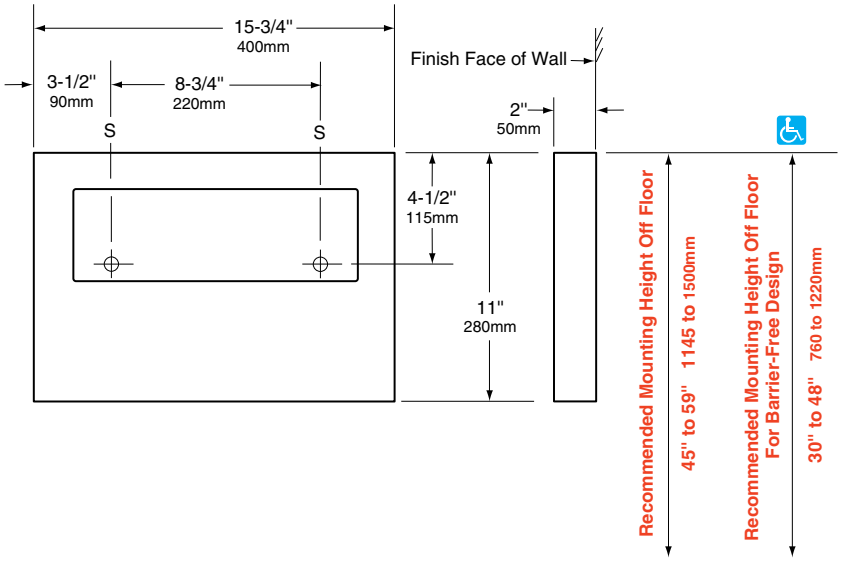
BOBRICK

Technical Data

ClassicSeries™ SURFACE-MOUNTED SEAT-COVER DISPENSER

B-221





MATERIALS:

18-8 S, type-304, 22-gauge (0.8mm) stainless steel with satin finish. All-welded construction with beveled opening.

OPERATION:

Dispenses single- or half-fold paper toilet seat covers from beveled opening. Dispenser fills from bottom through concealed opening. Capacity: 250 toilet seat covers.

INSTALLATION:

Mount unit on wall or toilet partition with two flat-head screws, not furnished by manufacturer, at points indicated by an *S*. For plaster or dry wall construction, provide concealed backing that complies with local building codes, then secure unit with flat-head screws not furnished. For other wall surfaces, provide fiber plugs or expansion shields for use with screws, not furnished, or provide 1/8" (3mm) toggle bolts or expansion bolts.

Note: Provide a 5" (125mm) minimum clearance from bottom of dispenser to top of any horizontal projection to provide room for filling dispenser from bottom.

SPECIFICATION:

Surface-mounted toilet-seat-cover dispenser shall be type-304, 22-gauge (0.8mm) stainless steel with all-welded construction; exposed surfaces shall have satin finish. Dispenser shall have a concealed opening in bottom for filling. Capacity shall be 250 paper toilet seat covers.

Surface-Mounted Seat-Cover Dispenser shall be Model B-221 of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

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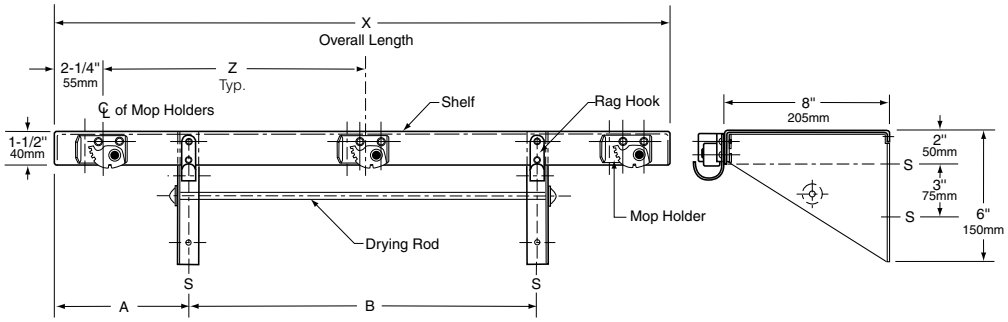
BOBRICK

Technical Data

UTILITY SHELF WITH MOP/BROOM HOLDERS AND RAG HOOKS

B-224



Model Number	Dim. X	No. of Mop Holders	Dim. Z	No. of Rag Hooks	Dim. A	Dim. B
B-224 x 36	36" (915mm)	4	10-1/2" (265mm)	3	6-1/2" (165mm)	23" (585mm)

MATERIALS:

Shelf — 18-8 S, type-304, 18-gauge (1.2mm) stainless steel with satin finish. Shelf has 1-1/2" (38mm) return edge for maximum rigidity.

Mounting Brackets — 18-8 S, type-304, 18-gauge (1.2mm) stainless steel with satin finish; welded to shelf.

Mop/Broom Holders — Spring-loaded rubber cams with anti-slip coating.

Rag Hooks — 18-8 S, type-304, 16-gauge (1.6mm) stainless steel with satin finish; secured to shelf with rivets.

Drying Rod — 18-8 S, type-304, 1/4" (6mm) diameter stainless steel with satin finish.

OPERATION:

Surface-mounted utility shelf with holders is designed to keep mops and brooms away from wall. Spring-loaded rubber cam holders accommodate mop or broom handles from 7/8" to 1-1/4" (22–32mm) diameter. Hooks for conveniently storing rags are located on front of shelf. Rod for hanging wet rags is located below shelf between mounting brackets.

INSTALLATION:

Secure unit to wall with four sheet-metal screws, furnished by manufacturer, at points indicated by an *S*. For plaster or dry wall construction, provide concealed backing to comply with local building codes, then secure unit with sheet-metal screws furnished. For other wall surfaces, provide fiber plugs or expansion shields for use with sheet-metal screws furnished, or provide 1/8" (3mm) toggle bolts or expansion bolts.

SPECIFICATION:

Surface-mounted utility shelf with mop/broom holders and rag hooks shall be type-304 stainless steel with satin finish. Shelf shall be 18 gauge (1.2mm) with 1-1/2" (38mm) return edge. Mounting brackets, welded to shelf, shall be 18 gauge (1.2mm). Manufacturer's service and parts manual shall be provided to the building owner/manager upon request.

Utility Shelf With Mop/Broom Holders And Rag Hooks shall be Model 224x36 of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

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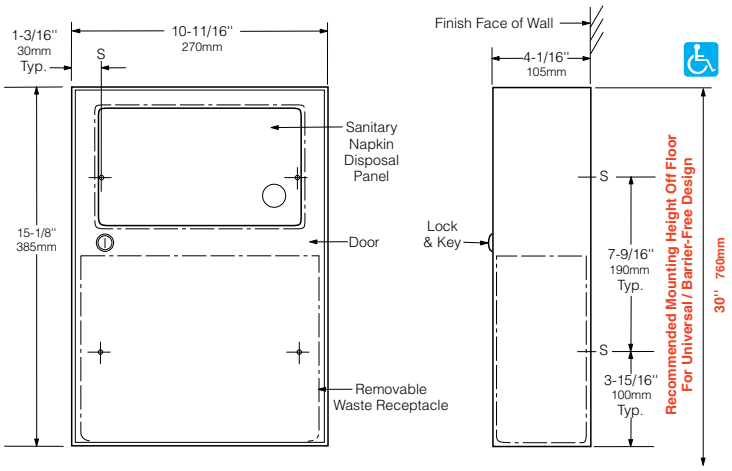
BOBRICK

Technical Data

SURFACE-MOUNTED SANITARY NAPKIN DISPOSAL

B-254



MATERIALS:

Cabinet — 18-8 S, type-304, heavy-gauge stainless steel. All-welded construction. Exposed surfaces have satin finish.

Door — 18-8 S, type-304, 22-gauge (0.8mm) stainless steel with satin finish. Secured to cabinet with a full-length stainless steel piano-hinge. Equipped with a tumbler lock keyed like other Bobrick washroom accessories.

Disposal Panel — 18-8 S, type-304, 22-gauge (0.8mm) stainless steel with satin finish. Bottom edge hemmed for safety. Secured to door with a spring-loaded, full-length stainless steel piano-hinge. Equipped with an international graphic symbol identifying sanitary napkin disposal.

Waste Receptacle — Leak-proof, rigid molded polyethylene. Removable for servicing. Capacity: 1.2-gal. (4.6-L).

OPERATION:

Unit is equipped with a self-closing panel covering disposal opening. Napkin disposal is emptied by opening door with furnished key and removing waste receptacle. Disposable paper liners for the receptacle are available as an optional accessory: order Bobrick Part No. 353-12.

INSTALLATION:

For partitions with particle-board or other solid core, secure with four #8 x 1-1/4" (4.2 x 32mm) sheet-metal screws (not furnished), or provide through-bolts, nuts, and washers.

For hollow-core metal partitions, provide solid backing into which sheet-metal screws can be secured. If two units are installed back-to-back, then provide threaded sleeves and machine screws for the full thickness of partition.

For plaster or dry wall construction, provide concealed backing to comply with local building codes, then secure unit with #8 x 1-1/4" (4.2 x 32mm) sheet-metal screws.

For other wall surfaces, provide fiber plugs or expansion shields for use with #8 x 1-1/4" (4.2 x 32mm) sheet-metal screws, or provide 3/16" (5mm) toggle bolts or expansion bolts.

SPECIFICATION:

Surface-mounted sanitary napkin disposal shall be type-304 stainless steel with all-welded construction; exposed surfaces shall have satin finish. Door shall be secured to cabinet with a full-length stainless steel piano-hinge and equipped with a tumbler lock keyed like other Bobrick washroom accessories. Unit shall have a self-closing panel covering disposal opening. Panel shall have bottom edge hemmed for safety, be secured to door with a spring-loaded, full-length stainless steel piano-hinge, and equipped with an international graphic symbol identifying sanitary napkin disposal. Unit shall be furnished with a removable, leak-proof, rigid molded polyethylene receptacle. Receptacle shall have a capacity of 1.2-gal. (4.6-L). Manufacturer's service and parts manual shall be provided to the building owner/manager upon request.

Surface-Mounted Sanitary Napkin Disposal shall be Model B-254 of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

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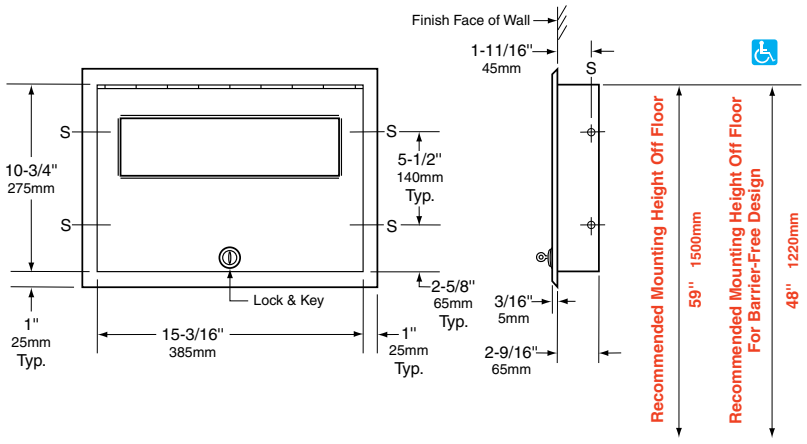
BOBRICK

Technical Data

RECESSED TOILET-SEAT-COVER DISPENSER

B-301



Rough Wall Opening
15-5/8" (395mm) wide
11-1/4" (285mm) high
2-5/8" (67mm) minimum
recessed depth

MATERIALS:

Cabinet — 18-8 S, type-304, heavy-gauge stainless steel. All-welded construction.

Flange — 18-8 S, type-304, 22-gauge (0.8mm) stainless steel with satin finish. Drawn and beveled, one-piece, seamless construction.

Door — 18-8 S, type-304, 22-gauge (0.8mm) stainless steel with satin finish. Secured to cabinet with a full-length, stainless steel piano-hinge. Beveled opening. Equipped with a tumbler lock keyed like other Bobrick washroom accessories.

OPERATION:

Dispenses single- or half-fold paper toilet seat covers. To fill dispenser, door unlocks with key provided. Capacity: 500 toilet seat covers.

INSTALLATION:

Provide framed rough wall opening 15-5/8" wide x 11-1/4" high (395 x 285mm). Minimum recessed depth required from finish face of wall is 2-5/8" (67mm). Allow clearance for construction features that may protrude into rough wall opening from opposite wall. Coordinate with mechanical engineer to avoid pipes, vents, and conduits in wall. Mount cabinet with shims between framing and cabinet at all points indicated by an *S,* then secure unit with four #8 x 1-1/4" (4.2 x 32mm) sheet-metal screws (not furnished).

SPECIFICATION:

Recessed toilet-seat-cover dispenser shall be type-304 stainless steel with all-welded construction; exposed surfaces shall have satin finish. Flange shall be drawn and beveled, one-piece, seamless construction. Door shall be secured to cabinet with a full-length, stainless steel piano-hinge and equipped with a tumbler lock keyed like other Bobrick washroom accessories. Dispenser shall have a capacity of 500 paper toilet seat covers. Manufacturer's service and parts manual shall be provided to the building owner/manager upon request.

Recessed Toilet-Seat-Cover Dispenser shall be Model B-301 of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

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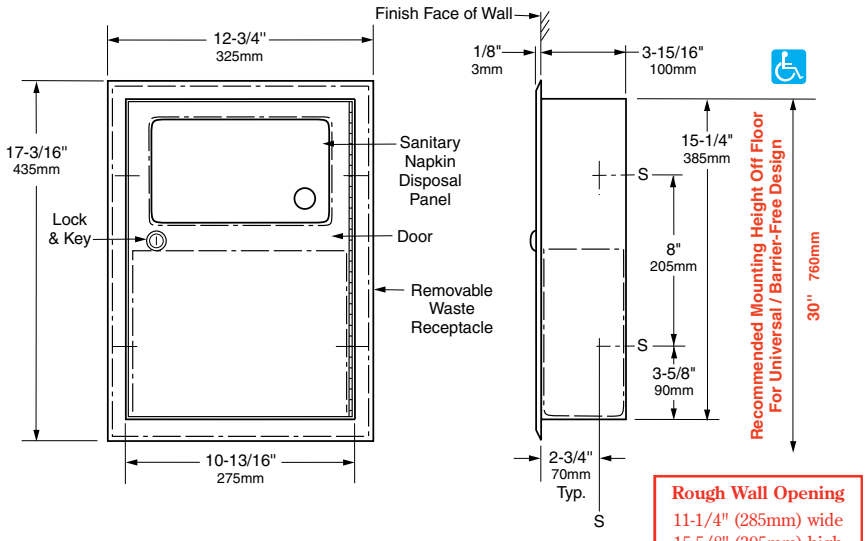
BOBRICK

Technical Data

RECESSED SANITARY NAPKIN DISPOSAL

B-353



Rough Wall Opening
11-1/4" (285mm) wide
15-5/8" (395mm) high
4" (102mm) minimum recessed depth

MATERIALS:

Cabinet — 18-8 S, type-304, heavy-gauge stainless steel. All-welded construction. Exposed surfaces have satin finish.

Flange — 18-8 S, type-304, 22-gauge (0.8mm) stainless steel with satin finish. Drawn and beveled, one-piece, seamless construction.

Door — 18-8 S, type-304, 22-gauge (0.8mm) stainless steel with satin finish. Secured to cabinet with a full-length stainless steel piano-hinge. Equipped with a tumbler lock keyed like other Bobrick washroom accessories.

Disposal Panel — 18-8 S, type-304, 22-gauge (0.8mm) stainless steel with satin finish. Bottom edge hemmed for safety. Secured to door with a spring-loaded, full-length stainless steel piano-hinge. Equipped with an international graphic symbol identifying sanitary napkin disposal.

Waste Receptacle — Leak-proof, rigid molded polyethylene. Removable for servicing. Capacity: 1.2-gal. (4.6-L).

OPERATION:

Unit is equipped with a self-closing panel covering disposal opening. Napkin disposal is emptied by opening door with furnished key and removing waste receptacle. Disposable paper liners for the receptacle are available as an optional accessory: order Bobrick Part No. 353-12.

INSTALLATION:

Provide framed rough wall opening 11-1/4" wide x 15-5/8" high (285 x 395mm). Minimum recessed depth required from finish face of wall is 4" (102mm). Allow clearance for construction features that may protrude into rough wall opening from opposite wall. Coordinate with mechanical engineer to avoid pipes, vents, and conduits. Mount unit in wall opening with shims between framing and cabinet at all points indicated by an *S*, then secure unit with four #8 x 1-1/4" (4.2 x 32mm) sheet-metal screws (not furnished).

SPECIFICATION:

Recessed sanitary napkin disposal shall be type-304 stainless steel with all-welded construction; exposed surfaces shall have satin finish. Door shall be secured to cabinet with a full-length stainless steel piano-hinge and equipped with a tumbler lock keyed like other Bobrick washroom accessories. Unit shall have a self-closing panel covering disposal opening. Panel shall have bottom edge hemmed for safety, be secured to door with a spring-loaded, full-length stainless steel piano-hinge, and equipped with an international graphic symbol identifying sanitary napkin disposal. Unit shall be furnished with a removable, leak-proof molded polyethylene receptacle. Receptacle shall have a capacity of 1.2-gal. (4.6-L). Manufacturer's service and parts manual shall be provided to the building owner/manager upon request.

Recessed Sanitary Napkin Disposal shall be Model B-353 of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

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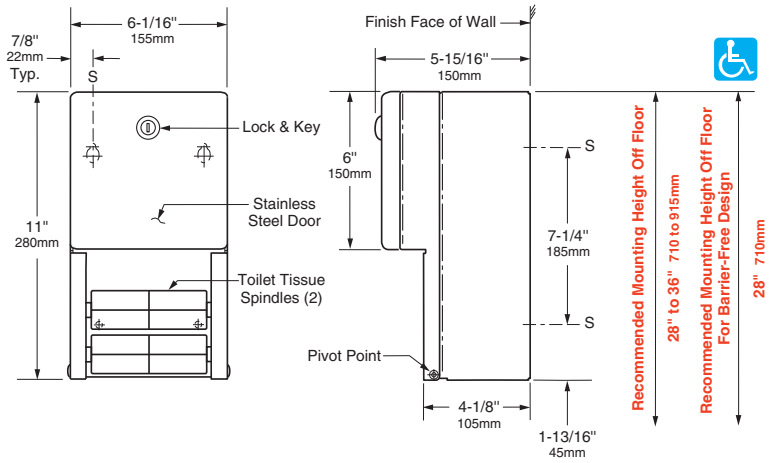
BOBRICK

Technical Data

SURFACE-MOUNTED MULTI-ROLL TOILET TISSUE DISPENSER

B-2888



MATERIALS:

Cabinet — 18-8 S, type-304, 22-gauge (0.8mm) stainless steel. All-welded construction. Exposed surfaces have satin finish.

Door — 18-8 S, type-304, 22-gauge (0.8mm) stainless steel with 18-gauge (1.2mm) stainless steel door frame. Exposed surfaces have satin finish. Front of door is drawn, one-piece, seamless construction. Secured to cabinet with two rivets. Equipped with a tumbler lock keyed like other Bobrick washroom accessories.

Dispensing Mechanism, Inner Housing and Cam — 18-8 S, type-304, 18-gauge (1.2mm) stainless steel.

Spindles (2) — Heavy-duty, one-piece, molded ABS. Theft-resistant. Retained in dispensing mechanism when door is locked.

OPERATION:

Unit holds two standard-core toilet tissue rolls up to 5-1/4" (133mm) diameter (1800 sheets). Tissue rolls are loaded and locked into dispensing mechanism. Extra roll automatically drops in place when bottom roll is depleted. Depleted rolls can only be removed after unlocking door.

INSTALLATION:

For partitions with particleboard or other solid core, secure with four #10 x 5/8" (4.8 x 16mm) sheet-metal screws (not furnished) at points indicated by an *S*, or provide through-bolts, nuts, and washers.

For hollow-core metal partitions, provide solid backing into which sheet-metal screws can be secured. If two units are installed back-to-back, then provide threaded sleeves and machine screws for the full thickness of partition.

For plaster or dry wall construction, provide concealed backing to comply with local building codes, then secure unit with sheet-metal screws.

For other wall surfaces, provide fiber plugs or expansion shields for use with sheet-metal screws or provide 3/16" (5mm) toggle bolts or expansion bolts.

SPECIFICATION:

Surface-mounted multi-roll toilet tissue dispenser shall be type-304 stainless steel with all-welded construction, including dispensing mechanism, inner housing and cam; exposed surfaces shall have satin finish. Front of toilet tissue dispenser door shall be drawn, one-piece, seamless construction. Door shall be secured to cabinet with two rivets and equipped with a tumbler lock keyed like other Bobrick washroom accessories. Unit shall dispense two standard-core toilet tissue rolls up to 5-1/4" (133mm) diameter (1800 sheets). Extra roll shall automatically drop in place when bottom roll is depleted. Unit shall be equipped with two theft-resistant, heavy-duty, one-piece, molded ABS spindles.

Surface-Mounted Multi-Roll Toilet Tissue Dispenser shall be Model B-2888 of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

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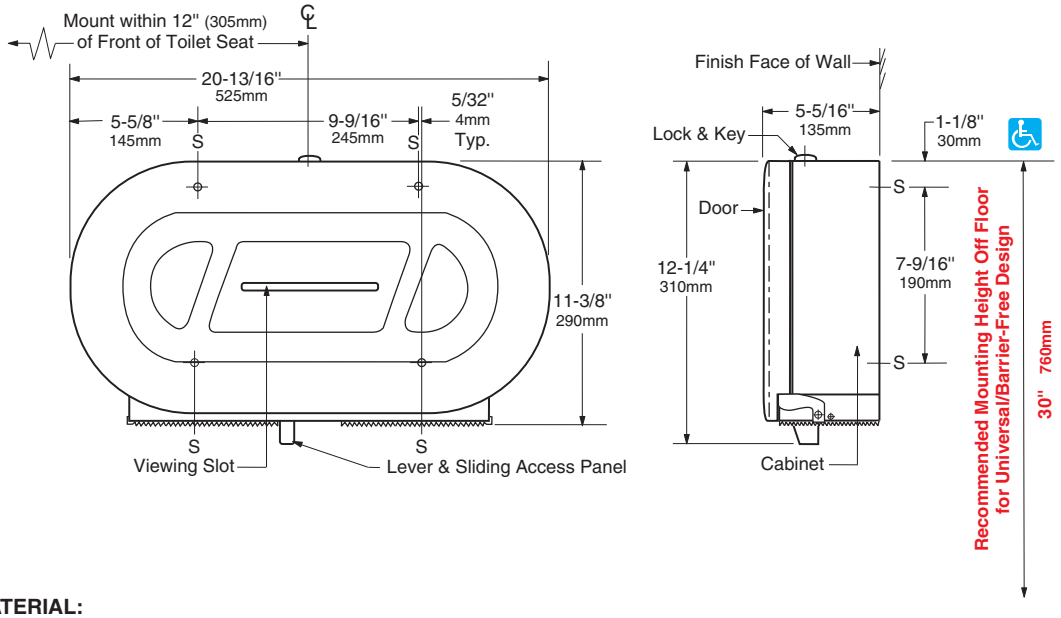
BOBRICK

Technical Data

SURFACE-MOUNTED TWIN JUMBO-ROLL TOILET TISSUE DISPENSER

B-2892



MATERIAL:

Cabinet — 18-8 S, type-304, 20-gauge (1.0mm) stainless steel with satin-finish. Equipped with a tumbler lock keyed like other Bobrick washroom accessories.

Door — 18-8 S, type-304, 18-gauge (1.2mm) stainless steel with satin-finish. Drawn, one-piece, seamless construction. Wide viewing slot reveals toilet tissue supply inside cabinet.

Dispensing Mechanism — High-impact ABS.

OPERATION:

Door unlocks with key provided and swings down for loading dispenser. Spindles accommodate two toilet tissue rolls up to 10" (255mm) diameter with 3" (75mm) diameter core, or remove outer spindle (which is held in place with 3 snaps) from the inner spindles to accommodate 2-1/4" (55mm) diameter core rolls. Unique sliding access panel exposes one roll at a time for patron use, assuring uninterrupted, complete no-waste use of first roll before starting the reserve roll; allows easy roll change-over. When first roll is depleted, move the lever at the bottom of dispenser to the left until sliding access panel locks in position and exposes roll on right. When door is opened for reloading, the sliding access panel automatically releases and returns to the original position on the right. Move the remaining roll to the first position on left and install a new roll on the right spindle. Wide viewing slot in door reveals the amount of toilet tissue on both rolls. Unit is designed for quick reloading.

continued . . .

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INSTALLATION:

Mount unit on wall or toilet partition with four sheet-metal screws, furnished by manufacturer, at points indicated by an *S*. Rear edge of unit should be 20" (510mm) from back wall. This locates toilet tissue within 12" (305mm) of front of standard toilet that projects 30" (760mm) from back wall.

For plaster or dry wall construction, provide concealed backing to comply with local building codes, then secure unit with sheet-metal screws furnished. For other wall surfaces, provide fiber plugs or expansion shields for use with sheet-metal screws furnished, or provide 1/4" (6mm) toggle bolts or expansion bolts.

For partitions with particle-board or other solid core, secure with sheet-metal screws or provide through-bolts, nuts, and washers. For hollow-core metal partitions, provide solid backing into which sheet-metal screws can be secured. If two units are installed back-to-back, then provide threaded sleeves and machine screws for the full thickness of partition.

SPECIFICATION:

Jumbo-roll toilet tissue dispenser door and cabinet shall be type-304 stainless steel with satin-finish: door shall be 18 gauge (1.2mm); cabinet shall be 20 gauge (1.0mm). Cabinet shall be equipped with a tumbler lock keyed like other Bobrick washroom accessories. Door shall have a wide viewing slot to reveal toilet tissue supply inside cabinet. Dispensing mechanism shall be constructed of high-impact ABS shall accommodate two toilet tissue rolls up to 10" (255mm) diameter with 3" (75mm) diameter core; and be equipped with a sliding access panel that exposes one roll at a time. Spindles shall be convertible in the field to dispense 2-1/4" (55mm) diameter core rolls by removing outer spindles furnished in-place.

Surface-Mounted Twin Jumbo-Roll Toilet Tissue Dispenser shall be Model B-2892 of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

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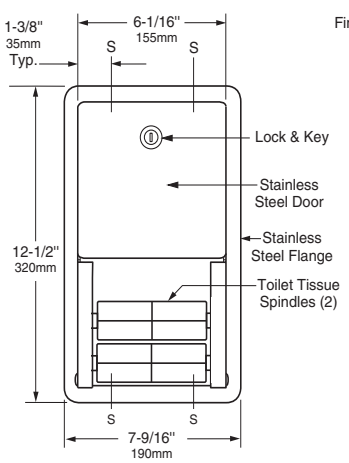
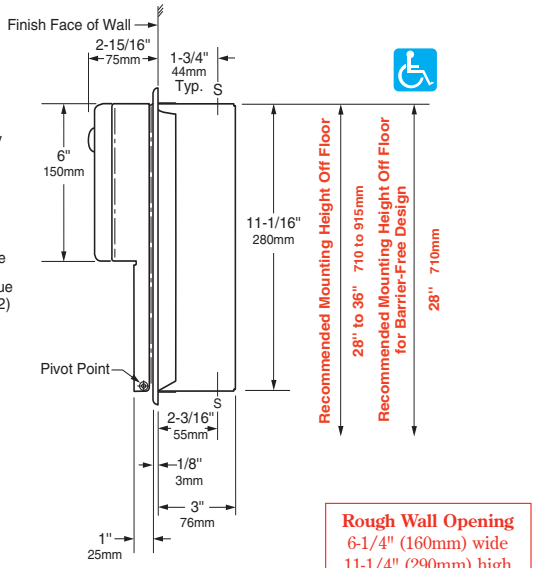
BOBRICK

Technical Data

RECESSED MULTI-ROLL TOILET TISSUE DISPENSER

B-3888





Rough Wall Opening
6-1/4" (160mm) wide
11-1/4" (290mm) high
3-1/8" (80mm) minimum
recessed depth

MATERIALS:

Cabinet — 18-8 S, type-304, 22-gauge (0.8mm) stainless steel. All-welded construction. Exposed surfaces have satin finish.

Flange — 18-8 S, type-304, 22-gauge (0.8mm) stainless steel with satin finish. Drawn, one-piece, seamless construction.

Door — 18-8 S, type-304, 22-gauge (0.8mm) stainless steel with 18-gauge (1.2mm) stainless steel door frame. Exposed surfaces have satin finish. Front of door is drawn, one-piece, seamless construction. Secured to cabinet with two rivets. Equipped with a tumbler lock keyed like other Bobrick washroom accessories.

Dispensing Mechanism, Inner Housing and Cam — 18-8 S, type-304, 18-gauge (1.2mm) stainless steel.

Spindles (2) — Heavy-duty, one-piece, molded ABS. Theft-resistant, spindles retained in dispensing mechanism when door is locked.

OPERATION:

Unit holds two standard-core toilet tissue rolls up to 5-1/4" (133mm) diameter (1800 sheets). Tissue rolls are loaded and locked into dispensing mechanism. Extra roll automatically drops in place when bottom roll is depleted. Depleted rolls can only be removed after unlocking door.

INSTALLATION:

Provide framed rough wall opening 6-1/4" wide x 11-1/4" high (160 x 290mm). Minimum recessed depth required to finish face of wall is 3-1/8" (80mm). Allow clearance for construction features that may protrude into opening from opposite wall. Coordinate with mechanical engineer to avoid pipes, vents, and conduits. Mount unit with shims between framing and cabinet at all points indicated by an *S*, then secure unit with sheet-metal screws (not furnished).

SPECIFICATION:

Recessed multi-roll toilet tissue dispenser shall be type-304 stainless steel with all-welded construction, including dispensing mechanism, inner housing and cam; exposed surfaces shall have satin finish. Front of toilet tissue dispenser door shall be drawn, one-piece, seamless construction. Door shall be secured to cabinet with two rivets and equipped with a tumbler lock keyed like other Bobrick washroom accessories. Flange shall be drawn, one-piece, seamless construction. Unit shall dispense two standard-core toilet tissue rolls up to 5-1/4" (133mm) diameter (1800 sheets). Extra roll shall automatically drop in place when bottom roll is depleted. Unit shall be equipped with two heavy-duty, one-piece, molded ABS spindles. Theft-resistant, spindles retained in dispensing mechanism when door is locked.

Recessed Multi-Roll Toilet Tissue Dispenser shall be Model B-3888 of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

The illustrations and descriptions herein are applicable to production as of the date of this Technical Data Sheet.
The manufacturer reserves the right to, and does from time to time, make changes and improvements in designs and dimensions.

Revised 3/3/11 QA030411 Printed in U.S.A.
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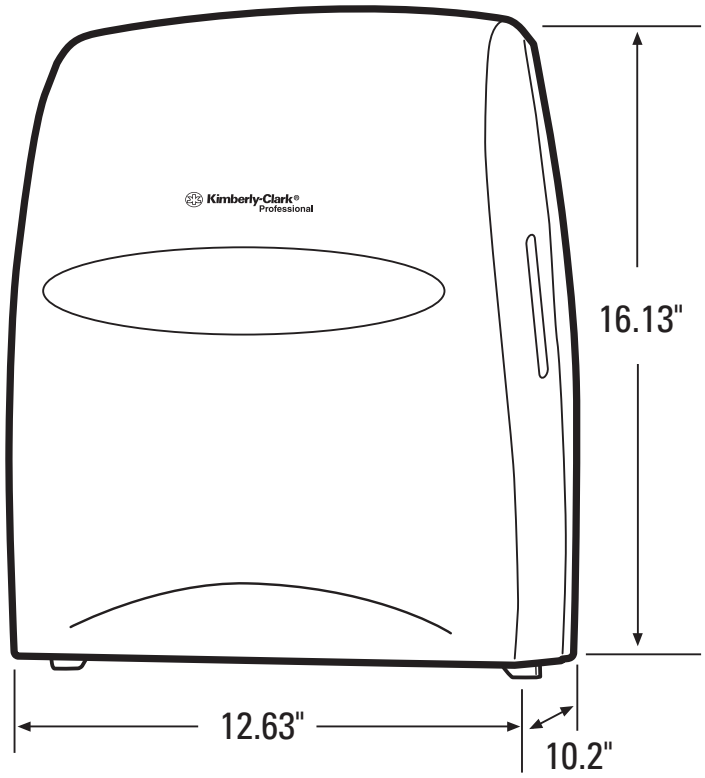
HAND TOWEL *Dispensers*



09992

IN-SIGHT® Touch-Less Electronic HRT 1.75" Hub

Made of high impact plastic with a black housing and transparent window for viewing product level. Dispenser automatically dispenses a single sheet of paper when users' hand is placed beneath dispenser. No-touch dispensing system helps reduce the spread of dirt and germs. Dispenses one 8" diameter roll with 1.75" core plus a stub roll. Features include adjustable sensitivity, sheet length and delay between sheets. Also incorporates a sleep mode to shut down unit when lights are out to conserve battery life. Choice of key activated spring latch or push button operation. Operates on four D size alkaline batteries or AC adapter. One per case. Suggested mounting height 48"

NOTE: Unless otherwise noted, suggested mounting height is the distance from the floor to the bottom of the dispenser.

Product Name: IN-SIGHT* SANITOUCH* Hard Roll Towel nser
Product Code: 09996
Color: Smoke Grey
Size: 12.6"x16.3"x10.2"

Packaging Level 1: 1 Case = 1 Package
Packaging Level 2: 1 Package = 1 Unit
Packaging Level 3: 1 Case = 1 Unit

Available exclusively with KIMBERLY-CLARK PROFESSIONAL* nsers, MICROBAN* technology provides built-in anti-microbial protection st most common stain and odor-causing bacteria. MICROBAN* tion helps prevent odor and stain microbes from growing and lucing.

- Available in Smoke Grey

Dispensers with MICROBAN* Protection Sell

Exploded Drawing
Printable Mounting and Loading Instructions

PRODUCT VARIATION

Product Code	Color	Size
09990	Smoke Grey	12.6"x16.3"x10.2"
09991	White	12.6"x16.1"x10.2"
09994	Stainless Steel	13.3"x16.6"x5.1"
09995	White	12.6"x16.3"x10.2"
10441	Smoke	12" x 12.5" x 7"
10442	White	12" x 12.5" x 7"
13567	Brushed Metallic	12" x 12.5" x 7"

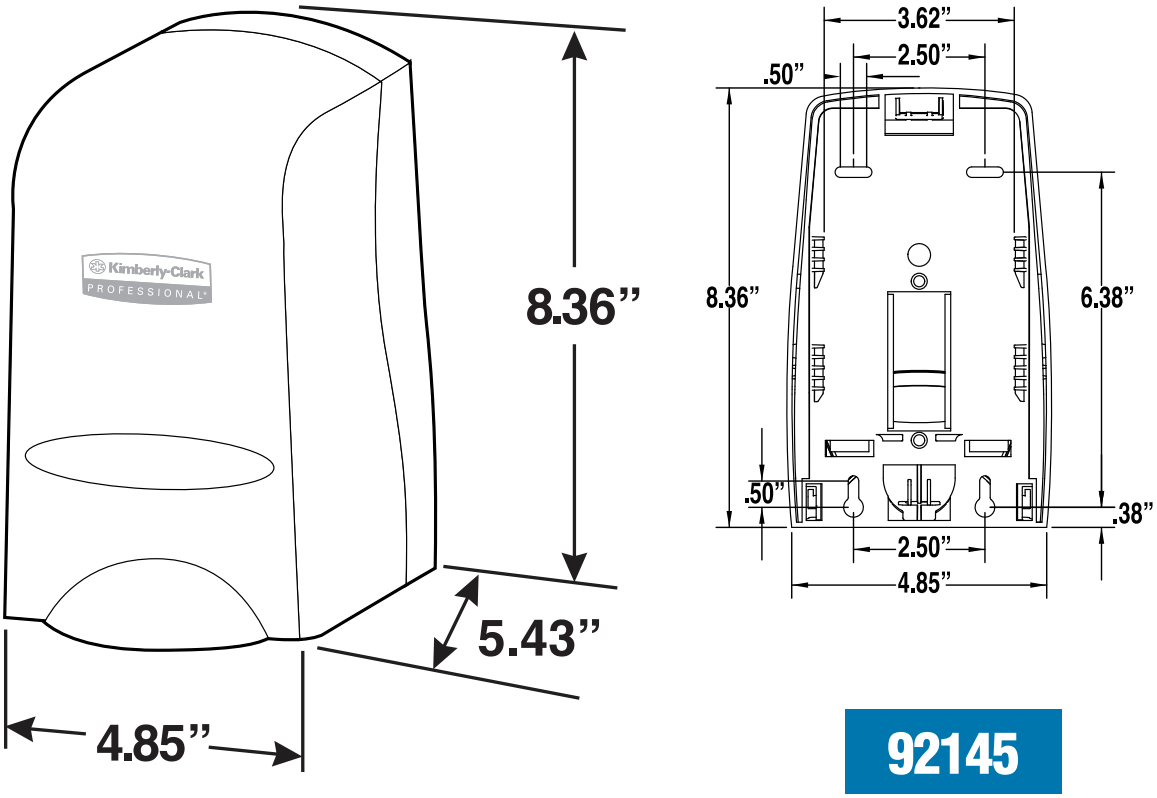
RECOMMENDED PRODUCT FOR PRODUCT CODE: #09996

SCOTT® High Capacity Hard Roll Towels #02000

KLEENEX® Hard Roll Towels #50500

KLEENEX® Hard Roll Towels #50606

SOAP *Dispensers*



92145

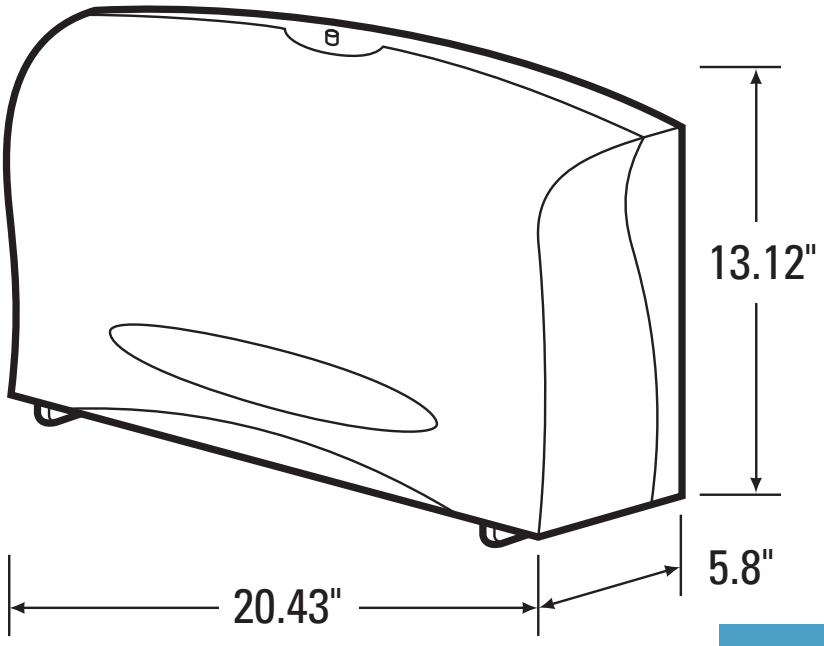
KIMBERLY-CLARK PROFESSIONAL* CASSETTE SKIN CARE DISPENSER-1000 ML

Cassette skin care system with manually activated dispenser with a 1000 mL capacity. Easy loading and provides for a new pump with each recyclable refill in various soap and foam formulas. Compatible with universal mounting brackets and wall and floor protector. 1 per packet.

When installed properly, this dispenser meets ADA Standard 28 CFR Part 36 (1994)

NOTE: Unless otherwise noted, suggested mounting height is the distance from the floor to the bottom of the dispenser.

BATH TISSUE *Dispensers*



09551

JRT® COMBINATION TISSUE DISPENSER

Dispenser is made of a durable grey plastic body and smoked transparent cover. It can dispense either two full 9.38" diameter rolls or one standard 13" diameter roll plus stub roll. All rolls have a 3.8" width and a 3.25" diameter core. With two full 9.38" rolls it holds more than the equivalent in length of ten standard rolls. Design minimizes run-out, waste, and maintenance time. Features hinged front cover, push button for easy opening or common key lock to reduce pilferage, and tear-off bars on sides and front of dispenser opening. Dispenser is shipped 1 per case.

Suggested Mounting Height: 30"

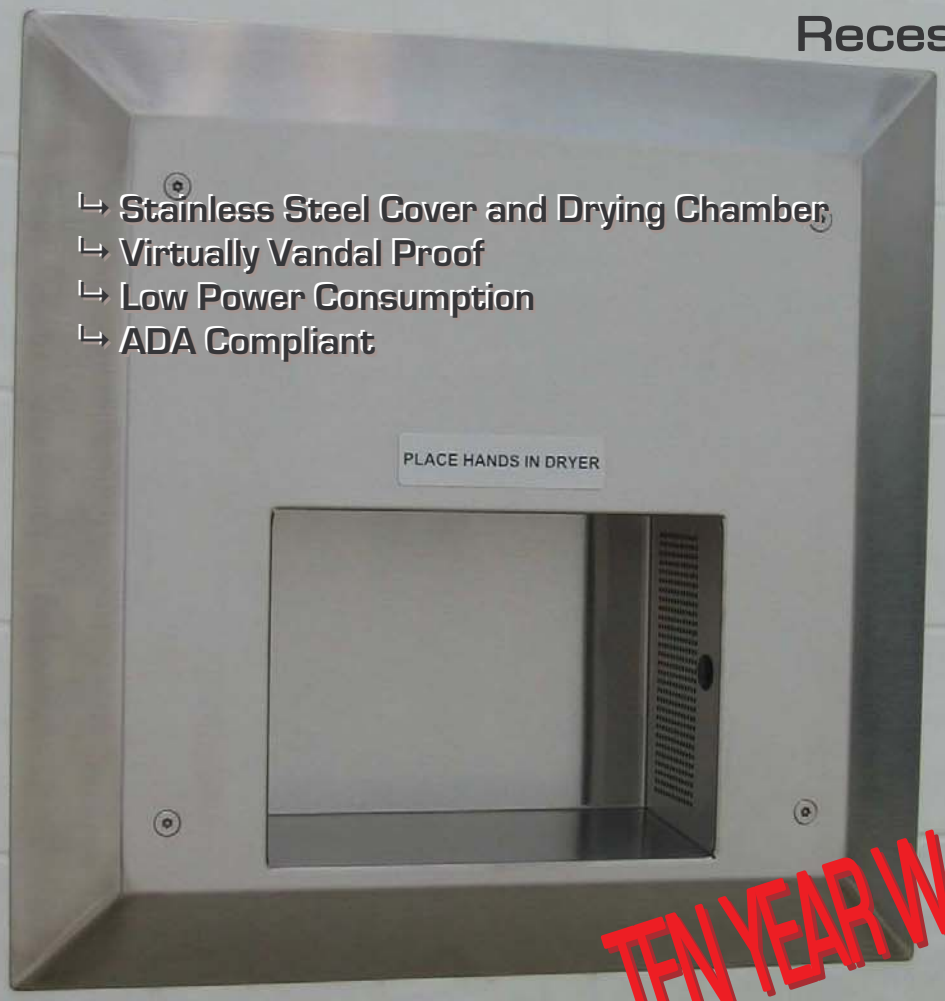
NOTE: Unless otherwise noted, suggested mounting height is the distance from the floor to the bottom of the dispenser.

PINNACLE DRYER
www.pinnacledryer.com

Touchless Hand Dryers

Recessed Model PDC-R10

- Stainless Steel Cover and Drying Chamber
- Virtually Vandal Proof
- Low Power Consumption
- ADA Compliant



TEN YEAR WARRANTY

Ideal for :

Schools
Prisons
DOT Rest Areas
Restaurants
Universities
Convenience Stores
Hospitals
Parks and Rec

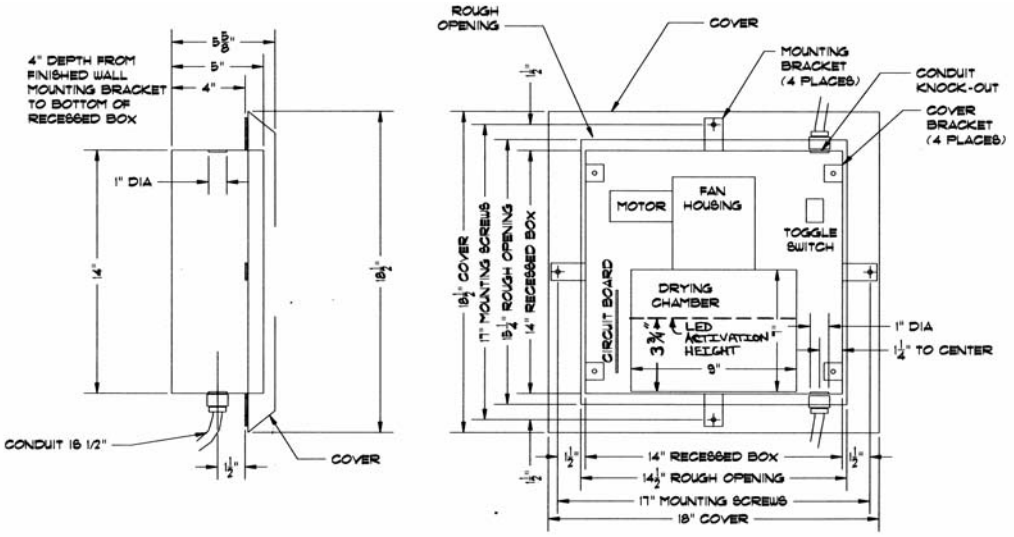
MADE IN USA

PINNACLE DRYER CORPORATION
330 FIELDS DRIVE - ABERDEEN, NC 28315 - TEL : 910.944.2117 or 800.943.7937 - FAX : 910.944.9430

PINNACLE DRYER
www.pinnacledryer.com

PINNACLE DRYER CORPORATION

Recessed Model PDC-R10



SIDE VIEW FRONT VIEW

Technical Information

MOTOR – Heavy Duty, 7500 RPM, Double-insulated, CSA & UL Component Approved

POWER CONSUMPTION – 11.5 amps 1.37 KW at 120 Vac Nominal

FAN ROTOR – Pressed, Galvanized and Electrically balanced delivering 150 cfm

HEATING ELEMENT – 1000W Heavy-duty, thermally protected to cut out at 90 C.

WARRANTY – Limited 10 year warranty

COVER – 18 gauge stainless steel

CIRCUITRY – All new solid state circuitry has completely eliminated all mechanical parts. Unit is activated by infra-red sensor when hands are placed in drying chamber. Dryer operates only when in use.

DRYING TIME – Complete drying is accomplished in 20-25 seconds.

WEIGHT – 20 lbs.

SAFETY – Five Levels of Over-Temperature Protection

INSTALLATION

The "Pinnacle" touchless hand dryer must be installed on a 20 AMP dedicated circuit and must be properly grounded. We recommend installing dryers on a GFI breaker.

CAUTION : Route Field Wiring Connections Away from Moving Parts. Disconnect from Power Before Servicing.

Dryer must be installed in accordance with the **National Electric Code (NEC)** and any local or state codes.

Mount Model #PDC-R10 in cut-out of wall after construction of finished wall is complete. 4" depth from mounting brackets to rear of recessed box requires mounting on finished wall surface. Knock-outs for conduit are provided on the top and bottom right side of the recess box, 1.5" from the right side to the center of the knock-outs.

FOR THE UNIT TO FUNCTION PROPERLY INSTALLATION SHOULD BE COMPLETE AND THE COVER IN PLACE.

RECOMMENDED MOUNTING HEIGHTS
(check Code requirements in your area)
Distance from Floor to electronic eye in Drying Chamber :

Men's Washrooms.....46"(117 cm)
Women's Washrooms.....44"(112 cm)
Children's Washroom's (ages 4-7 yrs).....32"(81 cm)
Children's Washroom's (ages 7-10 yrs).....36"(91 cm)
Children's Washroom's (ages 10-13 yrs).....40"(102 cm)
Children's Washroom's (ages 13-17 yrs).....44"(112 cm)

WARRANTY

PINNACLE DRYER CORPORATION EXTENDS A **TEN (10) YEAR LIMITED WARRANTY** ON REPLACEMENT PARTS. This warranty applies only to the original purchaser and is effective from date of purchase. The printed circuit board shall have a warrantee for three (3) years from date of purchase. Liability other than replacement of defective parts will not be accepted by the company. This warranty does not include parts damaged due to electrical storms and other acts of nature. As "Pinnacle" hand dryers are designed to be repaired very easily without removal from the wall, shipping and factory labor costs are normally eliminated. In the event the purchaser prefers to return the hand dryer to the factory for repair, all parts under warranty will be repaired with purchaser paying a $30.00 service charge and all freight costs. This warranty is limited to replacement of defective parts only and does not apply to normal wear and tear, malicious damage, vandalism or improper installation. All defective parts must be returned prepaid to the factory along with hand dryer serial number.

MADE IN USA

330 FIELDS DRIVE - ABERDEEN, NC 28315 - TEL : 910.944.2117 or 800.943.7937 - FAX : 910.944.9430

PINNACLE DRYER www.pinnacledryer.com

Plumbing Fixtures

The fixtures listed herein have been approved by the Campus for use as Standards. The following preferred fixtures and equipment will be the basis of design. The approval of these items will provide for consistent design and ease of maintenance throughout the campus.

American Standard
Style That Works Better

MADERA™ FloWise® 15" HIGH 1.28 GPF FLUSHOMETER TOILET SYSTEM

less EVERCLEAN®
SELECTRONIC® EXPOSED AC FLUSH VALVE

MADERA™ FloWise® 15" HIGH 1.28 GPF FLUSHOMETER TOILET SYSTEM less EVERCLEAN®

❑ **2234.712** 1.28 gpf 15" High Top Spud Bowl and Selectronic® Exposed AC Flush Valve

BOWL:
- Floor mount elongated flushometer valve toilet
- Vitreous china
- High Efficiency, Low Consumption. Operates in the range of 1.1 gpf to 1.6 gpf (4.2 Lpf to 6.0 Lpf)
- 15" rim height
- Powerful direct-fed siphon jet action
- Fully glazed 2-1/8" trapway
- Condensation channel
- 10" or 12" roughing-in
- 10" x 12" water surface area
- 1-1/2" inlet spud
- 100% factory flush tested
- Less toilet seat
- Model 3043.001

SELECTRONIC® FLUSH VALVE:
- Electronic flush valve with Selectronic® proximity system for hygienic "Hands Free" operation
- Self-Cleaning Piston with integral wiper spring helps prevent clogging and reduces maintenance
- Piston operation delivers superior flush accuracy and repeatability
- Fully Mechanical Manual Override - allows valve to flush during a power failure
- Fail-Safe Operation - valve automatically closes, and does not need to be reset, on loss of power or water pressure
- Adjustable Sanitary Flush - valve automatically flushes after 24 hours of non-use to clean fixture & maintain trap seal
- Chemical resistant EPDM seals are unaffected by chloramines
- Sensor & electronic controls are fully enclosed and water resistant
- Range can be adjusted manually or with optional remote control
- Includes UL approved hardwired AC transformer
- Input Voltage: 100 - 250 VAC, 50 / 60 Hz. Output Voltage: 6 VDC
- Adjustable tailpiece for rough-in flexibility
- Can be installed left or right hand
- Model 6067.121.002

Includes:
- 047007-0070A Inlet Spud (furnished with bowl)
- 481310-100 2 Bolt caps with retainers (furnished with bowl)
- 1" I.P.S. angle stop with back-flow prevention and vandal-resistant cap
- 1" Sweat solder kit including cover tube and wall flange
- 1-1/2" vacuum breaker with spud coupling & flange

SEE REVERSE FOR ROUGHING-IN DIMENSIONS

High-Efficiency Toilet System
- 20% water savings when compared to 1.6 gpf toilet systems

System MaP Score:
- 1000 grams of miso @ 1.28 gpf

Operating Pressure:
Overall Range: 20-125 psi**
Recommended: 25 psi (flowing)-80 psi (static)
** Water pressure over 80 psi is not recommended for most plumbing fixtures.

Flow Requirement:
25gpm (94.6 L/min.)

Nominal Fixture Dimensions:
718 x 356 x 381mm (28-1/4" x 14" x 15")

To Be Specified:
❑ Color: ❑ White
❑ Seat:
- ❑ American Standard #5901.100 Heavy duty open front less cover
- ❑ American Standard #5905.100 Extra heavy duty open front less cover

WATER EFFICIENT PRODUCT

© 2012 AS America Inc.

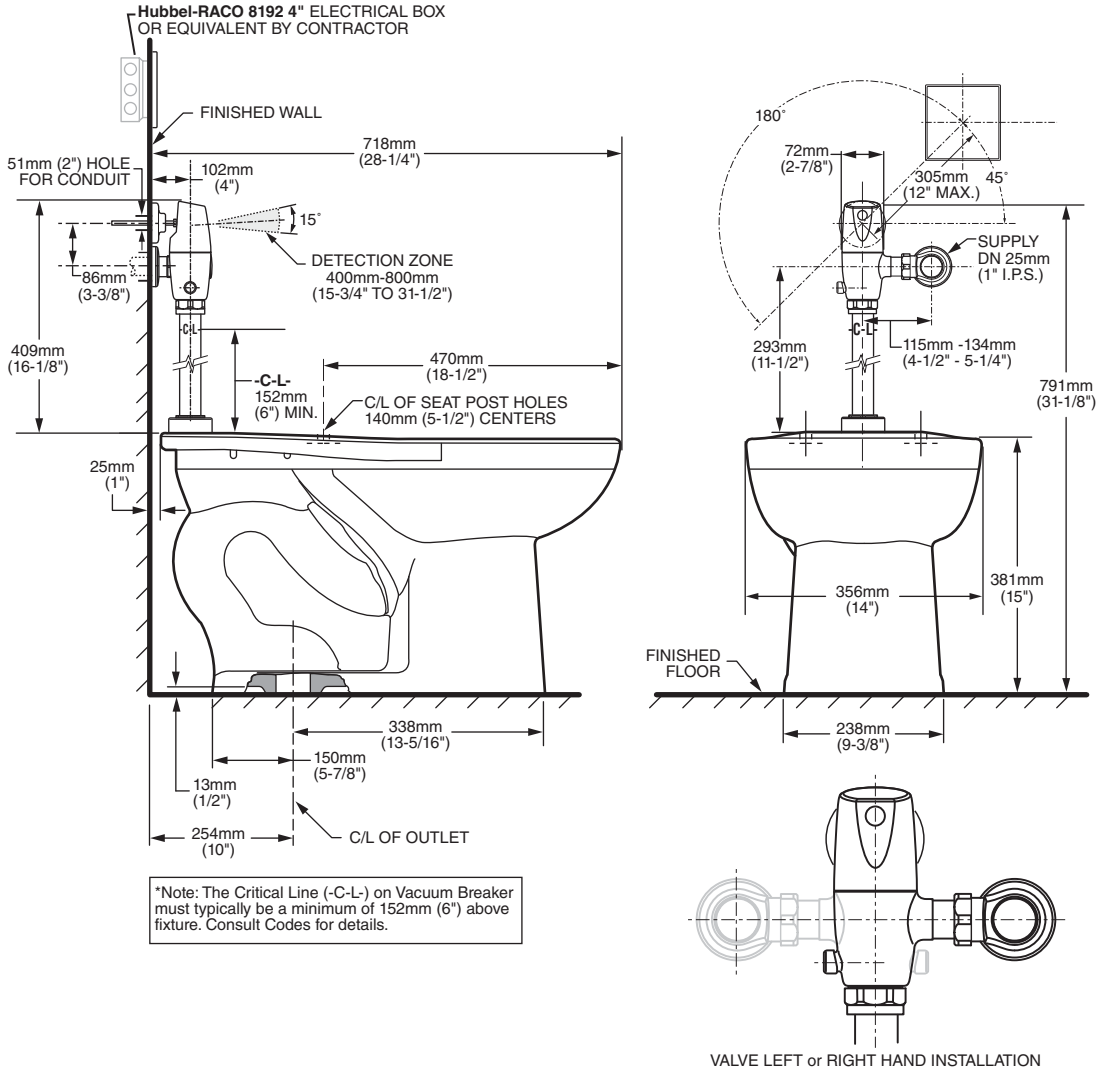
American Standard
Style That Works Better

MADERA™ FloWise® 15" HIGH 1.28 GPF FLUSHOMETER TOILET SYSTEM

less EVERCLEAN®
SELECTRONIC® EXPOSED AC FLUSH VALVE

Fixture Compliance Certifications -
Meets or Exceeds the Following Specifications:
- ASME A112.19.2-2008 / CSA B45.1-08 for Vitreous China Fixtures

Valve Listings:
- ASSE 1037
- ANSI/ASME A112.19.2
- ADA Compliant



*Note: The Critical Line (-C-L-) on Vacuum Breaker must typically be a minimum of 152mm (6") above fixture. Consult Codes for details.

VALVE LEFT or RIGHT HAND INSTALLATION

NOTES:
TO COMPLY WITH AREA CODE GOVERNING THE HEIGHT OF VACUUM BREAKER ON THE FLUSHOMETER VALVE, THE PLUMBER MUST VERIFY DIMENSIONS SHOWN FOR SUPPLY ROUGHING.
THIS TOILET DESIGNED TO ROUGH-IN AT A MINIMUM DIMENSION OF 254MM (10") AND A MAXIMUM DIMENSION OF 305MM (12") FROM FINISHED WALL TO C/L OF OUTLET.

FLUSHMETER VALVE REQUIREMENTS FOR 12" (305MM) ROUGH-IN:
SWEAT EXTENSION NIPPLE IS REQUIRED.
REFER TO VALVE MANUFACTURER AND LOCAL CODES

IMPORTANT: Dimensions of fixtures are nominal and may vary within the range of tolerances established by ANSI Standard A112.19.2. These measurements are subject to change or cancellation. No responsibility is assumed for use of superseded or voided pages.

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SLOAN®
OPTIMA SYSTEMS
Battery Powered Flushometers

SLOAN
Optima® SMOOTH®
Side-Mount-Operator-Over-The-Handle

Model
111-1.28

Description
Exposed, Battery Powered, Sensor Activated, Sloan® Optima® SMOOTH® Water Closet Flushometer for floor mounted or wall hung top spud bowls.

Flush Cycle
☐ Model 111-1.28 High Efficiency (1.28 gpf/4.8 Lpf)

Specifications
Quiet, Exposed, Diaphragm Type, Chrome Plated Closet Flushometer with the following features:

Flushometer
- High Chloramine Resistant PERMEX® Synthetic Rubber Diaphragm with Dual Filtered Bypass
- ADA Compliant Metal Oscillating Non-Hold-Open Handle with Triple Seal Handle Packing
- 1" I.P.S. Screwdriver Bak-Chek® Angle Stop
- Vandal Resistant Stop Cap
- Adjustable Tailpiece
- Vacuum Breaker with Flush Connection
- Spud Coupling and Spud Flange for 1½" Top Spud
- Sweat Solder Adapter with Cover Tube and Cast Wall Flange
- High Copper, Low Zinc Brass Castings for Dezincification Resistance
- Non-Hold-Open Handle and No External Volume Adjustment to Ensure Water Conservation
- Low Consumption flush accuracy
- Handle Packing, Stop Seat and Vacuum Breaker Molded from PERMEX® Rubber Compound for Chloramine Resistance

Optima SMOOTH Unit
- ADA Compliant OPTIMA® SMOOTH® Battery Powered Infrared Sensor for automatic "Hands-free" operation
- Sensor with Automatic Range Adjustment
- Chrome Plated Metal Sensor Housing
- Mechanical Manual Override Flush Handle
- Four (4) Size C Batteries included
- "Low Battery" Flashing LED
- "User in View" Flashing LED
- 25 to 80 psi Operating Range

Valve Body, Cover, Tailpiece and Control Stop shall be in conformance with ASTM Alloy Classification for Semi-Red Brass. Valve shall be in compliance to the applicable sections of ASSE 1037, ANSI/ASME A 12.19.2.

Variations
☐ TP Trap Primer
☐ YG Extended Bumper on Angle Stop (for seat with cover)

HET HIGH-EFFICIENCY TOILET

ADA Compliant

Automatic
Sloan SMOOTH® equipped Flushometers provide the ultimate in sanitary protection and automatic operation. There is no need for AC hookups or wall alterations. The Flushometer operates by means of a battery powered infrared sensor. Once the user enters the sensor's effective range and then steps away, the SMOOTH® Unit initiates the flushing cycle to flush the fixture. State-of-the-art Technology enables activation of a manual override without "double flushing" occurring as the user departs (locks out sensor for approximately 10 seconds).

Hygienic
The Sloan® Optima® SMOOTH® Flushometer is the next advancement in hygiene. It uses sensor technology to transform manual installations into electronic, hands-free operation. User makes no physical contact with the Flushometer surface except to initiate the Override Handle when required. Helps control the spread of infectious diseases.

Economical
Automatic operation provides water usage savings over other flushing devices. Reduces maintenance and operation costs. Installation and battery replacement does not require turning off water to the valve.

Warranty
3 year (limited)

Buy American Act Compliant

EPA GREEN POWER PARTNER
Sloan Valve Company is buying renewable energy certificates to meet 100% of the company's purchased electricity use at its Franklin Park, Illinois facility.

This space for Architect/Engineer approval

Job Name _____ Date _____

Model Specified _____ Quantity _____

Variations Specified _____

Customer/Wholesaler _____

Contractor _____

Architect _____

The information contained in this document is subject to change without notice.

Model

111-1.28

- **Description**
  Exposed, Battery Powered, Sensor Activated, Sloan® Optima® SMOOTH® Water Closet Flushometer for floor mounted or wall hung top spud bowls.
- **Flush Cycle**
  ☐ Model 111-1.28 High Efficiency (1.28 gpf/4.8 Lpf)

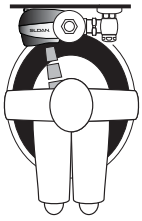
ELECTRICAL SPECIFICATIONS

- **Control Circuit**
  6 VDC Input
- **OPTIMA Sensor Type**
  Active Infrared with Automatic Adjustment
- **OPTIMA Sensor Range**
  Normal Range:
  26" - 32" (660 mm-813 mm)
  Reduced Range:
  20" - 26" (508 mm-660 mm)
- **Battery Type**
  (4) Size C Alkaline
- **Battery Life**
  2 Years @ 4,000 Flushes/Month
- **Indicator Lights**
  User in View/Low Battery
- **Operating Pressure**
  25-80 psi (172-552 kPa)

OPERATION

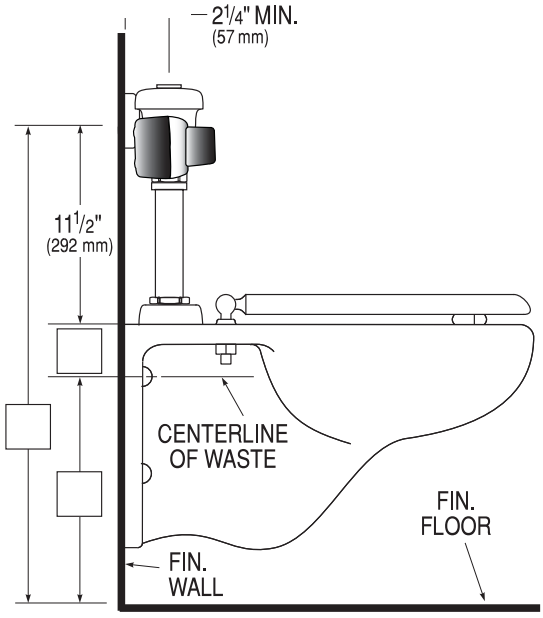
1. A continuous, invisible light beam is emitted from the SMOOTH unit's Infrared Sensor.

2. When the user enters the sensor's effective range, the Red LED light in the sensor window flashes for eight seconds. After eight seconds of sensing the user, the light will stop flashing and the unit waits for the user to step away before initiating a flush cycle.

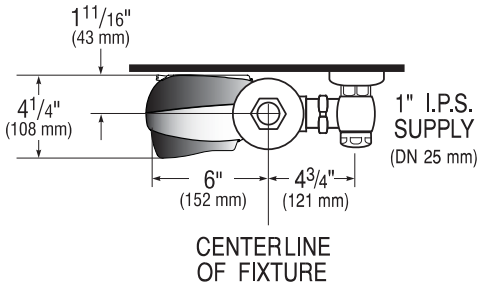


3. When the user steps away, the unit initiates a flush cycle. The unit then automatically resets and is ready for the next user.

DIMENSIONS



Side View



Top View

SLOAN • 10500 SEYMOUR AVENUE • FRANKLIN PARK, IL 60131
Phone: 1-800-9-VALVE-9 or 1-847-671-4300 • Fax: 1-800-447-8329 or 1-847-671-4380 • www.sloanvalve.com

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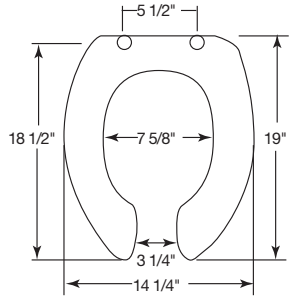
COMMERCIAL PLASTIC SEATS

MODEL 9500C

- **ELONGATED SEAT, OPEN FRONT LESS COVER**
- **SOLID PLASTIC**
- **CONCEALED CHECK STAINLESS STEEL HINGES**

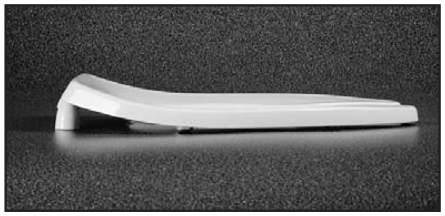


Ring thickness is 1"
Ring thickness including the bumper is 1-3/16"

Seats shall be No. _____ as manufactured by Church Seats. Seats shall be extra heavy weight and injection molded of solid plastic. Seats shall be open front less cover for elongated bowl and feature large molded-in bumpers. Concealed check hinges to feature 300 Series stainless steel posts that stop seat 11 degrees beyond vertical. Uses 300 Series stainless steel hardware. Color to be _____. (specify white or fixture manufacturer's color) Hinges shall be _____. (specify hinge type)

9500C Concealed check hinge stops seat 11° beyond vertical.
9500SSC Self-sustaining, concealed stainless steel check hinge holds seat in any raised position up to 11° beyond vertical.

**** ANSI Z124.5 section 5.1.2 Tests have shown that this product will support weights up to 500 pounds.** (Contact Church Seat Co., for test data)**



Church Seats, Sheboygan Falls, WI 53085
www.ChurchSeats.com

Phone: 920-467-2664 800-233-7328 Fax: 920-467-8573
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American Standard
Style That Works Better

UR-1

ALLBROOK™ FloWise® 0.5 HIGH EFFICIENCY URINAL
VITREOUS CHINA

BARRIER FREE

ALLBROOK® FloWise™ 0.5
HIGH EFFICIENCY URINAL

- Vitreous china
- High Efficiency (1.9 Lpf/0.5 gpf)
- Flushing rim
- Siphon jet flush action
- 3/4" inlet spud
- Outlet connection threaded 2" inside (NPTF)
- Wall hanger
- Fixture only
- Meets ANSI flush requirements at 0.5 GPF

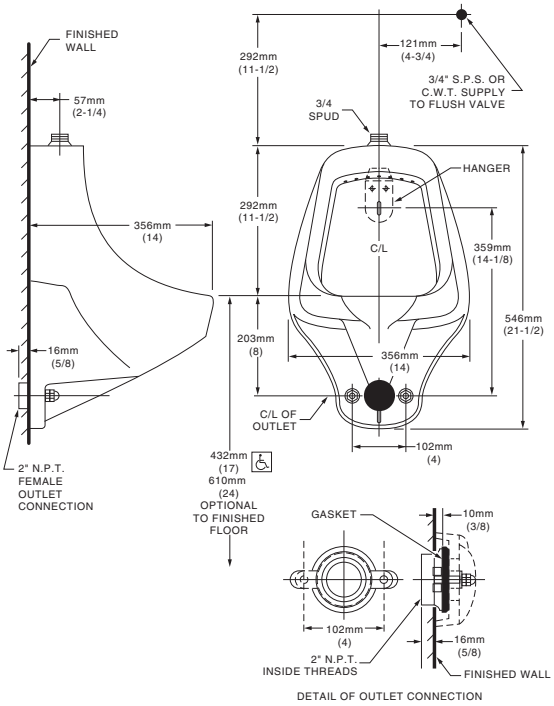
❏ **6550.005** Top spud

Nominal Dimensions:
356 x 356 x 546mm
(14" x 14" x 21-1/2")

Recommended working pressure – between
20 psi at valve when flushing and 80 psi static

Compliance Certifications -
Meets or Exceeds the Following Specifications:
• ASME A112.19.2 for Vitreous China Fixtures

To Be Specified:
❏ Color: ❏ White ❏ Bone ❏ Silver ❏ Linen
❏ Black
❏ Flush Valve:
❏ American Standard Selectronic™ #6063.051.002
DC Power (Top Spud)



DETAIL OF OUTLET CONNECTION

NOTES:
FLUSH VALVE NOT INCLUDED WITH FIXTURE AND MUST BE ORDERED SEPARATELY.
PROVIDE SUITABLE REINFORCEMENT FOR ALL WALL SUPPORTS.

IMPORTANT: Dimensions of fixtures are nominal and may vary within the range of tolerances established by ANSI Standard A112.19.2. These measurements are subject to change or cancellation. No responsibility is assumed for use of superseded or voided pages.

MEETS THE AMERICANS WITH DISABILITIES ACT GUIDELINES AND ANSI A117.1 ACCESSIBLE AND USEABLE BUILDINGS AND FACILITIES - CHECK LOCAL CODES.
● When installed so top of rim is 432mm (17") from finished floor.

M97

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Revised 11/08

SLOAN®
OPTIMA SYSTEMS
Battery Powered Flushometers

SLOAN
Optima® SMOOTH™
Side-Mount-Operator-Over-The-Handle

186

Description
Exposed, Battery Powered, Sensor Activated, Sloan® Optima® SMOOTH™ Urinal Flushometer for ¾" top spud urinals.

Flush Cycle
☐ Model 186 Water Saver (1.5 gpf/5.7 Lpf)
☐ Model 186-1.0 Low Consumption (1.0 gpf/3.8 Lpf)

Specifications
Quiet, Exposed, Diaphragm Type, Chrome Plated Urinal Flushometer with the following features:

Flushometer
- High Chloramine Resistant PERMEX™ Synthetic Rubber Diaphragm with Linear Filtered Bypass and Vortex Cleansing Action™
- ADA Compliant Metal Oscillating Non-Hold-Open Handle with Triple Seal Handle Packing
- ¾" I.P.S. Screwdriver Bak-Chek™ Angle Stop
- Vandal Resistant Stop Cap
- Adjustable Tailpiece
- Vacuum Breaker with Flush Connection
- Spud Coupling and Spud Flange for ¾" Top Spud
- Sweat Solder Adapter with Cover Tube and Cast Wall Flange
- High Copper, Low Zinc Brass Castings for Dezincification Resistance
- Non-Hold-Open Handle and No External Volume Adjustment to Ensure Water Conservation
- Low Consumption flush accuracy
- Handle Packing, Stop Seat and Vacuum Breaker Molded from PERMEX™ Rubber Compound for Chloramine Resistance

Optima SMOOTH Unit
- ADA Compliant OPTIMA® SMOOTH™ Battery Powered Infrared Sensor for automatic "Hands-free" operation
- Sensor with Automatic Range Adjustment
- Chrome Plated Metal Sensor Housing
- Mechanical Manual Override Flush Handle
- Four (4) Size C Batteries included
- "Low Battery" Flashing LED
- "User in View" Flashing LED
- 25 to 80 psi Operating Range

Valve Body, Cover, Tailpiece and Control Stop shall be in conformance with ASTM Alloy Classification for Semi-Red Brass. Valve shall be in compliance to the applicable sections of ASSE 1037.

Variations
☐ DFB Dual Filtered Fixed Bypass Diaphragm

ADA Compliant

Automatic
Sloan SMOOTH™ equipped Flushometers provide the ultimate in sanitary protection and automatic operation. There is no need for AC hookups or wall alterations. The Flushometer operates by means of a battery powered infrared sensor. Once the user enters the sensor's effective range and then steps away, the SMOOTH™ Unit initiates the flushing cycle to flush the fixture. State-of-the-art Technology enables activation of a manual override without "double flushing" occurring as the user departs (locks out sensor for approximately 10 seconds).

Hygienic
The Sloan® Optima® SMOOTH™ Flushometer is the next advancement in hygiene. It uses sensor technology to transform manual installations into electronic, hands-free operation. User makes no physical contact with the Flushometer surface except to initiate the Override Handle when required. Helps control the spread of infectious diseases.

Economical
Automatic operation provides water usage savings over other flushing devices. Reduces maintenance and operation costs. Installation and battery replacement does not require turning off water to the valve.

Warranty
3 year (limited)

This space for Architect/Engineer approval

Job Name _____ Date _____

Model Specified _____ Quantity _____

Variations Specified _____

Customer/Wholesaler _____

Contractor _____

Architect _____

The information contained in this document is subject to change without notice.

186

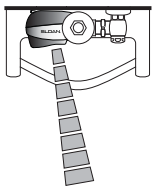
- **Description**
  Exposed, Battery Powered, Sensor Activated, Sloan® Optima® SMOOTH™ Urinal Flushometer for ¾" top spud urinals.
- **Flush Cycle**
  ☐ Model 186 Water Saver (1.5 gpf/5.7 Lpf)
  ☐ Model 186-1.0 Low Consumption (1.0 gpf/3.8 Lpf)

ELECTRICAL SPECIFICATIONS

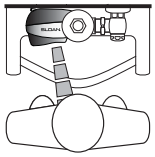
- **Control Circuit**
  6 VDC Input
- **OPTIMA Sensor Type**
  Active Infrared with Automatic Adjustment
- **OPTIMA Sensor Range**
  Normal Range:
  26" - 32" (660 mm-813 mm)
  Reduced Range:
  20" - 26" (508 mm-660 mm)
- **Battery Type**
  (4) Size C Alkaline
- **Battery Life**
  2 Years @ 4,000 Flushes/Month
- **Indicator Lights**
  User in View/Low Battery
- **Operating Pressure**
  25-80 psi (172-552 kPa)

OPERATION

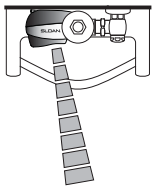
1. A continuous, invisible light beam is emitted from the SMOOTH unit's Infrared Sensor.



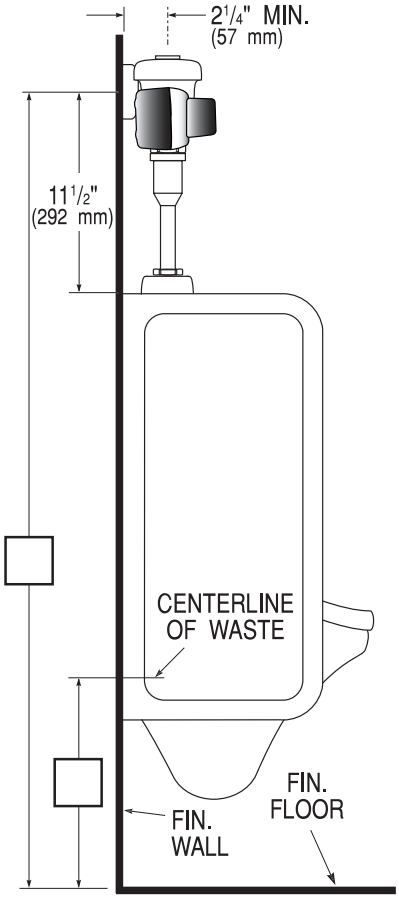
2. When the user enters the sensor's effective range, the Red LED light in the sensor window flashes for eight seconds. After eight seconds of sensing the user, the light will stop flashing and the unit waits for the user to step away before initiating a flush cycle.



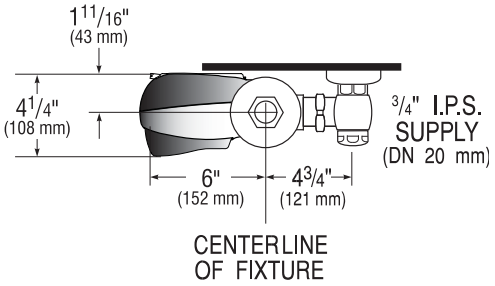
3. When the user steps away, the unit initiates a flush cycle. The unit then automatically resets and is ready for the next user.



DIMENSIONS



Side View



Top View

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Phone: 1-800-9-VALVE-9 or 1-847-671-4300 • Fax: 1-800-447-8329 or 1-847-671-4380 • www.sloanvalve.com

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MONTGOMERY, ALABAMA 36109-0237 (USA)
TEL: 334-277-8520 FAX: 334-272-7396 www.jrsmith.com
CUSTOMER DRIVEN
MEMBER OF:

LOCATION

LABOR SAVER URINAL SUPPORTS
FOR OFF-THE-FLOOR URINALS

WITH SUPPORTING AND BEARING STUDS FOR BL [redacted] URINALS

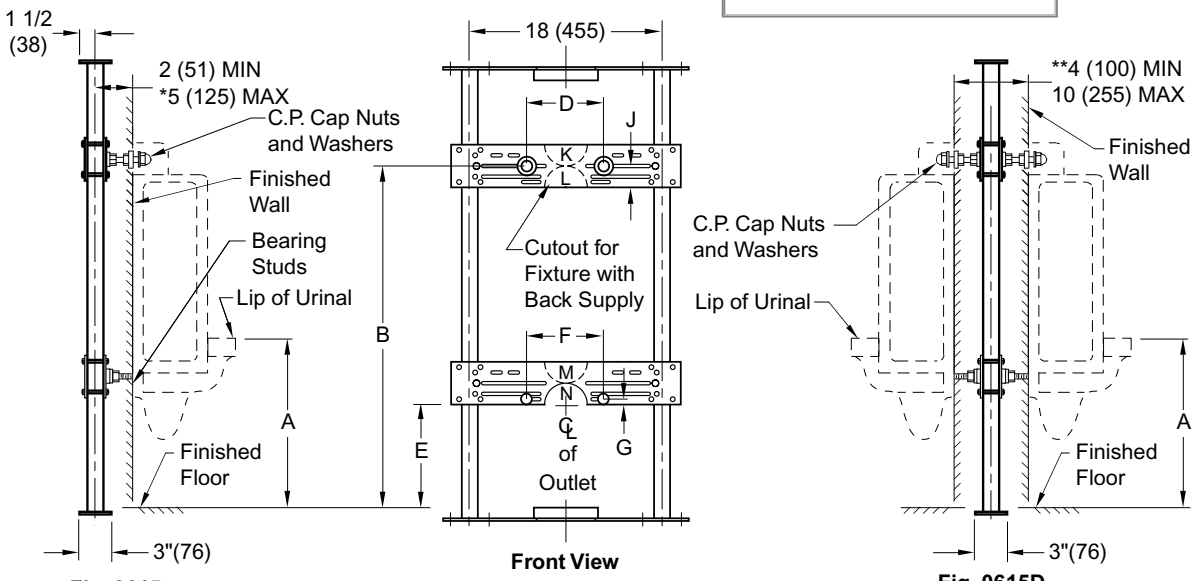
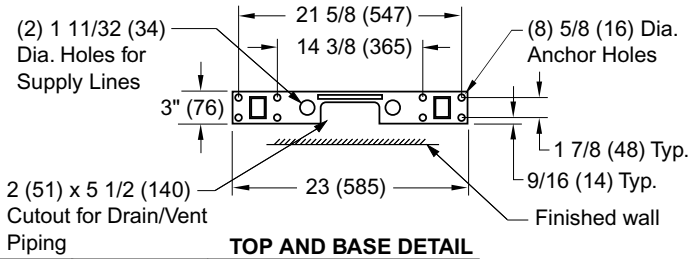


Fig. 0615 Side View

Front View

Fig. 0615D Side View



TOP AND BASE DETAIL

FIXTURE MFG.	NAME	NUMBER	SIZE	CUTOUT FOR INLET	CUTOUT FOR OUTLET

A	B	D	E	F	G	J	K	L	M	N

NOTE: The rough-in dimensions listed on this drawing are based on current information available to Jay R. Smith by the fixture manufacturers. We recommend that you verify these dimensions with the fixture manufacturer. We will not accept responsibility for rough-in dimension changes by the fixture manufacturer.

NOTE: *This dimension can be increased when fixture support is to be installed behind the wall (specify when required and wall thickness).**This dimension can be increased when required (specify wall thickness).

NOTE: Dimensions shown in parentheses are in millimeters.

REV.	DATE	DESCRIPTION	BY	CKD. BY
D	5-9-03	Removed C in Table	RN	AM
C	11/06/02	Changed per George Flegel	JJ	AM
B	7-10-02	Changed "E" & Chart Size	RN	AM
A	12/19/01	Changed Hole Size in Base	JJ	AM

WEIGHT POUNDS | VOLUME CUBIC FEET | FIGURE NUMBER 0615

FIGURE NUMBER 0615 | DRAWING NUMBER S0615 | SIZE A | SCALE: NONE | DATE: 03/27/01 | APPROVED BY: AM | CHECKED BY: CR | DRAWN BY: JJ | D

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DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCE AND CHANGE WITHOUT NOTICE

American Standard

BARRIER FREE

L-1

LUCERNE™ WALL-HUNG LAVATORY

VITREOUS CHINA

LUCERNE™ WALL-HUNG LAVATORY

- Vitreous china
- Front overflow
- D-shaped bowl
- Self-draining deck area with contoured back and side splash shields
- Faucet ledge

Faucet holes on 203mm (8") centers (Illus.):

❑ **0356.028** For exposed bracket support
Shown with 4801.862 Amarilis Heritage faucet with Triune Cross handles (not included)

❑ **0356.015** For wall hanger (included) or concealed arms support

❑ **0356.037** For wall hanger (included) or concealed arms support
• Extra right-hand hole

❑ **0356.073** For wall hanger (included) or concealed arms support
• Extra left-hand hole

Faucet holes on 102mm (4") centers:

❑ **0355.027** For exposed bracket support

❑ **0355.012** For wall hanger (included) or concealed arms support

❑ **0355.034** For wall hanger (included) or concealed arms support
• Extra right-hand hole

❑ **0355.056** For wall hanger (included) or concealed arms support
• Extra left-hand hole

Single center faucet hole (Illus.):

❑ **0356.041** for exposed bracket support
Shown with 1340.000 metering faucet (not included)

❑ **0356.421** for wall hanger (included) or concealed arms support

❑ **0356.137** For wall hanger (included) or concealed arms support
• Extra right-hand hole

❑ **0356.115** For wall hanger (included) or concealed arms support
• Extra left-hand hole

Nominal Dimensions:
521 x 464mm (20-1/2" x 18-1/4")

Bowl sizes:
381mm (15") wide, 254mm (10") front to back,
165mm (6-1/2") deep

Compliance Certifications -
Meets or Exceeds the Following Specifications:
• ASME A112.19.2 for Vitreous China Fixtures

Top of front rim mounted 864mm (34") from finished floor. **MEETS THE AMERICAN DISABILITIES ACT GUIDELINES AND ANSI A117.1 ACCESSIBLE AND USEABLE BUILDINGS AND FACILITIES - CHECK LOCAL CODES.**

NOTE: Roughing-in information shown on reverse side of page

0356.028

0356.041

To Be Specified

❑ Color: ❑ White ❑ Bone ❑ Silver ❑ Black ❑ Shell

❑ Faucet*: ❑ Faucet Finish:

❑ Supplies: ❑ 1-1/4" Trap:

❑ Nipple:

❑ Bracket Support (by others):

❑ Concealed Arms Support (by others):

* See faucet section for additional models available

CI-45

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Revised 9/04

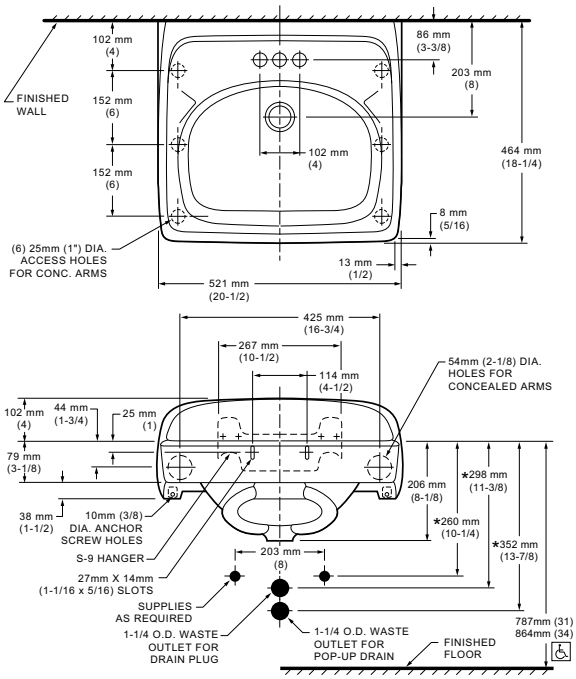
American Standard

LUCERNE™ WALL-HUNG LAVATORY

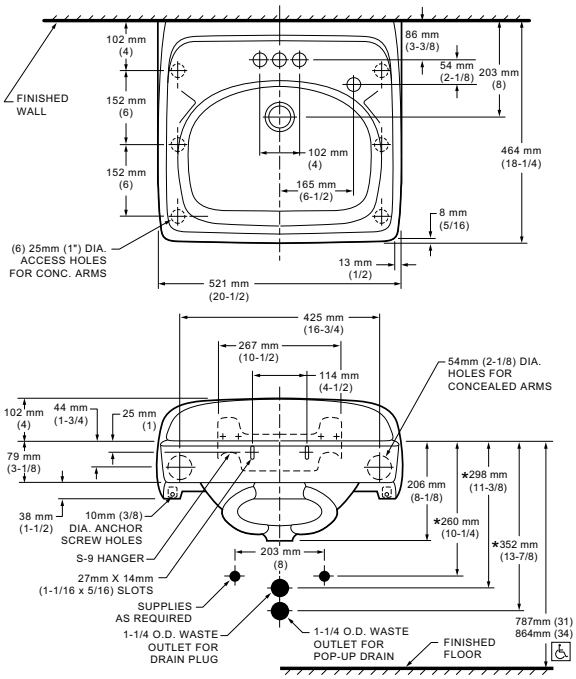
VITREOUS CHINA

BARRIER FREE

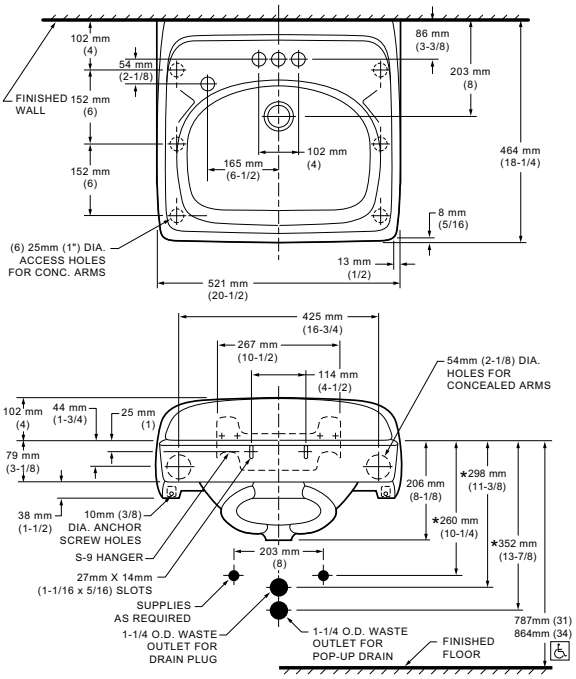
0355.012 4" CTRS FOR WALL HANGER OR CONCEALED ARMS



0355.034 4" CTRS FOR WALL HANGER OR CONCEALED ARMS EXRA RIGHT HAND HOLE



0355.056 4" CTRS FOR WALL HANGER OR CONCEALED ARMS EXRA LEFT HAND HOLE



NOTES:

* DIMENSIONS SHOWN FOR LOCATION OF SUPPLIES AND "P" TRAP ARE SUGGESTED.

LAVATORY DESIGNED TO MEET ADA HANDICAPPED GUIDELINES WITH MOUNTING HEIGHT SET AT 864MM (34") ABOVE FINISHED FLOOR.

PROVIDE SUITABLE REINFORCEMENT FOR ALL WALL SUPPORTS.

FITTINGS NOT INCLUDED AND MUST BE ORDERED SEPARATELY.

CONCEALED ARM SUPPORT AS REQUIRED TO BE FURNISHED BY OTHERS.

IMPORTANT: Dimensions of fixtures are nominal and may vary within the range of tolerances established by ANSI Standard A112.19.2.

These measurements are subject to change or cancellation. No responsibility is assumed for use of superseded or voided pages.

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MVP FACETS

802-665CP

Manual and Metering Faucets

Product Type

Deck Mounted 4" Fixed Centers Hot and Cold Water Metering Sink Faucet

Features & Specifications

- 4" Fixed Centers
- 2.2 GPM (8.3 L/min) Aerator
- 1 3/4" Vandal Proof MVP Metering Push Handle
- MVP Metering Adjustable Cycle Time Closure Cartridge
- 1/2" NPSM Supply Inlets and Coupling Nut for 3/8" or 1/2" Flexible Riser
- 4" Center to Center Integral Cast Brass Spout
- CFNow! Item Ships in 5 Days

Performance Specification

- Rated Operating Pressure: 20-125 PSI
- Rated Operating Temperature: 40-140ºF

Warranty

- Lifetime Limited Faucet Warranty
- 5-Year Limited Cartridge Warranty
- 1-Year Limited Finish Warranty

Codes & Standards

- ASME A112.18.1/CSA B125.1
- Certified to NSF/ANSI 61, Section 9 by CSA
- ADA ANSI/ICC A117.1

Job Name _____

Item Number _____

Section/Tag _____

Model Specified _____

Architect _____

Engineer _____

Contractor _____

[ ] Submitted as Shown [ ] Submitted with Variations

Date _____

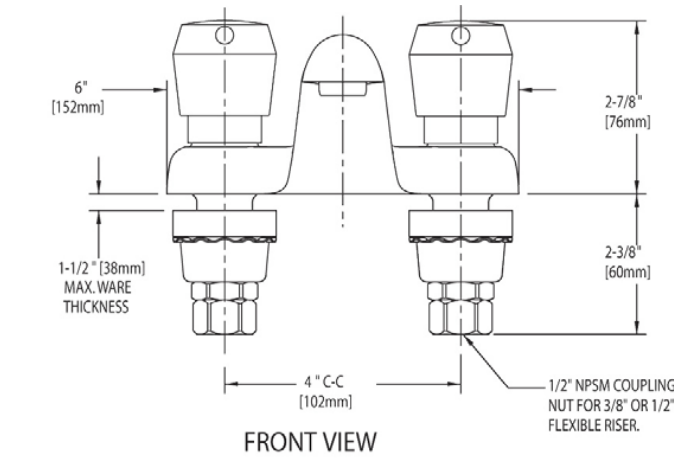
2100 South Clearwater Drive
Des Plaines, IL
P: 847/803-5000
F: 847/803-5454
Technical: 800/TEC-TRUE
www.chicagofaucets.com

802-665CP

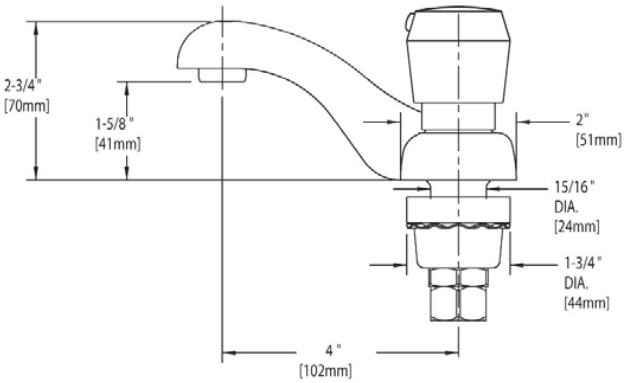
Manual and Metering Faucets

Architect/Engineer Specification

Chicago Faucets No. 802-665CP, Deck Mounted 4" Fixed Centers Hot and Cold Water Metering Sink Faucet, Chrome Plated solid brass construction. 4" Center to Center Integral Cast Brass Spout. 2.2 GPM (8.3 L/min) Pressure Compensating Softflo Aerator. 1 3/4" Metal Vandal Proof MVP Metering Push handle(s) with Blue and Red Buttons. MVP™ self-closing, auto-timed metering cartridge, adjustable run time from 2 to 15 seconds, opens with push, 0.25 gallon/cycle. 1/2" NPSM Supply Inlets and Coupling Nut for 3/8" or 1/2" Flexible Riser. Secondary Control Valve: 4" Center to Center Integral Cast Brass Spout. This product meets ADA ANSI/ICC A117.1 requirements and is tested and certified to industry standards: ASME A112.18.1/CSA B125.1, and Certified to NSF/ANSI 61, Section 9 by CSA.



FRONT VIEW



SIDE VIEW

Operation and Maintenance

Installation should be in accordance with local plumbing codes. Flush all pipes thoroughly before installation. After installation, remove spout outlet or flow control and flush faucet thoroughly to clear any debris. Care should be taken when cleaning the product. Do not use abrasive cleaners, chemicals or solvents as they can result in surface damage. Use mild soap and warm water for cleaning and protecting the life of Chicago Faucet products. For specific operation and maintenance refer to the installation instructions and repair parts documents that are located at www.chicagofaucets.com.

Chicago Faucets, member of the Geberit Group, is the leading brand of commercial faucets and fittings in the United States, offering a complete range of products for schools, laboratories, hospitals, office buildings, food service, airports and sport facilities. Call 1.800.TECTRUE or 1.847.803.5000 Option 1 for installation or other technical assistance.

2100 South Clearwater Drive
Des Plaines, IL
P: 847/803-5000
F: 847/803-5454
Technical: 800/TEC-TRUE
www.chicagofaucets.com

H | DRAWING NUMBER S0700 | SIZE A | SCALE: NONE | DATE: 2-20-85 | APPROVED BY: SJM | CHECKED BY: SJM | DRAWN BY: CR | 0700 | FIGURE NUMBER

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LOCATION

LAVATORY SUPPORTS
WITH CONCEALED ARMS
FLOOR MOUNTED WITH "PRO-

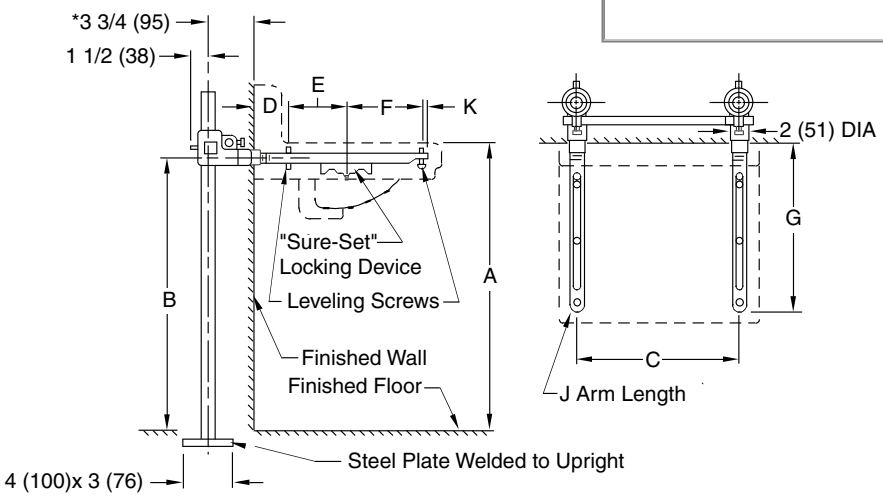
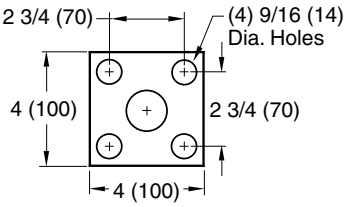


Fig. 0700 . . . FOR HIGH BACK LAVATORIES (shown)

NOTE: The rough-in dimensions listed on this drawing are based on current information available to Jay R. Smith by the fixture manufacturers. We recommend that you verify these dimensions with the fixture manufacturer. We will not accept responsibility for rough-in dimension changes by the fixture manufacturer.

NOTE: Dimensions shown in parentheses are in millimeters.



BASE DETAIL

ROUGHING-IN TABLE

FIXTURE MFG.	NAME	NUMBER	SIZE	A	B	C	D	E	F	G	J	K
AM. STD.	LUCERNE	0355.012	20 (510) x 18 (455)	31 (785)	29 1/4 (745)	16 3/4 (425)	4 (100)	6 (150)	6 (150)	16 1/2 (420)	19 (485)	1/2 (13)
AM. STD.	LUCERNE	0356.015	20 (510) x 18 (455)	31 (785)	29 1/4 (745)	16 3/4 (425)	4 (100)	6 (150)	6 (150)	16 1/2 (420)	19 (485)	1/2 (13)
AM. STD.	LUCERNE	0356.421	20 (510) x 18 (455)	31 (785)	29 1/4 (745)	16 3/4 (425)	4 (100)	6 (150)	6 (150)	16 1/2 (420)	19 (485)	1/2 (13)
AM. STD.	LUCERNE	0356.439	20 (510) x 18 (455)	31 (785)	29 1/4 (745)	16 3/4 (425)	4 (100)	6 (150)	6 (150)	16 1/2 (420)	19 (485)	1/2 (13)
AM. STD.	MURRO	0954.000	22 (560) x 21 (535)	34 (865)	32 3/8 (823)	16 3/4 (425)	4 (100)	6 (150)	4 (100)	14 1/2 (370)	17M (430)	1/2 (13)
AM. STD.	MURRO	0955.000	22 (560) x 21 (535)	34 (865)	32 3/8 (823)	16 3/4 (425)	4 (100)	6 (150)	4 (100)	14 1/2 (370)	17M (430)	1/2 (13)
AM. STD.	MURRO	0958.000	22 (560) x 21 (535)	34 (865)	32 3/8 (823)	16 3/4 (425)	4 (100)	6 (150)	4 (100)	14 1/2 (370)	17M (430)	1/2 (13)
CRANE	HARWICH	1-412	20 (510) x 18 (455)	31 (785)	29 1/4 (745)	16 1/4 (415)	4 (100)	5 5/8 (143)	4 3/8 (111)	16 1/2 (420)	18 (455)	2 1/2 (64)
ELJER	DELWYN	051-1634, 1838	18 (455) x 15 (380)	31 (785)	29 1/4 (745)	15 1/2 (395)	3 (76)	5 (125)	4 3/4 (120)	13 1/2 (345)	17M (430)	3/4 (19)
ELJER	SIGNATURE	051-2101, 4, 8	20 (510) x 18 (455)	34 (865)	32 (815)	17 (430)	4 (100)	5 5/8 (143)	5 5/8 (143)	15 3/4 (400)	18 (455)	1/2 (13)
KOHLER	GREENWICH	K-2030, 1, 2, 4, 6	20 (510) x 18 (455)	31 (785)	29 (735)	17 1/4 (440)	3 1/4 (83)	5 1/4 (135)	5 1/4 (135)	14 1/4 (360)	16 (405)	1/2 (13)
KOHLER	SOHO	K-2053, 4	20 (510) x 18 (455)	31 (785)	29 1/4 (745)	16 1/2 (420)	3 1/4 (83)	5 1/4 (135)	5 1/4 (135)	14 1/4 (360)	17M (430)	1/2 (13)
U. RUNDLE	NEW CAMDEN	4648, 9	20 (510) x 18 (455)	31 (785)	29 3/8 (746)	16 1/4 (415)	4 1/2 (115)	2 1/2 (64)	4 (345)	13 1/2 (345)	16 (405)	2 1/2 (64)

NOTE: *This dimension can be increased when fixture support is to be installed behind the wall. (Specify when required and wall thickness).

REV.	DATE	DESCRIPTION	BY	CKD. BY
H	11/23/05	Revised Roughing-in Table	JJ	CL
G	03/19/04	Revised Roughing-in Table	JJ	CL

WEIGHT POUNDS | VOLUME CUBIC FEET | FIGURE NUMBER 0700

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TEL: 334-277-8520 FAX: 334-272-7396 www.jrsmith.com
CUSTOMER DRIVEN
MEMBER OF:

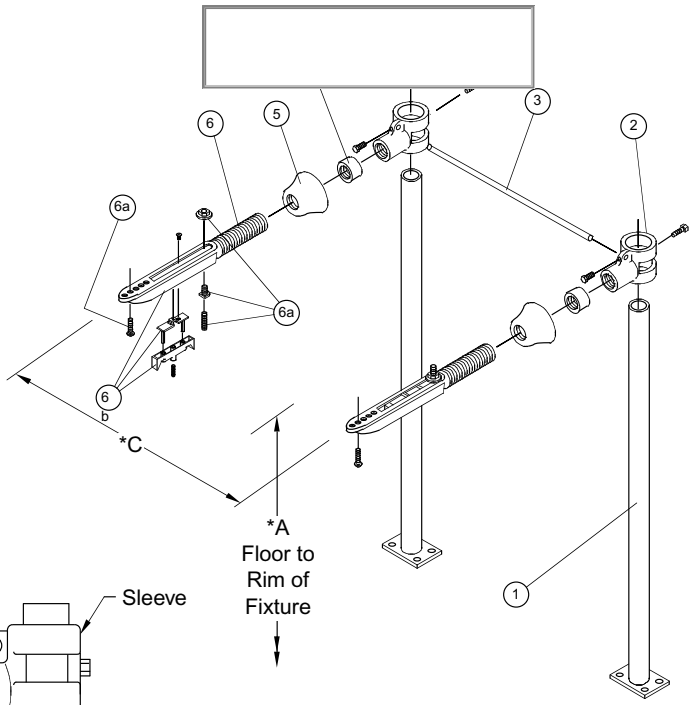
LOCATION

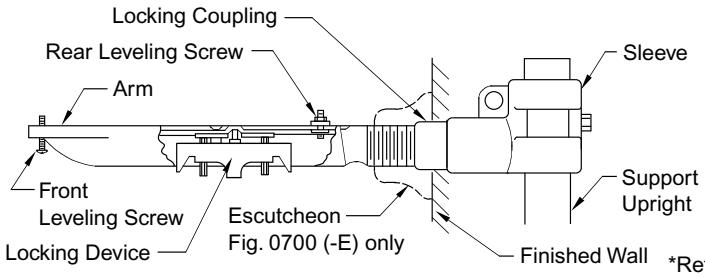
INSTALLATION INSTRUCTIONS FOR CONCEALED ARM CARRIERS

BEFORE starting rough-in be certain you:
a) know correct fixture number and name
b) have a copy of Smith submittal (rough-in) drawing with dimensions for fixture to be used.

NOTE: The rough-in dimensions listed on this drawing are based on current information available to Jay R. Smith by the fixture manufacturers. We recommend that you verify these dimensions with the fixture manufacturer. We will not accept responsibility for rough-in dimension changes by the fixture manufacturer.

PART	QTY	DESCRIPTION
1	2	Upright (w/welded base)
2	2	Sleeve Assembly
3	1	Alighnment Bar
4	2	Locking Coupling
5	2	Escutcheon Fig. 0700 (-E)
6	2	Arm Assembly
6a	2	Rear Leveling Screw Assy
6b	2	Locking Device
6c	2	Front Leveling Screw





*Refer to Smith submittal drawing for these dimensions.

INSTALLATION INSTRUCTIONS FOR CONCEALED ARM CARRIERS

1. Uprights (Part #1) must be spaced according to the "C" dimension (shown on the submittal drawing). Uprights should not be bolted rigidly to the floor at this time.
2. Position sleeves (Part #2) by using the "B" dimension (shown on the submittal drawing). Secure to uprights with 5/16 (8)-18 hex head bolts (furnished) on the back of the sleeve.
3. Slide alignment bar (Part #3) into the sleeves. Recheck the "C" dimension at the center of the uprights. Secure the alignment bar with 5/16 (8) hex head bolts (furnished). Uprights should now be bolted securely to the floor. Uprights must be plumb: if necessary, shim to compensate for uneven floors.
4. Thread escutcheon (Part #5), Fig. 0700 (-E) only onto arm (Part #6). Thread locking coupling (Part #4) onto arm. Thread arms into sleeves (Part #2) to dimension "G" (shown on the submittal drawing). Lock arms in place by tightening locking coupling (Part #4). Recheck "C" dimension at the end of the arms.
5. Rear leveling screw assemblies (Part #6a) must be set according to the "D" dimension (shown on the submittal drawing). Position the locking devices (Part #6b) to the "E" dimension (shown on the submittal drawing). Install the front leveling screws (Part #6b) to the "E" dimension (shown on the submittal drawing).
6. Level lavatory with leveling screws as required and secure in place with locking device.

REV.	DATE	DESCRIPTION	BY	CKD. BY
D	2/16/01	Revisied Submittal	RN	BS
C	01/11/00	Revised Base Plate	JJ	BS
B	6-7-95	Added Millimeters	EMB	BS
A	9-27-94	Submittal Update	EMB	BS

WEIGHT POUNDS | VOLUME CUBIC FEET

FIGURE NUMBER **0700, 0700 (-E)** INSTALLATION INSTRUCTIONS

DRAWN BY: VGD | CHECKED BY: CR | APPROVED BY: KG | DATE: 8-8-85 | SCALE: NONE | SIZE A | DRAWING NUMBER S0700 INS | D

DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCE AND CHANGE WITHOUT NOTICE
WE CAN ASSUME NO RESPONSIBILITY FOR USE OF SUPERSEDED OR VOID DATA

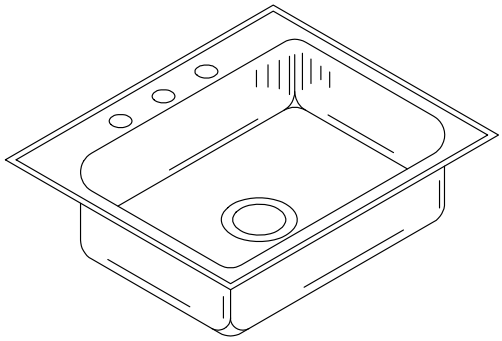
S-1

STAINLESS STEEL SINKS

J. STYLIST GROUP

SL-ADA - SERIES - A - 18 GA.

GENEROUS CAPACITY - LEDGE TYPE
SINGLE COMPARTMENT



SUBMITTAL DATA

ADA COMPLIANT

SPECIFICATION

Seamless die-drawn construction of type 304, 18-8 stainless steel. Interior and top surfaces polished to a non-porous Hand-Blended Just Finish with highlighted bowl rim. Fully coated underside insulates for sound, and reduces condensation. Straight-sided compartment with 1 3/4" radius corners provides greater capacity. Self-rimming top mount Grip-Rim Plus with 300 series stainless steel mounting channels. Conforms to ASME/ANSI A112.19.3M.Drain punch #35 centered for Just J-35 unless otherwise specified.

To be specified :

■ Faucet hole punching:

❑ (1) Hole Centered ❑ (2) Holes on 4" centers

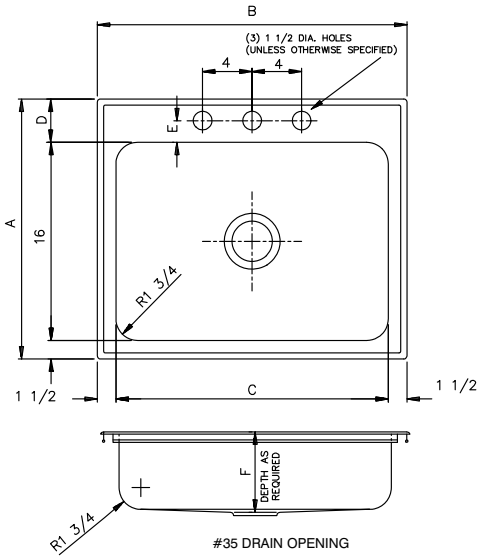
❑ (3) Holes on 4" centers(illustrated) ❑ (4) Holes

❑ Alternate Punching:
Faucet Model: _____
Punching required: _____

DRAIN LOCATION MUST BE SPECIFIED(Circle one):

❑ CENTER (SHOWN)
❑ LEFT REAR
❑ RIGHT REAR
❑ CENTER REAR

LOCATIONS MUST BE A MINIMUM OF 4 1/2"FROM THE BOWL WALL.



MODEL NO.	A	B	C	D	E	F	CUTOUT*
SL-ADA-2125-A-GR	21	25	22	3-1/2	1-3/4	4-1/2 to 6-1/2	20-1/4 x 24-1/4
SL-ADA-2131-A-GR	21	31	28	3-1/2	1-3/4	4-1/2 to 6-1/2	20-1/4 x 30-1/4
SL-ADA-2133-A-GR **	21	33	28	3-1/2	1-3/4	4-1/2 to 6-1/2	20-1/4 x 32-1/4
SL-ADA-2219-A-GR	22	19	16	4-1/2	2	4-1/2 to 6-1/2	21-1/4 x 18-1/4
SL-ADA-2222-A-GR	22	22	19	4-1/2	2	4-1/2 to 6-1/2	21-1/4 x 21-1/4
SL-ADA-2225-A-GR	22	25	22	4-1/2	2	4-1/2 to 6-1/2	21-1/4 x 24-1/4
SL-ADA-2231-A-GR	22	31	28	4-1/2	2	4-1/2 to 6-1/2	21-1/4 x 30-1/4
SL-ADA-2233-A-GR **	22	33	28	4-1/2	2	4-1/2 to 6-1/2	21-1/4 x 32-1/4

* Cutout dimensions shown (Front-to-Back) x (Left-to-Right) - Corners of cutout may be square or up to 1/2" radius.
** 2-1/2" side flanges

JUST MFG. COMPANY CONTINUES TO MAKE QUALITY AND FUNCTIONALITY A MARK OF THE JUST PRODUCT LINE. TO DO SO REQUIRES THAT WE RESERVE THE RIGHT TO CHANGE PRODUCT INFORMATION WITHOUT NOTICE. FOR THE MOST CURRENT AND ACCURATE INFORMATION REGARDING THE COMPLETE LINE OF **JUST** SINKS, FAUCETS AND DRAINS, CLICK ON THE ***SPEC LINE DRAWINGS*** LINK ON OUR WEB SITE AT ***www.justmfg.com***

Job Name _____

Customer _____

Architect/Engineer _____

APPROVED FOR MANUFACTURING

MODEL NO. _____ QTY. _____

COMPANY _____

TITLE _____ DATE _____

SIGNATURE _____

REVISED-5/2004

JUST MANUFACTURING COMPANY
9233 KING STREET . FRANKLIN PARK . ILLINOIS . 60131-2111
PH: 847-678-5150 . FAX: 847-678-6817
E-MAIL: custserv@justmfg.com . www.justmfg.com

3-20

MANUAL

ECAST™

CHICAGO FAUCETS®
a Geberit company

895-317XKABCP

Deck Mounted Faucet - 4" Centers

Product Type

Deck Mounted Gooseneck Faucet - 4" Centers

Features & Specifications

- Polished chrome plated finish
- ECAST design provides durable brass construction with total lead content less than 0.25% by weighted average
- 3 1/2" C-C Rigid/Swing field convertible gooseneck spout, catalog #GN1A
- 2.2 GPM (8.3 L/min) pressure compensating aerator outlet, catalog #E3
- 4" Wristblade metal handles with eight point tapered broach and secured color coded index buttons, catalog #317
- Quarter-turn ceramic disc cartridge with tapered square broach to facilitate handle removal, catalog #1-100XK and #1-099XK
- 1/2" NPSM supply inlets with coupling nuts for 3/8" or 1/2" flexible risers
- Mounting hardware included

Performance Specification

- Rated Operating Pressure: 20-125 PSI
- Rated Operating Temperature: 40-140° F

Warranty

- Lifetime Limited Faucet Warranty
- 5-Year Limited Cartridge Warranty
- 1-Year Limited Finish Warranty

Compliant To

- California Lead Plumbing Law (AB1953)
- NSF 61, Sec. 9
- ASME A112.18.1
- CSA B125
- ADA

Job Name _____

Item Number _____

Section/Tag _____

Model Specified _____

Architect _____

Engineer _____

Contractor _____

❑ Submitted as Shown ❑ Submitted with Variations

Date _____

U.S. GREEN BUILDING COUNCIL MEMBER

2100 South Clearwater Drive
Des Plaines, IL 60018
P: 847/803-5000
F: 847/803-5454
Technical: 800/TEC-TRUE
www.chicagofaucets.com

10/08

ECAST™

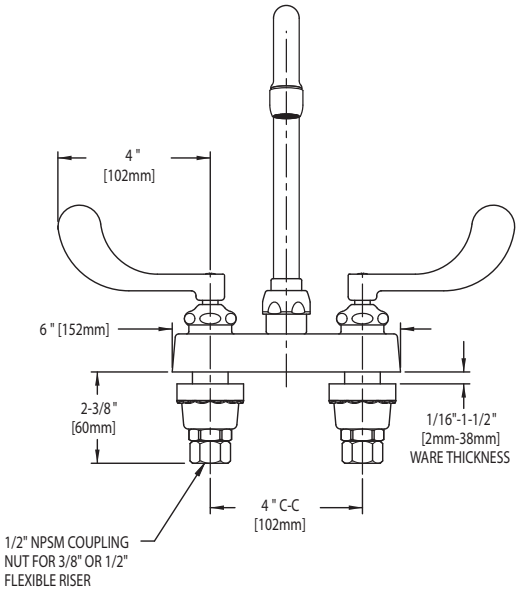
CHICAGO FAUCETS
a Geberit company

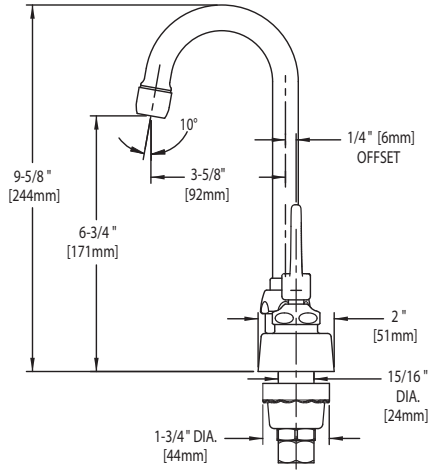
895-317XKABCP

Deck Mounted 4" Centerset Faucet

Architect/Engineer Specification

Chicago Faucets No. 895-317XKABCP, Polished chrome plated solid brass body and spout. ECAST™ construction with less than 0.25% lead content by weighted average. 3 1/2" C-C rigid/swing field convertible gooseneck spout. 2.2 GPM pressure compensating aerator outlet. 4" Wristblade handles with eight point tapered broach and secured color coded index buttons. Quarter-turn ceramic disc cartridge with square tapered broach feature to help facilitate handle removal. 1/2" NPSM inlets and coupling nuts for 3/8" or 1/2" flexible risers. Mounting hardware included. This product meets ADA requirements and is tested and certified to industry standards: ASME A112.18.1, NSF 61, Sec. 9, CSA B125 and California Lead Plumbing Law (AB1953).





Operation and Maintenance

Installation should be in accordance with local plumbing codes. Flush all pipes thoroughly before installation. After installation, remove spout outlet or flow control and flush faucet thoroughly to clear any debris. Care should be taken when cleaning this product. Do not use abrasive cleaners, chemicals or solvents as they can result in surface damage. Use mild soap and warm water for cleaning and protecting the life of Chicago Faucet products. For specific operation and maintenance refer to the installation instructions and repair parts documents that are located at www.chicagofaucets.com.

ECAST,™ from Chicago Faucets, is the line of durable, high quality brass faucets and fixtures that are designed and manufactured with less than one quarter of one percent (0.25%) total lead content by weighted average. These products are intended for installation where state laws and local codes mandate lead content levels or in any location where lead content is a concern.

2100 South Clearwater Drive
Des Plaines, IL 60018
P: 847/803-5000
F: 847/803-5454
Technical: 800/TEC-TRUE
www.chicagofaucets.com

10/08 Product specifications subject to change without notice.

PROJECT: _____ **ITEM NO.:** GD-1

LIGHT COMMERCIAL MODEL LC-50

APPLICATION:

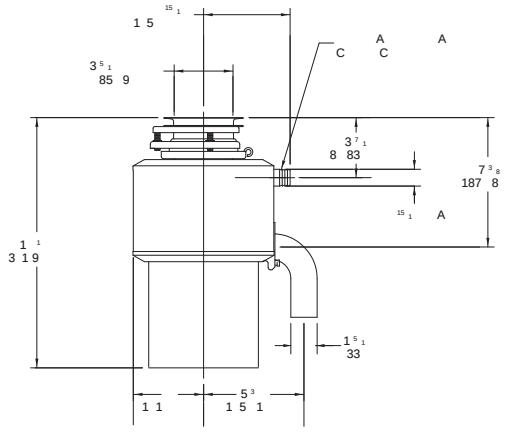
Designed for light commercial food waste elimination in:

- Convenience/grocery store deli's
- Fast food restaurants
- Church/office kitchens
- Bed and breakfast inns

PRODUCT FEATURES & SPECIFICATIONS:

- Commercial design with the ease and flexibility of a household unit.
- Disposer mounting included with unit. Mounting fits standard 3 1/2" - 4" sink opening. No welding required.
- Standard wall switch operates the disposer.
- Automatic reversing motor for longer life and trouble-free operation.
- Stainless steel grind chamber.
- Cast nickel chrome cutting element.
- 1-year full warranty from date of installation.
- 35 lb. shipping weight.

Dimensions



NOTE: Plumb 1 1/2" waste line to prevent standing water in disposer motor housing.

ELECTRICAL SPECIFICATIONS:

- Continuous-duty commercial motor
- 1725 RPM
- 120V
- 5.8 Amps
- 60 Hz
- Single Phase

IMPORTANT: *The model LC-50 is designed specifically for* ***light*** *commercial use. Use of this disposer in applications other than those named above may void your warranty. If you are unsure of a potential application, call the factory at 1-800-558-5712.*

4700 21st STREET
RACINE, WI 53406-5093
TEL: 800-558-5712 x8025, 8030, 8083
FAX: 262 554-3620
www.insinkerator.com

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In-Sink-Erator is a division of Emerson Electric Co.

© IN-SINK-ERATOR Printed in USA Form No. C198-03H-02

S-2

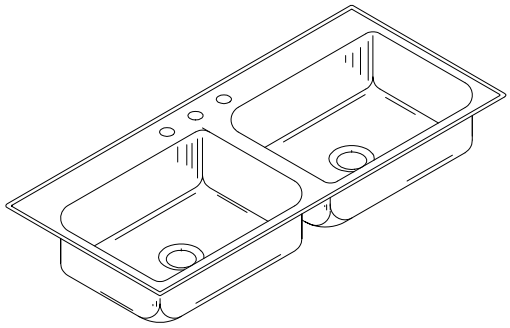
DL-ADA - SERIES - A - 18 GA.

SUBMITTAL DATA

STYLIST GROUP

ADA COMPLIANT

A.D.A. COMPLIANT - MAXIMUM CAPACITY
LEDGE TYPE - DOUBLE BOWL



SPECIFICATION

Seamless die-drawn construction of type 304, 18-8 stainless steel. Interior and top surfaces polished to a non-porous Hand-Blended Just Finish with highlighted bowl rim. Fully coated underside insulates for sound, and reduces condensation. Straight-sided compartment with 1 3/4" radius corners provides greater capacity. Self-rimming top mount Grip-Rim Plus with 300 series stainless steel mounting channels. Drain punch #35 centered for Just J-35 unless otherwise specified.

To be specified :

■ Faucet hole punching:

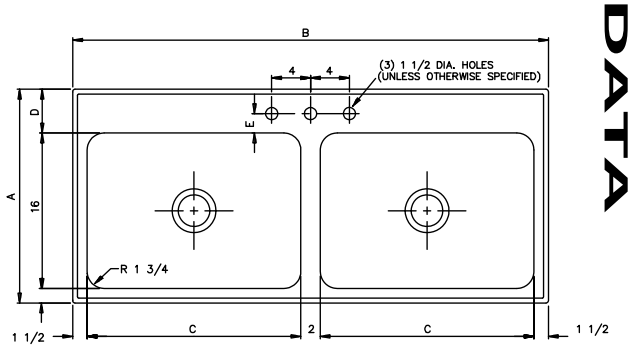
❑ (1) Hole Centered

❑ (2) Holes on 4" centers

❑ (3) Holes on 4 "centers(illustrated)

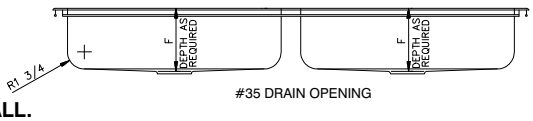
❑ (4) Holes on 4" centers

❑ Alternate Punching:
Faucet Model: _____
Punching required: _____
_____



DRAIN LOCATION MUST BE SPECIFIED FOR EACH COMPARTMENT:

LEFT BOWL:	RIGHT BOWL:
❑CENTER(SHOWN)	❑CENTER(SHOWN)
❑LEFT REAR	❑LEFT REAR
❑RIGHT REAR	❑RIGHT REAR
❑CENTER REAR	❑CENTER REAR



#35 DRAIN OPENING

LOCATIONS MUST BE A MINIMUM OF 4 1/2"FROM THE BOWL WALL.

Job Name _____

Customer _____

Architect/Engineer _____

APPROVED FOR MANUFACTURING

MODEL NO. _____ QTY. _____

COMPANY _____

TITLE _____ DATE _____

SIGNATURE _____

REVISED-5/2003

MODEL NO.	A	B	C	D	E	F	CUTOUT*
DL-ADA-2143-A-GR	21	43	19	3-1/2	1-3/4	4-1/2 to 6-1/2	20-1/4 x 42-1/4
DL-ADA-2243-A-GR	22	43	19	4-1/2	2	4-1/2 to 6-1/2	21-1/4 x 42-1/4
DL-ADA-2249-A-GR	22	49	22	4-1/2	2	4-1/2 to 6-1/2	21-1/4 x 48-1/4
DL-ADA-2261-A-GR	22	61	28	4-1/2	2	4-1/2 to 6-1/2	21-1/4 x 60-1/4

* Cutout dimensions shown (Front-to-Back) x (Left-to-Right) - Corners of cutout may be square or up to 1/2" radius.

JUST MFG. COMPANY CONTINUES TO MAKE QUALITY AND FUNCTIONALITY A MARK OF THE JUST PRODUCT LINE. TO DO SO REQUIRES THAT WE RESERVE THE RIGHT TO CHANGE PRODUCT INFORMATION WITHOUT NOTICE. FOR THE MOST CURRENT AND ACCURATE INFORMATION REGARDING THE COMPLETE LINE OF **JUST** SINKS, FAUCETS AND DRAINS, CLICK ON THE ***SPEC LINE DRAWINGS*** LINK ON OUR WEB SITE AT ***www.justmfg.com***

JUST MANUFACTURING COMPANY
9233 KING STREET . FRANKLIN PARK . ILLINOIS . 60131-2111
PH: 847-678-5150 . FAX: 847-678-6817
E-MAIL: custserv@justmfg.com . www.justmfg.com

3-11

American Standard

SS-1

FLORWELL™ SERVICE SINK

ENAMELED CAST IRON

FLORWELL™ SERVICE SINK

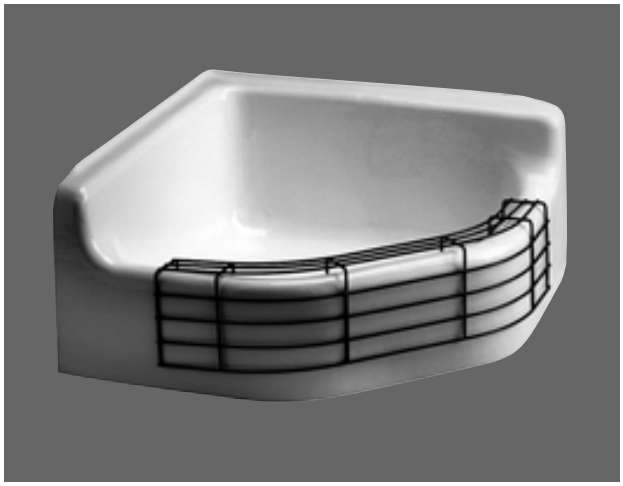
- Enameled cast iron
- 3” outlet
- Corner model

❑ **7741.000**
fixture only

❑ **7745.811**
Vinyl Rim Guard

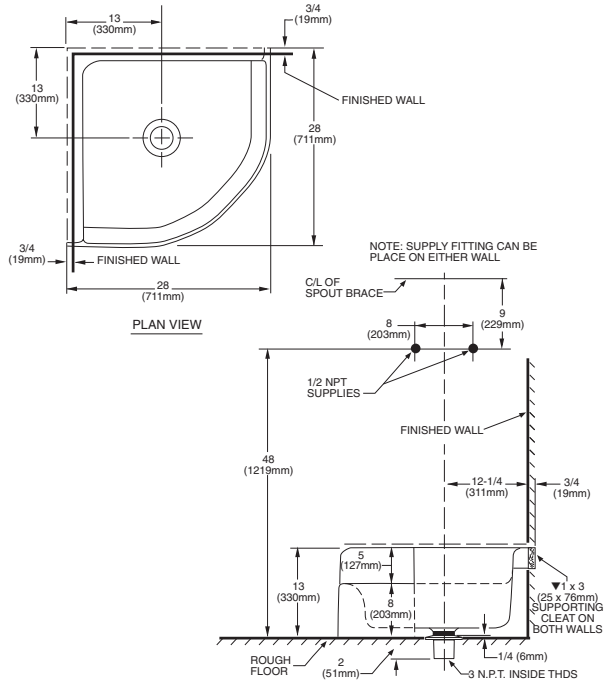
Nominal Dimensions: 28” x 28” x 13”
711 x 711 x 330mm

Compliance Certifications -
Meets or Exceeds the Following Specifications:
- ASME A112.19.1 for Cast Iron Plumbing Fixtures
- CAN / CSA B45 Series



To Be Specified

- ❑ Faucet: 8344.112 faucet with top brace, stops, and vacuum breaker
- ❑ Alternative faucet:
- ❑ Drain: 7721.038 flat grid drain
- ❑ Removable vinyl-coated rim guard: 7745.811 (black)



NOTES:
▼ PROVIDE SUITABLE REINFORCEMENT FOR ALL WALL SUPPORTS.
FITTINGS NOT INCLUDED AND MUST BE ORDERED SEPARATELY.
IMPORTANT: Dimensions of fixtures are nominal and may vary within the range of tolerances established by ANSI Standard A112.19.1
These measurements are subject to change or cancellation. No responsibility is assumed for use of superseded or voided leaflet.

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9/02

MANUAL FAUCETS

CHICAGO FAUCETS
a Geberit company

897-RCF

Wall Mounted Service Sink Faucet with Atmospheric Vacuum Breaker Spout

Product Type

Wall mounted service sink faucet with atmospheric vacuum breaker spout

Features & Specifications

- Rough chrome plated finish
- Solid brass body construction
- Adjustable 7 5/8" - 8 3/8" centers
- Atmospheric vacuum breaker spout with pail hook and wall brace
- 3/4" Male garden hose thread outlet
- 2 3/8" Lever handles with secured color coded index buttons, catalog #369
- Quaturn™ quarter-turn renewable compression cartridge that closes with water pressure with tapered square broach to facilitate handle removal, catalog #1-100XT and #1-099XT
- 1/2" NPT female union nut supply inlets
- 5/16" Hex. integral supply stops
- Mounting hardware

Performance Specification

- Rated Operating Pressure: 20-125 PSI
- Rated Operating Temperature: 40-140° F

Warranty

- Lifetime Limited Faucet Warranty
- 5-Year Limited Cartridge Warranty
- 1-Year Limited Finish Warranty

Compliant To

- ASME A112.18.1
- CSA B125
- ADA

Job Name _____

Item Number _____

Section/Tag _____

Model Specified _____

Architect _____

Engineer _____

Contractor _____

❑ Submitted as Shown ❑ Submitted with Variations

Date _____

U.S. GREEN BUILDING COUNCIL MEMBER

2100 South Clearwater Drive
Des Plaines, IL 60018
P: 847/803-5000
F: 847/803-5454
Technical: 800/TEC-TRUE
www.chicagofaucets.com

1/07

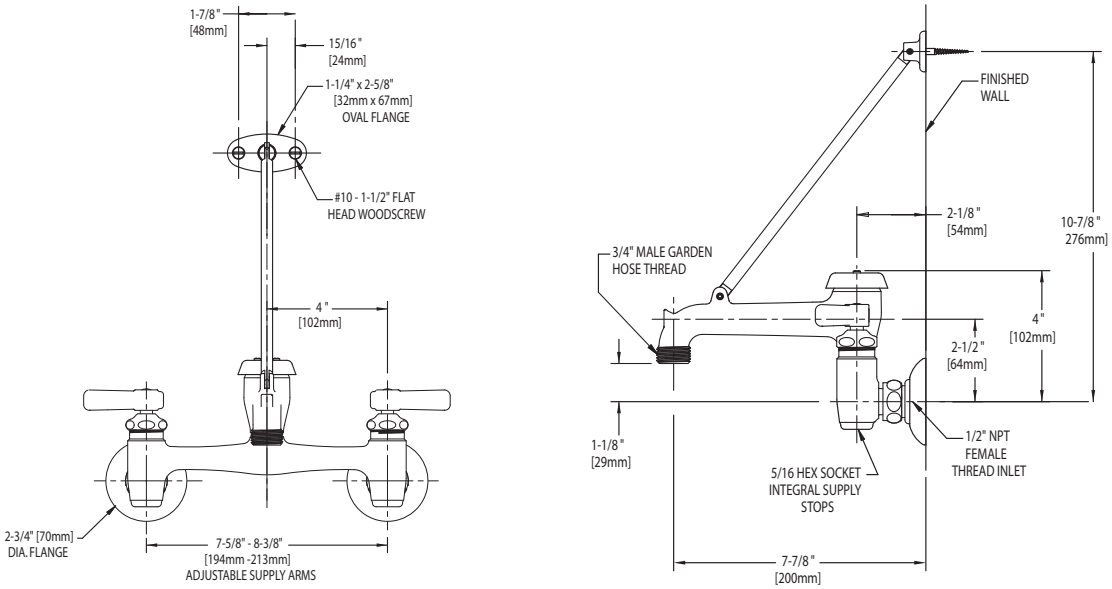
897-RCF

Wall Mounted Service Sink Faucet with
Atmospheric Vacuum Breaker Spout

CHICAGO FAUCETS
a Geberit company

Architect/Engineer Specification

Chicago Faucets No. 897-RCF, Rough chrome plated solid cast brass construction. Atmospheric vacuum breaker spout with pail hook, wall brace and 3/4" male garden hose thread outlet. 2 3/8" metal lever handles with height point tapered broach and secured color coded index buttons. Quaturn™ quarter-turn renewable compression cartridge designed to close with water pressure with square tapered broach feature to help facilitate handle removal. Inlet supply arms with adjustable centers from 7 5/8" – 8 3/8". Integral supply stops in body for servicing cartridges. This product meets ADA requirements and is tested and certified to ASME A112.18.1 and CSA B125 industry standards.



Operation and Maintenance

Installation should be in accordance with local plumbing codes. Flush all pipes thoroughly before installation. After installation, remove spout outlet or flow control and flush faucet thoroughly to clear any debris. Care should be taken when cleaning this product. Do not use abrasive cleaners, chemicals or solvents as they can result in surface damage. Use mild soap and warm water for cleaning and protecting the life of Chicago Faucet products. For specific operation and maintenance refer to the installation instructions and repair parts documents that are located at www.chicagofaucets.com.

Chicago Faucets, member of the Geberit Group, is the leading brand of commercial faucets and fittings in the United States, offering a complete range of products for schools laboratories, hospitals, office buildings, food service, airports and sport facilities. Call 1.800.TECTRUE or 1.847.803.5000 Option 1 for installation or other technical assistance.

2100 South Clearwater Drive
Des Plaines, IL 60018
P: 847/803-5000
F: 847/803-5454
Technical: 800/TEC-TRUE
www.chicagofaucets.com

C US

1/07

Wall Mounted Drinking Fountains

Haws corporation

1119.14

Model 1119.14 is a "Hi-Lo" wall mounted drinking fountain with 14 gauge, Type 304 Stainless Steel with a satin finish . It includes push button valves, polished chrome-plated brass bubbler heads and waste strainers, matching stainless steel back panel, vandal-resistant bottom plates and 1-1/4" NPT traps. Bowls feature a one-piece 14 gauge stamping with rounded design and integral 1/4" stainless steel mounting plates for extra durability and easy maintenance.

Model 1119.14 meets all current Federal Regulations for the disabled including those in the Americans with Disabilities Act. Haws manufactures drinking fountains, electric water coolers and electric drinking fountains to be lead-free by all known definitions including ANSI/NSF Standard 61, Section 9, California Proposition 65 and the Federal Safe Drinking Water Act.

Components:

Bubbler Head: Model 5703M, polished chrome-plated forged brass, integral basin shank, shielded, anti-squirt, vandal-resistant bubbler head.

Valve: Model 5874, push button activation, front adjustable, front access for strainer cleaning with automatic pressure regulation with fully adjustable flow.

Waste Strainer: Model 6462, polished chrome-plated brass vandal-resistant combination waste strainer and tailpiece assembly.

Push Button: Model PBA6, push button assembly has a polished chrome-plated finish.

Trap: Model 0005982900, low profile trap 1-1/4"NPT x 1-1/4" O.D. satin chrome-plated brass.

Bottom Plate: Model PBM1105, bottom plate with vandal resistant screws.

Bottom Plate: Model PBM1109, bottom plate with vandal resistant screws.

Accessory: 0006983506 Spanner wrench is used to remove retaining ring for cartridge for 5874 valve assembly, and the VRK5874 kit.

Options: (Additional costs may apply)

Wall Mounted Drinking Fountain: Model 1119, "Hi-Lo" wall mounted, 18 gauge Type 304 Stainless Steel drinking fountain with satin finish.

Barrier-Free Electric Drinking Fountain: Model H1119.8, barrier-free, "Hi-Lo", wall mounted, stainless steel electric drinking fountain with a satin finish.

Filter: Model 6426, 12" x 2", in-line lead removal element that reduces lead from incoming water supply to levels below 15 ppb for up to 500 gallons. Filter has a maximum flow of .5gpm. Therefore, only 1 bubbler may be operated at a time on dual units.

Cane Touch Skirt: Model SK1, satin finish stainless steel cane touch skirt for installation on high unit to comply with ADA protruding objects guidelines.

Mounting: Model 6700.4, mounting plate with all thread studs, nuts and washers.

Support Carrier: Model 6800, in-the-wall struts for fountains that may be subjected to excessive leverage. Must be used with mounting plate (not included with carrier).

Chiller: Model HCR8, chiller provides for instantaneous cooling to meet a continuous demand for chilled water.

DISCLAIMER: Continued product improvements make specifications subject to change without notice.

1455 Kleppe Lane, Sparks, NV 89431
v.775.359.4712 f.775.359.7424
e. info@hawsco.com website. www.hawsco.com

16 March, 2006

WH-1

BRADFORD WHITE®
WATER HEATERS

Eco Friendly Solutions | DEFENDER SAFETY SYSTEM®

Light Duty Commercial Ultra Low NOx Energy Saver Gas Water Heater

Photo is of
U-50T-55FR-3N

Identical Dimensions
Same diameter, height and connections as standard units for ease of installation.

The Light Duty FVIR Eco-Defender Safety System® Models Feature:

Defender Combustion Chamber—Incorporates the Advanced ScreenLok® Technology Flame Arrestor and large split-door design to prevent ignition of flammable vapors outside the water heater.

Ultra Low NOx Burner with Primary and Secondary Air Distribution Devices—Ensures proper air to gas ratio for reduction of NOx generated by the combustion process.

Digital Thermal Sensor and Resettable Thermal Switch—Coordinates with self diagnostic control to prevent water heater operation as needed.

Millivolt Powered Control with Built-in Piezo Igniter—Easy and quick lighting of the pilot burner by push button.

Pedestal Base—Rugged and durable base allows easy transport and positioning, while providing corrosion resistant contact with floor.

Maintenance Free—No regular cleaning of air inlet openings or flame arrestor is required under normal conditions.

Sight Window—Offers a view into the combustion chamber to observe the operation of the pilot and burner.

No Electricity Required.

Factory Installed Hydrojet® Total Performance System—Cold water inlet sediment reducing device helps prevent sediment build up in tank. Increases first hour delivery of hot water while minimizing temperature build up in tank.

Vitraglas® Lining—Bradford White tanks are lined with a exclusively engineered enamel formula that provides superior protection from the highly corrosive effects of hot water. This formula (Vitraglas®) is fused to the steel surface by firing at at temperature of over 1600ºF.

Self Diagnostic Honeywell Gas Control—Integrated, immersion gas control learns and monitors the combustion chamber's temperature profile and prevents water heater operation during upset conditions. Also equipped with an LED display to aid in start-up and diagnostics.

More Precise Temperature Control—With an adjustable temperature up to 180ºF.

Side Connections—3/4" NPT tappings allow an easy connection for space heating applications.

2" Non-CFC Foam Insulation—Surrounds the tank surface, saving energy by retarding loss of heat.

Water Connections—3⁄4" NPT factory installed true dielectric fittings extend water heater life and eases installation.

Factory Installed Heat Traps—Design incorporates a flexible disk that reduces heat loss in piping and eliminates the potential for noise generation.

Protective Magnesium Anode Rod—Provides added protection against corrosion for long trouble-free service.

"Snap Lock" Draft Diverter.

T&P Relief Valve—Installed.

Brass Drain Valve—Tamper proof.

Meets SCAQMD Rule 1121 (10ng/J NOx limit).

Design Certified by CSA International (formerly AGA and CGA).

EFFICIENCY RATING CERTIFIED Gama

3 or 5-Year Limited Tank Warranties / 1-Year Limited Warranty on Component Parts.

For more information on warranty, please visit www.bradfordwhite.com

For products installed in USA, Canada and Puerto Rico. Some states do not allow limitations on warranties. See complete copy of the warranty included with the heater.

MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,954,492; 5,761,379; 5,943,984; 5,081,696; 5,988,117; 6,142,216; 5,199,385; 5,574,822; 5,372,185; 5,485,879; 5,277,171; (B1)5,341,770; 5,660,165; 5,596,952; 5,682,666; 4,904,428; 5,023,031; 5,000,893; 4,669,448; 4,829,983; 4,808,356; 5,115,767; 5,092,519; 5,052,346; 4,416,222; 4,628,184; 4,861,968; 4,672,919; Re. 34,534; 7,270,087 B2. OTHER U.S. AND FOREIGN PATENT APPLICATIONS PENDING. CURRENT CANADIAN PATENTS: 1,272,914; 1,280,043; 1,289,832; 2,045,862; 2,112,515; 2,108,186; 2,107,012; 2,092,105; 2,409,271.
Defender Safety System®, ScreenLok®, Vitraglas® and Hydrojet® are registered trademarks of Bradford White® Corporation.

702-B-0309-A

Commercial Atmospheric Vent Gas Water Heater

Light Duty Ultra Low NOx Energy Saver Models

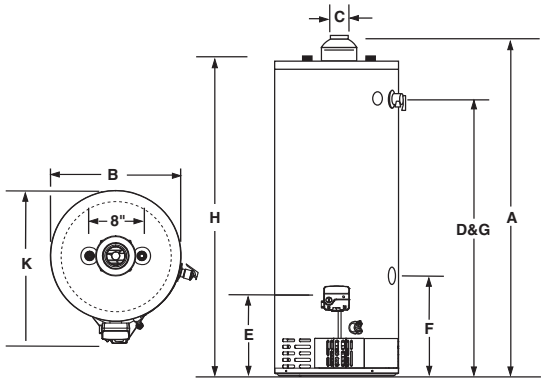
NATURAL GAS

Meet or exceed ASHRAE 90.1b (current standard) C.E.C. Listed
Recovery efficiency ranging up to 80%

Model Number	Capacity U.S. Gal.	Capacity Imp. Gal.	Nat. BTU/Hr. Input	Recovery at 90°F Rise* Nat. U.S. GPH	Recovery at 90°F Rise* Nat. Imp. GPH	A Floor to Flue Conn. in.	B Jacket Dia. in.	C Vent Size in.	D Floor to T&P Conn. in.	E Floor to Gas Conn. in.	F Floor to Space Heating Return in.	G Floor to Space Heating Outlet in.	H Floor to Water Conn. in.	K Depth in.	Approx. Shipping Weight lbs.
U-50T-55FR-3N	48	40	55,000	57	47	59 1/4	22	4	50	11 5/8	13 1/2	50	57	26	174
U-65T-55FR-3N	65	54	55,000	57	47	63	24	4	53 1/2	11 5/8	13 1/2	53 1/2	60 3/4	28	213

Model Number	Capacity Liters	Nat. kW Input	Recovery at 50°C Rise* Nat. Liters/ Hour	A Floor to Flue Conn. mm.	B Jacket Dia. mm.	C Vent Size mm.	D Floor to T&P Conn. mm.	E Floor to Gas Conn. mm.	F Floor to Space Heating Return mm.	G Floor to Space Heating Outlet mm.	H Floor to Water Conn. mm.	K Depth mm.	Approx. Shipping Weight kg.
U-50T-55FR-3N	182	16.1	215	1505	559	102	1270	330	343	1270	1448	660	74
U-65T-55FR-3N	246	16.1	215	1600	609	102	1359	309	342	1359	1543	711	93

Available in Natural Gas only.
For 5 year models, change suffix from "3" to "5".
*Based on manufacturers rated recovery efficiency.



All models meet SCAQMD rule 1121 requirement of 10ng/J, or less, NOx emissions.

Meets NAECA Requirements

General

All gas water heaters are certified at 300 PSI test pressure (2068 kPa) and 150 PSI working pressure (1034 kPa). All water connections are 3/4" NPT (19mm) on 8" (203mm) centers. All Gas Connections are 1/2" (13mm).

All models design certified by CSA International (formerly AGA/CGA), to meet ANSI standard Z-21.10.1 and peak performance rated.

Dimensions and specifications subject to change without notice in accordance with our policy of continuous product improvement.

Suitable for Water (Potable) Heating and Space Heating.

Toxic chemicals, such as those used for boiler treatment, shall NEVER be introduced into this system. This unit may NEVER be connected to any existing heating system or component(s) previously used with a non-potable water heating appliance.

BRADFORD WHITE
WATER HEATERS
Ambler, PA
For U.S. and Canada field service, contact your professional installer or local Bradford White sales representative.
Sales **800-523-2931** Fax **215-641-1670** / Technical Support **800-334-3393** Fax **269-795-1089** Warranty **800-531-2111** Fax **269-795-1089**
International: Telephone **215-641-9400** Telefax **215-641-9750 / www.bradfordwhite.com**
BRADFORD WHITE-CANADA® INC. Sales / Technical Support **866-690-0961** / **905-238-0100** Fax **905-238-0105** / **www.bradfordwhite.com**

Built to be the Best™

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702-B-0309-A Printed in U.S.A.

BRADFORD WHITE®
WATER HEATERS

EWH-1

Light Duty Commercial Utility Energy Saver Electric Water Heater

Photo is of
LD-12UT3-1

Copper Screw Type Immersion Element
(Incoloy type immersion element available upon request)

The Light Duty Utility Electric Models Feature:

- **Fully Automatic Controls—**Fast acting surface-mount thermostat for automatic temperature control. Factory installed sensitive manual reset energy cut-off for safety to prevent overheating. (Maximum thermostat setting is 160°F.)
- **Direct Heat Transfer With a Single Immersed Element—**Transfers heat directly and efficiently to the water. Screw-in style element.
- **Vitraglas® Lining—**Bradford White water heater tanks are protected from the corrosive effects of hot water by an exclusive ceramic porcelain-like coating. The Bradford White high silica Vitraglas® lining provides a tough interior surface for our hot water tanks.
- **1" Non-CFC Foam Insulation—**Surrounds the tank surface, saving energy by retarding loss of heat.
- **Water Connections—**3/4" NPT factory installed true dielectric fittings extend water heater life and eases installation. Located on the side for easier installation.
- **Alternate Top Water Connections—**The 6 and 12 gallon models have alternate 3/4" water connection tappings on top.
- **Protective Magnesium Anode Rod—**Provides added protection against corrosion for long trouble-free service.
- **Steel Tank—**Heavy gauge steel automatically formed, rolled and welded.
- **Voltages Available—**120V, 208V, 240V, 277V, 480V.
- **Single Phase Operation Only**.
- **T&P Relief Valve Installed—**All models have special tapping on side of tank.

3 or 5-Year Limited Tank Warranties / 1-Year Limited Warranty on Component Parts.
For more information on warranty, please visit www.bradfordwhite.com
For products installed in USA, Canada and Puerto Rico. Some states do not allow limitations on warranties. See complete copy of the warranty included with the heater.

MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,954,492; 5,761,379; 5,943,984; 5,081,696; 5,988,117; 6,142,216; 5,199,385; 5,574,822; 5,372,185; 5,485,879; 5,277,171; (B1)5,341,770; 5,660,165; 5,596,952; 5,682,666; 4,904,428; 5,023,031; 5,000,893; 4,669,448; 4,829,983; 4,808,356; 5,115,767; 5,092,519; 5,052,346; 4,416,222; 4,628,184; 4,861,968; 4,672,919; Re. 34,534; 7,270,087 B2. OTHER U.S. AND FOREIGN PATENT APPLICATIONS PENDING. CURRENT CANADIAN PATENTS: 1,272,914; 1,280,043; 1,289,832; 2,045,862; 2,112,515; 2,108,186; 2,107,012; 2,092,105; 2,409,271.
Vitraglas® is a registered trademark of Bradford White® Corporation.

412-B-0408-A

Commercial Electric Water Heater

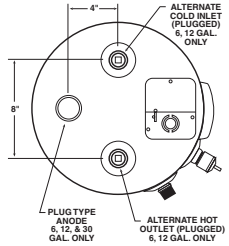
Light Duty Utility Energy Saver Models

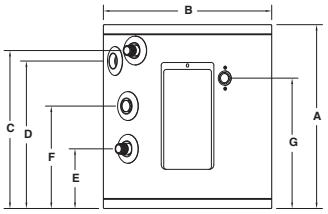
Meet or exceed ASHRAE 90.1b (current standard) C.E.C. Listed

Model Number	Capacity U.S. Gal.	Capacity Imp. Gal.	Recovery 100°F Rise U.S.* GPH	Recovery 100°F Rise Imp.* GPH	A Floor to Heater Top in.	B Jacket Dia. in.	C Floor to Hot Water Conn. in.	D Floor to T&P Conn. in.	E Floor to Cold Water Conn. in.	F Floor to Anode Rod in.	G Floor to Electrical Access in.	Approx. Shipping Weight lbs.
LD-6U3-1†	6	5	6	5	16 1/2	14	10 1/8	10 1/8	3 1/8	16 1/2	16 1/2	33
LD-10U3-1†	10	8	6	5	17 1/2	16	15	14	5 11/16	9 11/16	12	48
LD-12UT3-1†	12	10	6	5	27 3/4	14	21 1/8	21 1/8	3	27 3/4	27 3/4	48
LD-15U3-1†	15	13	6	5	20 1/4	18	17 3/4	16 3/4	6 1/8	10 1/8	12 11/16	55
LD-20U3-1	19	16	6	5	24 3/4	18	18 1/4	18 1/4	3	10 1/4	24 3/4	59
LD-30U3-1	30	25	6	5	30	22	23 1/2	23 1/2	4 1/2	30	30	82

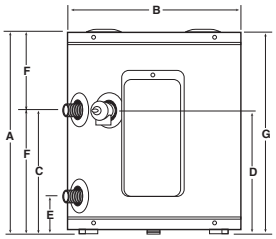
Model Number	Capacity Liters	Recovery 56°C Rise Liters/* Hour	A Floor to Heater Top mm.	B Jacket Dia. mm.	C Floor to Hot Water Conn. mm.	D Floor to T&P Conn. mm.	E Floor to Cold Water Conn. mm.	F Floor to Anode Rod mm.	G Floor to Electrical Access mm.	Approx. Shipping Weight kg.
LD-6U3-1†	23	23	419	356	257	257	79	444	419	15
LD-10U3-1†	38	26	444	404	381	355	144	246	305	22
LD-12UT3-1†	45	23	705	356	537	537	76	730	705	22
LD-15U3-1†	57	26	514	457	451	425	155	257	309	25
LD-20U3-1	72	23	629	457	464	464	76	464	628	27
LD-30U3-1	114	23	762	557	597	59	114	787	762	37

Specify wattage and voltage when ordering.
Use chart to right for maximum wattages at certain voltages.
†Maximum wattage at any voltage is 3000W.
For 5 year models, change suffix "3" to "5".
Single element only.
*Based on 1500W operation.
NSF Construction not available.





10 & 15 Gallon Models



6, 12, 20 & 30 Gallon Models

Wattage	Recovery GPH Temperature Rise °F 60	80	90	100	120
1500W	10	8	7	6	5
2000W	14	10	9	8	7
2500W	17	13	11	10	9
3000W	21	15	14	12	10
3500W	24	18	16	14	12
4000W	28	21	18	16	14
4500W	31	23	21	19	15
5000W	34	26	23	21	17
5500W	38	29	25	23	19
6000W	41	31	28	25	21

Wattage Limitations	Voltage 120V	208V	240V	277V	480V
1500W	yes	yes	yes	yes	yes
2000W	yes	yes	yes	yes	yes
2500W	yes	yes	yes	yes	yes
3000W	yes	yes	yes	yes	yes
3500W	no	yes	yes	no	no
4000W	no	yes	yes	yes	yes
4500W	no	yes	yes	yes	yes
5000W	no	yes	yes	yes	yes
5500W	no	yes	yes	no	no
6000W	no	yes	yes	yes	yes

General
All models UL and CUL listed. These heaters are wired Single Phase, 120V with one 1500W element, unless otherwise specified.
All water and electrical connections are 3/4" (19mm)NPT.
All models certified at 300 psi test pressure (2068 kPa) and 150 psi working pressure (1034 kPa).
Applicable models CSA verified for energy performance in accordance with C191.1-M90.

Dimensions and specifications subject to change without notice in accordance with our policy of continuous product improvement.

BRADFORD WHITE WATER HEATERS
Ambler, PA
For U.S. and Canada field service, contact your professional installer or local Bradford White sales representative.
Sales **800-523-2931** • Fax **215-641-1670** / Technical Support **800-334-3393** • Fax **269-795-1089** • Warranty **800-531-2111** • Fax **269-795-1089**
International: Telephone **215-641-9400** • Telefax **215-641-9750** / **www.bradfordwhite.com**

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Built to be the Best™

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412-B-0408-A Printed in U.S.A.

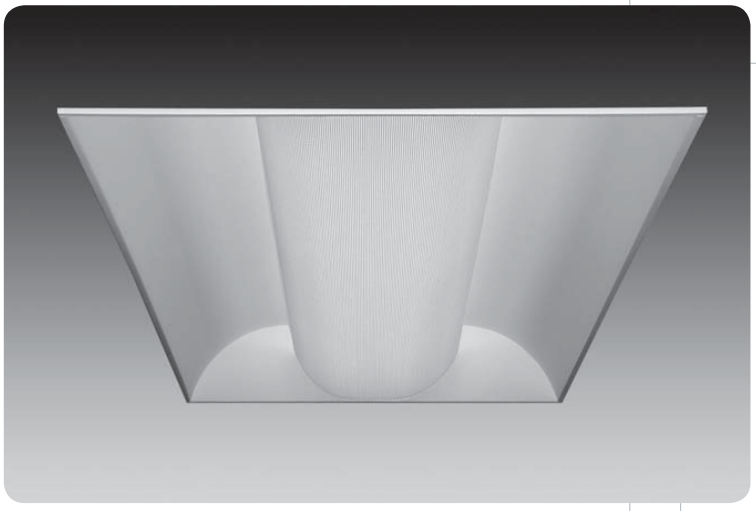
Lighting Fixtures

The fixtures listed herein have been approved by the Campus for use as Standards. The following preferred fixtures and equipment will be the basis of design. The approval of these items will provide for consistent design and ease of maintenance throughout the campus.

TYPE "A"

FOCAL POINT®

luna® 2x4



Covered by the following U.S. Patents: D395,727; D397,819.

features

2'x4' recessed indirect with perforated center basket.

Reflector and end caps form seamless one-piece housing.

High reflectance, low gloss Matte White finish controls glare and provides high efficiency.

Perforated shield hinges open for quick and easy relamping.

Optional radial blade louver offers a distinct look that highlights interior architecture.

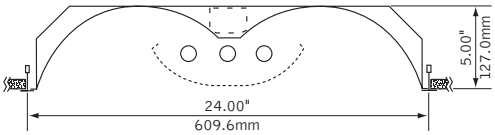
All luminaire combinations may be continuously row mounted.

Luna® provides high angle uniform distribution ideal for general illumination.

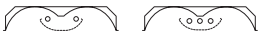
shielding options & details

perforated | radial blade louver

dimensional data



lamping options

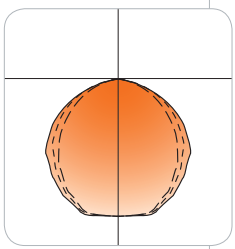


T8 LAMPS

T5/T5HO LAMPS

performance

2–Lamp T8
72% Efficiency
1528 cd @ 10°



Visit focalpointlights.com for complete photometric data.

july 2008 A

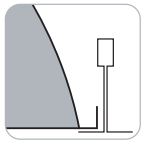
fixture:

project:

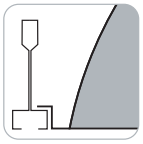
mounting information

grid

specify "G" for flat 9/16" and 15/16" tee or "ST" for 9/16" slot tee grid types.



"G" flat tee

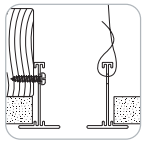


"ST" slot tee

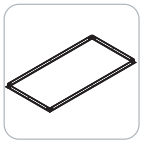
Luminaires may be installed in T-bar ceiling systems up to 1 11/16" high in T8 lamp configurations.

drywall frame kit

specify "DF" Drywall Frame Kit for drywall ceiling conditions.



Use tie–wire or screws to secure frame kit.



cut out dimensions:
2': Min: 24.125"
Max: 24.563"
4': Min: 48.125"
Max: 48.563"

specifications

construction

One-piece 20 Ga. steel reflector and housing.

20 Ga. steel ends form finished housing.

Lamps are shielded by detachable 22 Ga. steel perforated lamp shield with acrylic lens insert.

Lamp shield is secured by four spring–pins allowing shield to hinge down for relamping.

Optional radial blade louver: .75"H x 1" frequency fabricated of 20 Ga. steel with acrylic lens insert.

Top access 20 Ga. steel ballast compartment.

Weight: 29 lbs

optic

One-piece 20 Ga. steel reflectors finished in Matte Satin White powder coat.

electrical

Electronic ballasts are thermally protected and have a Class "P" rating.

Optional dimming ballasts available.

Consult factory for dimming specifications and availability.

UL and cUL listed.

finish

Polyester powder coat applied over a 5-stage pre–treatment.

ordering

luminaire series		FLU
Luna	FLU	
nominal size		24
2' x 4'	24	
distribution		B
Bi-Directional	B	
lamp quantity		
Two Lamp	2	
Three Lamp	3	
lamp type		
T8 (1 11/16" maximum grid height)	T8	
T5	T5	
T5HO	T5HO	
ballast		
Electronic Instant Start <20% THD (T8 only)	E	
Electronic Program Start <10% THD	S	
Electronic Dimming Ballast*	D	
voltage		
120 Volt	120	
277 Volt	277	
347 Volt	347	
mounting		
Grid	G	
Slot Tee	ST	
Surface Mount	SM	
shielding		
Perforated Shield	PS	
Radial Blade Louver	RLP	
factory options		
Air Return	AR	
Chicago Plenum	CP	
Dust Cover	DC	
Drywall Frame Kit (Cut out dimensions: Min:24.25"/Max: 24.563" Min: 48.25"/Max 48.563")	DF	
Emergency Battery Pack*	EM	
Earthquake Clip	EQ	
HLR/GLR Fuse	FU	
Flex Whip*	FW	
Include 3000K Lamp	L830	
Include 3500K Lamp	L835	
Include 4100K Lamp	L841	
Separate Circuit*	SC	
Master Satellite*	MS	
Tandem Wiring*	TW	
Lutron™ Sensor Feed* (EcoSystem ballast required)	SF	
finish		WH
Matte Satin White	WH	

* for more information see Reference section.

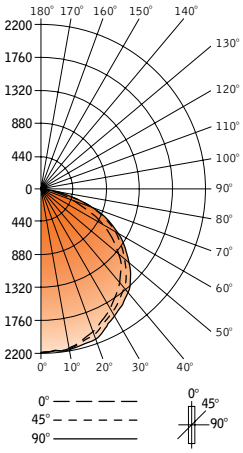
Focal Point LLC | 4141 S. Pulaski Rd, Chicago, IL 60632 | T: 773.247.9494 | F: 773.247.8484 | info@focalpointlights.com | www.focalpointlights.com.
Focal Point LLC reserves the right to change specifications for product improvement without notification.

recessed

luna® 2x4

Filename: FLU242T8PS.IES
Catalog #: FLU-24-B-2-T8-E-120-G-PS-WH
Efficiency: 72%
Test #: 11161.0

CANDLEPOWER DISTRIBUTION



Vertical Angle	Horizontal Angle 0°	22.5°	45°	67.5°	90°	Zonal Lumens
0°	1510	1510	1510	1510	1510	
5°	1503	1503	1505	1511	1510	144
15°	1493	1497	1506	1524	1524	428
25°	1332	1340	1369	1402	1412	635
35°	1132	1150	1198	1257	1273	755
45°	907	941	1023	1094	1122	789
55°	6635	687	781	856	874	691
65°	386	449	531	555	560	498
75°	187	228	221	254	260	245
85°	35	39	45	48	48	47
90°	3	4	4	4	4	
95°	0	0	0	0	0	0
105°	0	0	0	0	0	0
115°	0	0	0	0	0	0
125°	0	0	0	0	0	0
135°	0	0	0	0	0	0
145°	0	0	0	0	0	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	

Spacing 1.2
Criterion: 1.3

LUMEN SUMMARY

	Zone	Lumens	% Lamp	% Fixt
	0°-30°	1206	20.4	28.5
	0°-40°	1934	33.2	46.4
	0°-60°	3440	58.3	81.3
	0°-90°	4231	71.7	100.0
Total Luminaire	0°-180°	4231	71.7	100.0

LUMINANCE DATA (CD/M²)

Vertical Angle	0°	45°	90°
45°	1825	2059	2258
55°	1575	1937	2168
65°	1300	1788	1885
75°	1028	1215	1429
85°	571	735	784

CO–EFFICIENTS OF UTILIZATION

Floor	80				70			50	30	10	00
Ceiling								20			
Wall	70	50	30	10	70	50	10	50	10	10	00
RCR 0	85	85	85	85	83	83	83	80	80	76	76	73	73	72
1	79	76	73	71	77	74	69	71	67	68	65	66	63	62
2	72	67	63	59	71	66	58	63	57	61	56	59	54	53
3	67	60	54	50	65	58	49	56	49	54	48	53	47	45
4	61	53	47	43	59	52	42	50	42	49	41	47	41	39
5	56	47	41	36	54	46	36	45	36	43	35	42	35	33
6	51	42	36	31	50	41	31	40	31	39	31	38	30	29
7	47	38	32	27	46	37	27	36	27	35	27	34	27	25
8	43	34	28	24	42	33	24	32	23	31	23	31	23	22
9	40	30	24	20	39	30	20	29	20	28	20	27	20	19
10	37	28	22	18	36	27	18	26	18	26	18	25	18	16

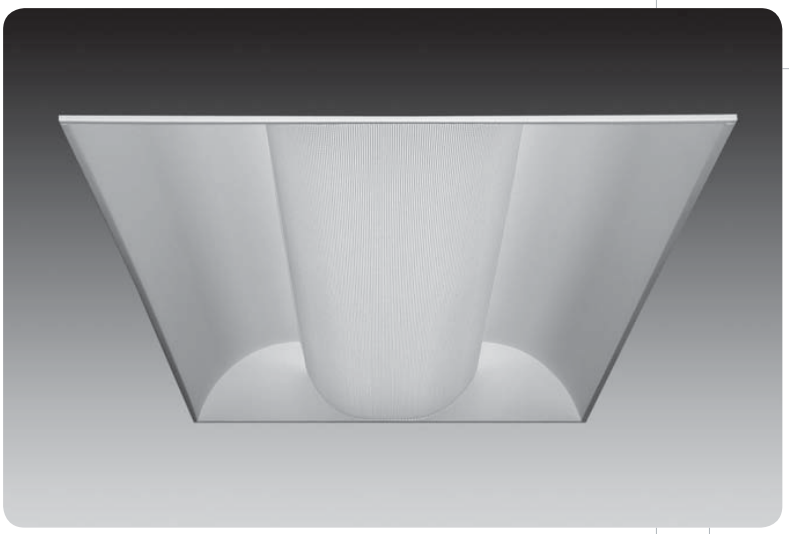
Numbers indicate percentage values of

Go to www.focalpointlights.com for additional photometric data.

TYPE "B"

FOCAL POINT®

luna® 2x4



Covered by the following U.S. Patents: D395,727; D397,819.

features

2'x4' recessed indirect with perforated center basket.

Reflector and end caps form seamless one-piece housing.

High reflectance, low gloss Matte White finish controls glare and provides high efficiency.

Perforated shield hinges open for quick and easy relamping.

Optional radial blade louver offers a distinct look that highlights interior architecture.

All luminaire combinations may be continuously row mounted.

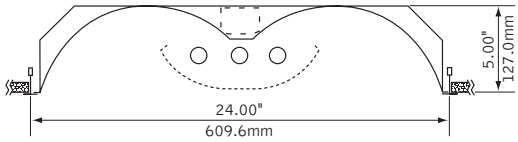
Luna® provides high angle uniform distribution ideal for general illumination.

shielding options & details

perforated

radial blade louver

dimensional data



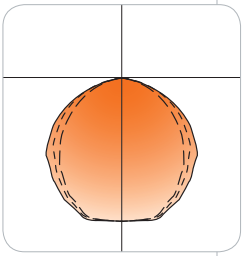
lamping options

T8 LAMPS

T5/T5HO LAMPS

performance

2–Lamp T8
72% Efficiency
1528 cd @ 10°



Visit focalpointlights.com for complete photometric data.

july 2008 A

www.focalpointlights.com | 1.773.247.9494

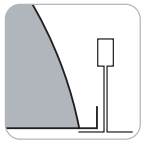
fixture:

project:

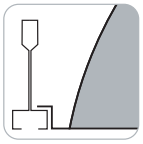
mounting information

grid

specify "G" for flat 9/16" and 15/16" tee or "ST" for 9/16" slot tee grid types.



"G" flat tee

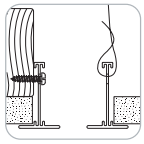


"ST" slot tee

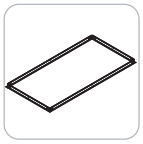
Luminaires may be installed in T-bar ceiling systems up to 1 11/16" high in T8 lamp configurations.

drywall frame kit

specify "DF" Drywall Frame Kit for drywall ceiling conditions.



Use tie–wire or screws to secure frame kit.



cut out dimensions:
2': Min: 24.125"
Max: 24.563"
4': Min: 48.125"
Max: 48.563"

specifications

construction

One-piece 20 Ga. steel reflector and housing.

20 Ga. steel ends form finished housing.

Lamps are shielded by detachable 22 Ga. steel perforated lamp shield with acrylic lens insert.

Lamp shield is secured by four spring–pins allowing shield to hinge down for relamping.

Optional radial blade louver: .75"H x 1" frequency fabricated of 20 Ga. steel with acrylic lens insert.

Top access 20 Ga. steel ballast compartment.

Weight: 29 lbs

optic

One-piece 20 Ga. steel reflectors finished in Matte Satin White powder coat.

electrical

Electronic ballasts are thermally protected and have a Class "P" rating.

Optional dimming ballasts available.

Consult factory for dimming specifications and availability.

UL and cUL listed.

finish

Polyester powder coat applied over a 5-stage pre–treatment.

ordering

luminaire series		FLU
Luna	FLU	
nominal size		24
2' x 4'	24	
distribution		B
Bi-Directional	B	
lamp quantity		
Two Lamp	2	
Three Lamp	3	
lamp type		
T8 (1 11/16" maximum grid height)	T8	
T5	T5	
T5HO	T5HO	
ballast		
Electronic Instant Start <20% THD (T8 only)	E	
Electronic Program Start <10% THD	S	
Electronic Dimming Ballast*	D	
voltage		
120 Volt	120	
277 Volt	277	
347 Volt	347	
mounting		
Grid	G	
Slot Tee	ST	
Surface Mount	SM	
shielding		
Perforated Shield	PS	
Radial Blade Louver	RLP	
factory options		
Air Return	AR	
Chicago Plenum	CP	
Dust Cover	DC	
Drywall Frame Kit (Cut out dimensions: Min:24.25"/Max: 24.563" Min: 48.25"/Max 48.563")	DF	
Emergency Battery Pack*	EM	
Earthquake Clip	EQ	
HLR/GLR Fuse	FU	
Flex Whip*	FW	
Include 3000K Lamp	L830	
Include 3500K Lamp	L835	
Include 4100K Lamp	L841	
Separate Circuit*	SC	
Master Satellite*	MS	
Tandem Wiring*	TW	
Lutron™ Sensor Feed* (EcoSystem ballast required)	SF	
finish		WH
Matte Satin White	WH	

* for more information see Reference section.

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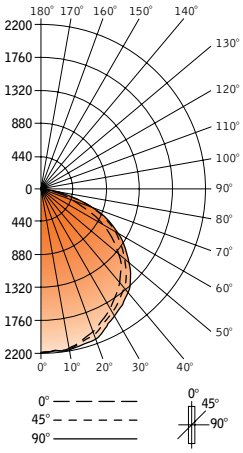
recessed

luna® 2x4

Filename: FLU242T8PS.IES
Catalog #: FLU-24-B-2-T8-E-120-G-PS-WH
Efficiency: 72%
Test #: 11161.0

CANDLEPOWER DISTRIBUTION



Vertical Angle	Horizontal Angle 0°	22.5°	45°	67.5°	90°	Zonal Lumens
0°	1510	1510	1510	1510	1510	
5°	1503	1503	1505	1511	1510	144
15°	1493	1497	1506	1524	1524	428
25°	1332	1340	1369	1402	1412	635
35°	1132	1150	1198	1257	1273	755
45°	907	941	1023	1094	1122	789
55°	6635	687	781	856	874	691
65°	386	449	531	555	560	498
75°	187	228	221	254	260	245
85°	35	39	45	48	48	47
90°	3	4	4	4	4	
95°	0	0	0	0	0	0
105°	0	0	0	0	0	0
115°	0	0	0	0	0	0
125°	0	0	0	0	0	0
135°	0	0	0	0	0	0
145°	0	0	0	0	0	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	

Spacing 1.2
Criterion: 1.3

LUMEN SUMMARY

	Zone	Lumens	% Lamp	% Fixt
	0°-30°	1206	20.4	28.5
	0°-40°	1934	33.2	46.4
	0°-60°	3440	58.3	81.3
	0°-90°	4231	71.7	100.0
Total Luminaire	0°-180°	4231	71.7	100.0

LUMINANCE DATA (CD/M²)

Vertical Angle	0°	45°	90°
45°	1825	2059	2258
55°	1575	1937	2168
65°	1300	1788	1885
75°	1028	1215	1429
85°	571	735	784

CO–EFFICIENTS OF UTILIZATION

Floor	80				70			50	30	10	00
Ceiling								20			
Wall	70	50	30	10	70	50	10	50	10	10	00
RCR 0	85	85	85	85	83	83	83	80	80	76	76	73	73	72
1	79	76	73	71	77	74	69	71	67	68	65	66	63	62
2	72	67	63	59	71	66	58	63	57	61	56	59	54	53
3	67	60	54	50	65	58	49	56	49	54	48	53	47	45
4	61	53	47	43	59	52	42	50	42	49	41	47	41	39
5	56	47	41	36	54	46	36	45	36	43	35	42	35	33
6	51	42	36	31	50	41	31	40	31	39	31	38	30	29
7	47	38	32	27	46	37	27	36	27	35	27	34	27	25
8	43	34	28	24	42	33	24	32	23	31	23	31	23	22
9	40	30	24	20	39	30	20	29	20	28	20	27	20	19
10	37	28	22	18	36	27	18	26	18	26	18	25	18	16

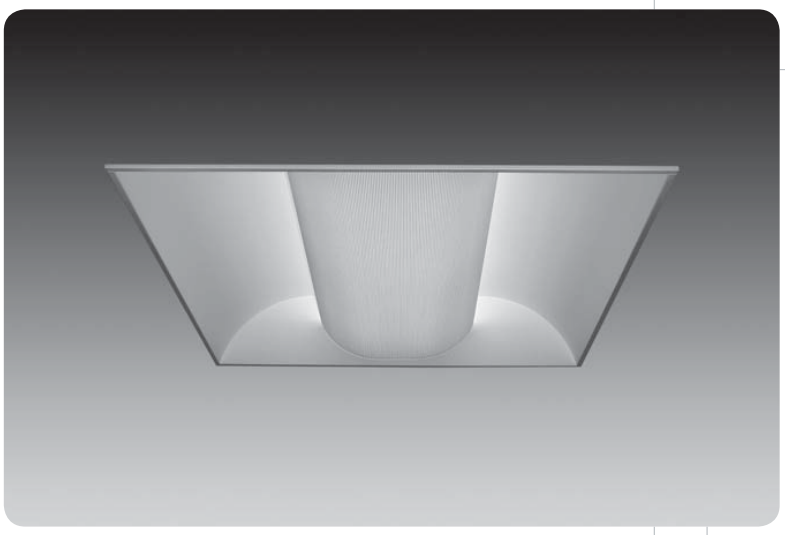
Numbers indicate percentage values of

Go to www.focalpointlights.com for additional photometric data.

TYPE "C"

FOCAL POINT®

luna® 2x2



Covered by the following U.S. Patents: D395,727; D397,819.

features

2'x2' recessed indirect with perforated center basket.

Reflector and end caps form seamless one-piece housing.

High reflectance, low gloss Matte White finish controls glare and provides high efficiency.

Perforated shield hinges open for quick and easy relamping.

Optional radial blade louver offers a distinct look that highlights interior architecture.

All luminaire combinations may be continuously row mounted.

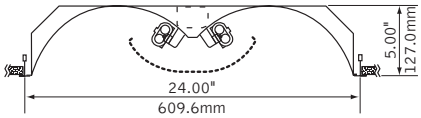
Luna® provides high angle uniform distribution ideal for general illumination.

shielding options & details

perforated

radial blade louver

dimensional data



lamping options

BIAX LAMPS

T8 U–BEND LAMPS

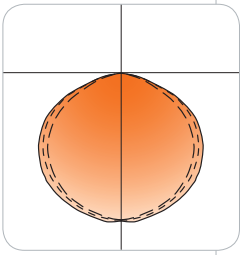
T8 LAMPS

T5/T5HO LAMPS

july 2008 A

performance

2–Lamp 40W Biax
70% Efficiency
1598 cd @ 5°



Visit focalpointlights.com for complete photometric data.

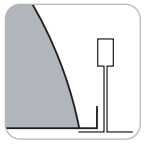
fixture:

project:

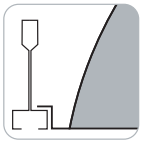
mounting information

grid

specify "G" for flat 9/16" and 15/16" tee or "ST" for 9/16" slot tee grid types.



"G" flat tee

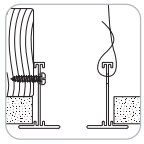


"ST" slot tee

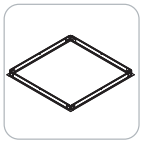
Luminaires may be installed in T-bar ceiling systems up to 1 11/16" high".

drywall frame kit

specify "DF" Drywall Frame Kit for drywall ceiling conditions.



Use tie–wire or screws to secure frame kit.



cut out dimensions:
2': Min: 24.125"
Max: 24.563"

specifications

construction

One-piece 20 Ga. steel reflector and housing.

20 Ga. steel ends form finished housing.

Lamps are shielded by detachable 22 Ga. steel perforated lamp shield with acrylic lens insert.

Lamp shield is secured by four spring–pins allowing shield to hinge down for relamping.

Optional radial blade louver: .75"H x 1" frequency fabricated of 20 Ga. steel with acrylic lens insert.

Top access 20 Ga. steel ballast compartment.

Weight: 20 lbs

optic

One-piece 20 Ga. steel reflectors finished in Matte Satin White powder coat.

electrical

Electronic ballasts are thermally protected and have a Class "P" rating.

Optional dimming ballasts available.

Consult factory for dimming specifications and availability.

UL and cUL listed.

finish

Polyester powder coat applied over a 5-stage pre–treatment.

ordering

luminaire series		FLU
Luna	FLU	
nominal size		22
2' x 2'	22	
distribution		B
Bi-Directional	B	
lamp quantity		
Two Lamp	2	
Three Lamp	3	
lamp type		
40 Watt Biax	BX40	
50 Watt Biax	BX50	
55 Watt Biax	BX55	
F31/T8U (two lamp only)	T831	
T8 (1 11/16" maximum grid height)	T8	
T5	T5	
T5HO	T5HO	
ballast		
Electronic Instant Start <20% THD (BX40 & T8 only)	E	
Electronic Program Start <10% THD	S	
Electronic Dimming Ballast*	D	
voltage		
120 Volt	120	
277 Volt	277	
347 Volt	347	
mounting		
Grid	G	
Slot Tee	ST	
Surface Mount	SM	
shielding		
Perforated Shield	PS	
Radial Blade Louver	RLP	
factory options		
Air Return	AR	
Chicago Plenum	CP	
Dust Cover	DC	
Drywall Frame Kit (Cut out dimensions: Min:24.25"/Max: 24.563")	DF	
Emergency Battery Pack*	EM	
Earthquake Clip	EQ	
HLR/GLR Fuse	FU	
Flex Whip*	FW	
Include 3000K Lamp	L830	
Include 3500K Lamp	L835	
Include 4100K Lamp	L841	
Separate Circuit*	SC	
Master Satellite*	MS	
Tandem Wiring*	TW	
Lutron™ Sensor Feed* (EcoSystem ballast required)	SF	
finish		WH
Matte Satin White	WH	

* for more information see Reference section.

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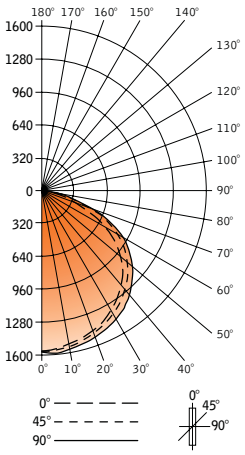
recessed

luna® 2x2

Filename: FLU222BX40PS.IES
Catalog #: FLU-22-B-2-BX40-E-120-G-PS-WH
Efficiency: 70%
Test #: 11020.0

CANDLEPOWER DISTRIBUTION



Vertical Angle	Horizontal Angle 0°	22.5°	45°	67.5°	90°	Zonal Lumens
0°	1595	1595	1595	1595	1595	
5°	1581	1583	1583	1596	1598	152
15°	1505	1515	1521	1543	1550	433
25°	1370	1386	1416	1451	1467	656
35°	1184	1209	1262	1320	1341	794
45°	944	981	1065	1140	1172	822
55°	676	731	837	913	940	738
65°	408	477	570	587	592	530
75°	183	224	230	259	271	249
85°	29	34	44	43	48	44
90°	0	0	0	0	0	
95°	0	0	0	0	0	0
105°	0	0	0	0	0	0
115°	0	0	0	0	0	0
125°	0	0	0	0	0	0
135°	0	0	0	0	0	0
145°	0	0	0	0	0	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	

Spacing 1.2
Criterion: 1.3

LUMEN SUMMARY

	Zone	Lumens	% Lamp	% Fixt
	0°-30°	1241	19.7	28.1
	0°-40°	2034	32.3	46.1
	0°-60°	3594	57.0	81.4
	0°-90°	4415	70.1	100.0
Total Luminaire	0°-180°	4415	70	100.0

LUMINANCE DATA (CD/M²)

Vertical Angle	0°	45°	90°
45°	3924	4427	4872
55°	3464	4289	4817
65°	2838	3965	4118
75°	2078	2612	3078
85°	978	1484	1619

CO–EFFICIENTS OF UTILIZATION

Floor	80				70			50	30	20	10	00
Ceiling	70	50	30	10	70	50	10	50	30	20	10	00
Wall												
RCR 0	83	83	83	83	81	81	81	78	75	75	72	70
1	77	74	71	69	75	73	68	70	67	64	64	61
2	71	66	61	57	69	64	57	62	60	54	58	52
3	65	58	53	49	63	57	48	55	53	47	51	44
4												
5	60	52	46	42	58	51	41	49	48	40	46	38
6	54	46	40	35	53	45	35	44	42	34	41	32
7	50	41	35	30	49	40	30	39	38	30	37	28
8	46	37	31	26	45	36	26	35	34	26	33	24
9	42	33	27	23	41	32	23	31	31	23	30	22
10	39	29	24	20	38	29	20	28	27	19	27	19

Numbers indicate percentage values of

Go to www.focalpointlights.com for additional photometric data.

Commalite

Page 1 of 3

TYPE "D"

ARCHITECTURAL LIGHTING WORKS

TYPE:

Specification and Ordering Information:

1. Style:

- ❑ CML - Commalite (CML)

2. Overall Run Length:

- ❑ Specify total run length

3. Lamp Options:

- ❑ 14 - 14W T5 22"(14W)
- ❑ 24 - 24W T5HO 22"(24W)
- ❑ 21 - 21W T5 34"(21W)
- ❑ 39 - 39W T5HO 34"(39W)
- ❑ 28 - 28W T5 46"(28W)
- ❑ 54 - 54W T5HO 46"(54W)
- ❑ 35 - 35W T5 58"(35W)
- ❑ 80 - 80W T5HO 58"(80W)
- ❑ LED - White LED -120V only (LED)

4. Standoff Length:

- ❑ Specify any length 2"-36"

5. Ballast Specification:

- ❑ LED - LED Power Supply (LED)
- ❑ STD - Standard (STD) - Electronic, non-dim <10%THD
- ❑ * MK7 - Mark 7® Dimming 0-10V (MK7)
- ❑ * MK10 - Advance Mark 10® Dimming (MK10)
- ❑ * HILUME - Lutron Hilume® (HILUME)
- ❑ * ECOSYS- Lutron ECOSYSTEM® Dimming (ECOSYS)
- ❑ * BALSTAR - Ballastar® Light level switching (BALSTAR)
- ❑ * USD - Superdim® Dimming (USD)

6. Mounting:

- ❑ *JBOX2 - 2" canopy with integral 2" splice box (JBOX2)
- ❑ JBOX4 - 4" canopy cover plate (JBOX4)
- ❑ TIE-BACK - Wall Tie-Back (TIE-BACK)
- ❑ ACSUSP - Aircraft cable suspended - non rotatable (ACSUSP)

* JBOX2 is standard unless otherwise noted.

7. Voltage:

- ❑ * 120 volt
- ❑ 277 volt
- ❑ UNV (Universal) voltage
- ❑ 347 volt (not available in dimming)

* LED is 120V only

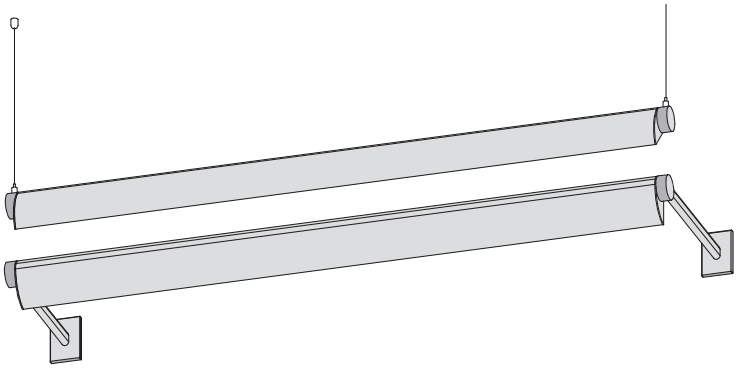
8. Finish:

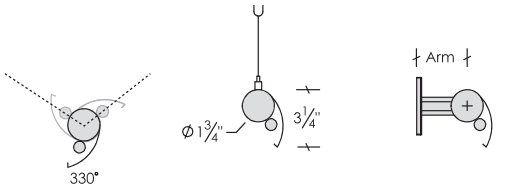
- ❑ * AL (Natural "Ultimatte" aluminum)
- ❑ BK (Black powdercoat)
- ❑ WH (White powdercoat)
- ❑ RAL (Specify RAL # of powdercoat of your choice)

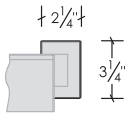
* AL is standard on all Commalite product

9. Additional Options:

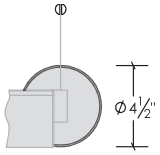
- ❑ OS - Occupancy Sensor (OS)
- ❑ PH - Photocell - Consult Factory (PH)
- ❑ REM - Remote Emergency Ballast (REM)







JBOX2 (2-1/4" Canopy with integral Junction box)



JBOX4 (4-1/2" Canopy)

Architectural Lighting Works reserves the right to make changes to fixture design, finish and engineering at any time.

Commalite

Page 2 of 3

TYPE "D"

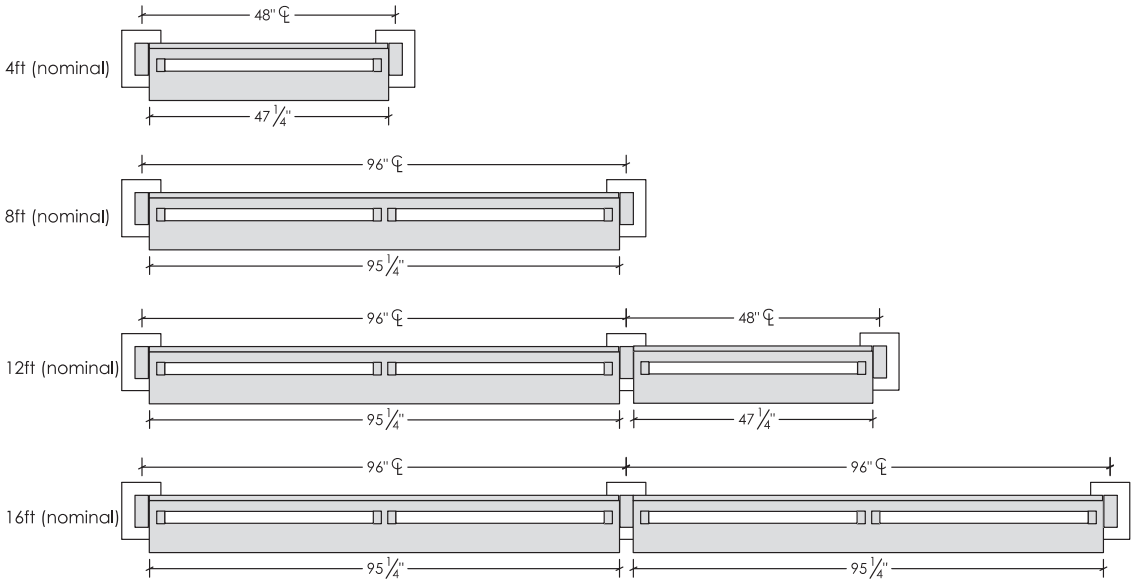
ARCHITECTURAL LIGHTING WORKS

TYPE:

Lamp Configuration Chart: Individual and Continuous

Regular	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'
14 or 24w T5	1								1		
21 or 39w T5		1			2	1		3		1	
28 or 54w T5			1			1	2		2	2	3
35 or 80w T5				1							

Typical Commalite row configurations: Additonal configurations and row lengths available. Consult factory for details.

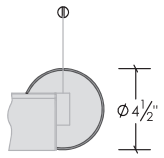


Staggered lamping not applicable.

Standard: Wall/Ceiling mount with integral 2" Junction box and canopy

JBOX2 - 2-1/4"W x 3-1/4"H canopy cover plate with factory supplied mini junction box.

Option: 4-1/2" Round Canopy



JBOX4 (4-1/2" round canopy). Junction box not included.

Option: Wall Tie-back

TIE-BACK - Aircraft cable wall tie-back.

Option: Cable Suspension

ACSUSP - Aircraft cable suspension - unit will be non-rotatable.

Architectural Lighting Works reserves the right to make changes to fixture design, finish and engineering at any time.

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Commalite

ARCHITECTURAL LIGHTING WORKS

TYPE:

Colors and Finishes:

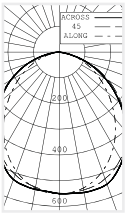
STANDARD: "Ultimatte" Natural aluminum : A two step, clear anodizing process that creates a smooth and durable surface.

OPTION: Black - BK powdercoat

OPTION: White - WH powdercoat

RAL

OPTION: RAL - powdercoat the RAL color of your choice. Specify RAL code.



Efficiency 54.5 %

Catalog # CML-4-28

Design Specifications

Construction
Extruded architectural grade T6061 aluminum. Minimum wall thickness is .080" 100% recyclable.
Reflectors are formed from .040 aluminum and finished in Titanium white powdercoat.
Integral, 93.4% efficient, high-transmission optical lens for lamp shielding and superior diffusion.
Cast Aluminum end-caps, machined aluminum rotational fittings.

Electrical Details
All ballasts are electronic <10% THD
Class P electronic ballasts - Programmed start
Standard and dimming ballasts are integral to channel (unless otherwise noted).
LED options available (consult factory)
Multiple interface options available including dimming, motion sensing, daylight harvesting and DALI.
ETL listed for Indoor location only.

Emergency
Remote Emergency Ballast
Emergency one-lamp ballasts provide 90 minutes of illumination.
T5/T5HO = Initial output of 1300 Lumens

Finish
All fixtures are standard in Ultimatte aluminum finish (AL) - A deep etch and two-step clear anodizing process that gives a smooth, clean and durable surface.
Powder Coat options are available. Consult factory.

Architectural Lighting Works reserves the right to make changes to fixture design, finish and engineering at any time.

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Commalite

Page 1 of 3

TYPE "D1"

ARCHITECTURAL LIGHTING WORKS

TYPE:

Specification and Ordering Information:

1. Style:

- ❑ CML - Commalite (CML)

2. Overall Run Length:

- ❑ Specify total run length

3. Lamp Options:

- ❑ 14 - 14W T5 22"(14W)
- ❑ 24 - 24W T5HO 22"(24W)
- ❑ 21 - 21W T5 34"(21W)
- ❑ 39 - 39W T5HO 34"(39W)
- ❑ 28 - 28W T5 46"(28W)
- ❑ 54 - 54W T5HO 46"(54W)
- ❑ 35 - 35W T5 58"(35W)
- ❑ 80 - 80W T5HO 58"(80W)
- ❑ LED - White LED -120V only (LED)

4. Standoff Length:

- ❑ Specify any length 2"-36"

5. Ballast Specification:

- ❑ LED - LED Power Supply (LED)
- ❑ STD - Standard (STD) - Electronic, non-dim <10%THD
- ❑ * MK7 - Mark 7® Dimming 0-10V (MK7)
- ❑ * MK10 - Advance Mark 10® Dimming (MK10)
- ❑ * HILUME - Lutron Hilume® (HILUME)
- ❑ * ECOSYS- Lutron ECOSYSTEM® Dimming (ECOSYS)
- ❑ * BALSTAR - Ballastar® Light level switching (BALSTAR)
- ❑ * USD - Superdim® Dimming (USD)

6. Mounting:

- ❑ *JBOX2 - 2" canopy with integral 2" splice box (JBOX2)
- ❑ JBOX4 - 4" canopy cover plate (JBOX4)
- ❑ TIE-BACK - Wall Tie-Back (TIE-BACK)
- ❑ ACSUSP - Aircraft cable suspended - non rotatable (ACSUSP)

* JBOX2 is standard unless otherwise noted.

7. Voltage:

- ❑ * 120 volt
- ❑ 277 volt
- ❑ UNV (Universal) voltage
- ❑ 347 volt (not available in dimming)

* LED is 120V only

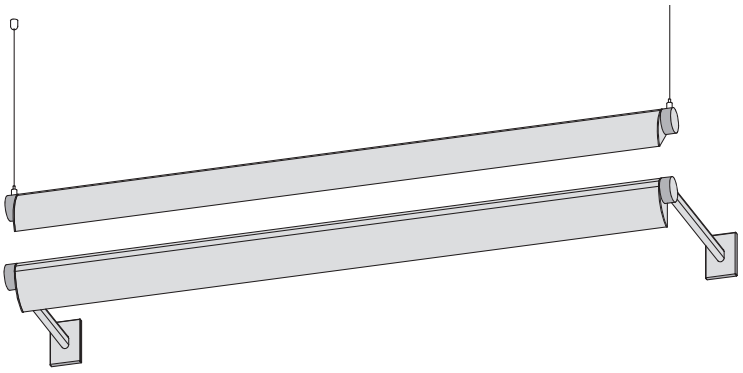
8. Finish:

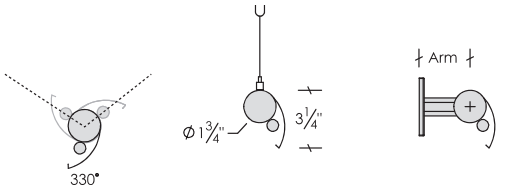
- ❑ * AL (Natural "Ultimatte" aluminum)
- ❑ BK (Black powdercoat)
- ❑ WH (White powdercoat)
- ❑ RAL (Specify RAL # of powdercoat of your choice)

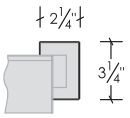
* AL is standard on all Commalite product

9. Additional Options:

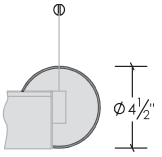
- ❑ OS - Occupancy Sensor (OS)
- ❑ PH - Photocell - Consult Factory (PH)
- ❑ REM - Remote Emergency Ballast (REM)







JBOX2 (2-1/4" Canopy with integral Junction box)



JBOX4 (4-1/2" Canopy)

Architectural Lighting Works reserves the right to make changes to fixture design, finish and engineering at any time.

www.architgworks.com

Commalite

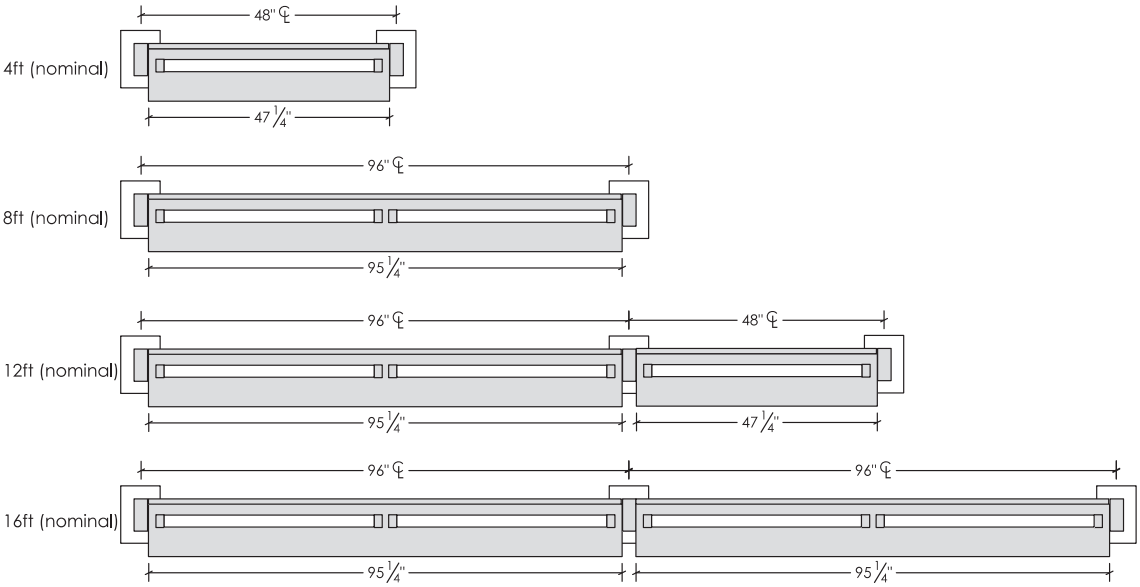
ARCHITECTURAL LIGHTING WORKS

TYPE:

Lamp Configuration Chart: Individual and Continuous

Regular	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'
14 or 24w T5	1								1		
21 or 39w T5		1			2	1		3		1	
28 or 54w T5			1			1	2		2	2	3
35 or 80w T5				1							

Typical Commalite row configurations: Additonal configurations and row lengths available. Consult factory for details.

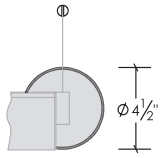


Staggered lamping not applicable.

Standard: Wall/Ceiling mount with integral 2" Junction box and canopy

JBOX2 - 2-1/4"W x 3-1/4"H canopy cover plate with factory supplied mini junction box.

Option: 4-1/2" Round Canopy



JBOX4 (4-1/2" round canopy). Junction box not included.

Option: Wall Tie-back

TIE-BACK - Aircraft cable wall tie-back.

Option: Cable Suspension

ACSUSP - Aircraft cable suspension - unit will be non-rotatable.

Architectural Lighting Works reserves the right to make changes to fixture design, finish and engineering at any time.

www.archltgworks.com

Commalite

ARCHITECTURAL LIGHTING WORKS

TYPE:

Colors and Finishes:

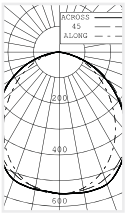
STANDARD: "Ultimatte" Natural aluminum : A two step, clear anodizing process that creates a smooth and durable surface.

OPTION: Black - BK powdercoat

OPTION: White - WH powdercoat

RAL

OPTION: RAL - powdercoat the RAL color of your choice. Specify RAL code.



Efficiency 54.5 %

Catalog # CML-4-28

Design Specifications

Construction
Extruded architectural grade T6061 aluminum. Minimum wall thickness is .080" 100% recyclable.
Reflectors are formed from .040 aluminum and finished in Titanium white powdercoat.
Integral, 93.4% efficient, high-transmission optical lens for lamp shielding and superior diffusion.
Cast Aluminum end-caps, machined aluminum rotational fittings.

Electrical Details
All ballasts are electronic <10% THD
Class P electronic ballasts - Programmed start
Standard and dimming ballasts are integral to channel (unless otherwise noted).
LED options available (consult factory)
Multiple interface options available including dimming, motion sensing, daylight harvesting and DALI.
ETL listed for Indoor location only.

Emergency
Remote Emergency Ballast
Emergency one-lamp ballasts provide 90 minutes of illumination.
T5/T5HO = Initial output of 1300 Lumens

Finish
All fixtures are standard in Ultimatte aluminum finish (AL) - A deep etch and two-step clear anodizing process that gives a smooth, clean and durable surface.
Powder Coat options are available. Consult factory.

Architectural Lighting Works reserves the right to make changes to fixture design, finish and engineering at any time.

www.architgworks.com

LITHONIA LIGHTING®

Catalog Number	
Notes	Type E

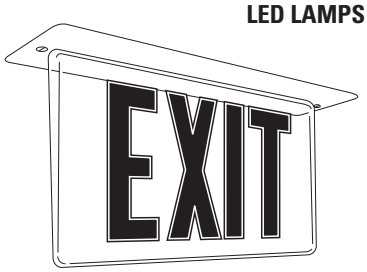
PRECISE® COLLECTION

TYPE "E"

Edge-Lit Exits

LRP

LED LAMPS RECESSED OR TOP MOUNT



FEATURES & SPECIFICATIONS

INTENDED USE — Suitable for architectural applications where aesthetics and superior performance are required.

CONSTRUCTION — High-polish, injection-molded virgin acrylic panel, ultrasonically welded to eliminate visible hardware. Graduated depth of molded letters provides uniform light distribution on graphics. Standard housing finish is brushed aluminum.

Precision-molded, textured letters – 6" high with 3/4" stroke. Chevron indicator direction must be specified.

Recessed rough-in section constructed of 20-gauge, die-formed galvanized steel.

Extruded aluminum housing trim mounts flush onto wall or ceiling.

Mounting canopy for top mount is constructed of extruded aluminum to match housing finish.

OPTICS — LEDs mounted on printed circuit board. Expected LED life more than 25 years.

Low energy consumption – only 1.5W for 120V single-face red sign; 1.2W for 120V single-face green sign.

INSTALLATION — Recessed mount – universal rough-in section for back, ceiling or end mounting. Fits into minimum wall or ceiling opening 13-5/8" L x 4-1/2" W x 3-1/8" D.

Adjustable T-bar hangers adapt mounting tray for mounting in suspended ceilings or variable-size framed openings. Trim ring has 3/4" variable depth adjustment to ensure flush fit against surface of wall or ceiling.

Plug-in wire connections and self-captive mounting screws for mounting panel/trim to rough-in section.

Top mount – low-profile mounting canopy attaches exit to J-box. No rough-in section required.

LISTING — UL listed. Meets UL 924, NFPA 101 (current Life Safety Code), NEC and OSHA illumination standards, and State of Minnesota requirements for less than 20W energy consumption. Listed and labeled to comply with Canadian Standards C-860 and C-22.2 No. 9 (see options).

WARRANTY — Five-year warranty, including lamps.

All life safety equipment, including emergency lighting for path of egress must be maintained, serviced, and tested in accordance with all National Fire Protections Association (NFPA) and local codes. Failure to p erform the required maintenance, service, or testing could jeopardize the safety of occupants and will void all warranties.

ORDERING INFORMATION

For shortest lead times, configure product using **standard options (shown in bold).**

Example: LRP 2 RMR DA 120/277

LRP

Family

LRP LED

Housing color

(blank) **Brushed aluminum**
W White
B Black
BZ Bronze
BS Polished brass
CR Chrome
U Unfinished

Number of faces

1 Single face
2 Double face

Panel color letter/background

RW Red on white
RC Red on clear (single face only)[1]
RMR Red on mirror[1,2]
GW Green on white[1]
GC Green on clear (single face only)[1]
GMR Green on mirror[1,2]

Directional indicators[3]

(blank) **None**
LA Left[4]
RA Right[4]
LRA Left and right
DA Double face[5]

Input voltage

120/277 Dual voltage[1]
120/347 Dual voltage[6]

Mounting

(blank) **Recessed ceiling or back mount**
EM Recessed end mount
TM Top mount[7]

Item type

(blank) **Complete exit panel and rough-in section**
PNL Panel assembly only

Options[8]

FI Fire alarm interface[1,9]
X2 Lamp boards wired on two separate circuits (specify 120V or 277V)[1,9]
CSA Listed and labeled to comply with Canadian Standards

Accessories

Order as separate item.

ELA LCRIS LED rough-in section (supplied standard with recessed exit unless PNL suffix is specified; order ELA LCRIS only if needed for early installation)

ELA US12[10] 12" pendant-mount kit. Mounting canopy is brushed aluminum. To order white or black canopy, add W or B to catalog number. Example: ELA W US12. To order 24" or 36" lengths, add 24 or 36 to catalog number. Example: ELA US24. See spec sheet ELA-StemKits.

NOTES:

1 Not available with CSA option.
2 Simulates clear background for double-face exits.
3 See chart on back for more information.
4 Only available with single face.
5 Only available with double face.
6 Only available with CSA option.
7 No rough-in section required. Attaches directly to J-box.
8 When ordering recessed rough-in separately, all options must be included with rough-in nomenclature. Example: ELA LRIS 120 X2
9 Not available with top-mount exits.
10 Top-mount exits only.

Emergency **Sheet #: LRP** ELEX - 100

LRP Precise® LED Exit Signs

SPECIFICATIONS

ELECTRICAL

Primary Circuit

Type	LED rated life*	Supply voltage	No. of faces	Input watts	Max. amps
Red	25+ years	120	1	1.5	.087
		277	1	1.8	.089
		347	1	2.2	.107
Red	25+ years	120	2	3.1	.178
		277	2	3.4	.180
		347	2	4.1	.220
Green	25+ years	120	1	1.2	.064
		277	1	1.3	.062
Green	25+ years	120	2	2.0	.06
		277	2	2.3	.06

* Based on continuous operation.

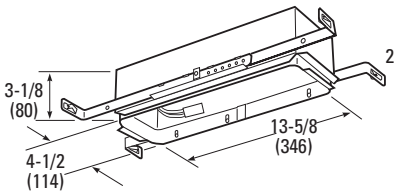
Directional Indicators

Specification (add to catalog number)	Graphics Back	Graphics Front
LA		
RA		
LRA (single face)		
DA		
LRA (double face)		

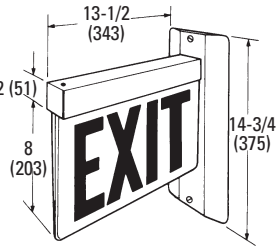
MOUNTING

All dimensions are in inches (millimeters).
Shipping weight for panel: 5 lbs. (2.3 kgs.)
Shipping weight for rough-in section: 4.6 lbs. (2.1 kgs.)

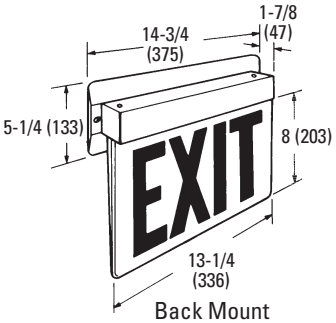
RECESSED



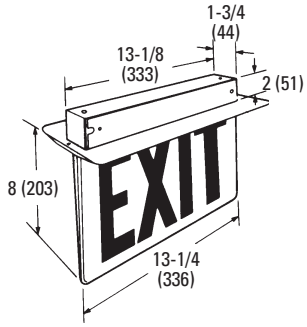
Rough-Section



End Mount

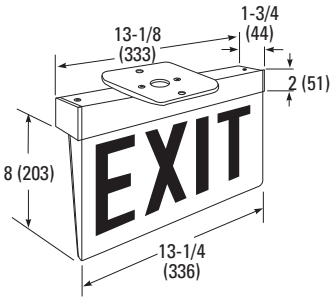


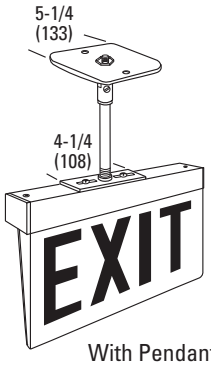
Back Mount



Ceiling-Mount

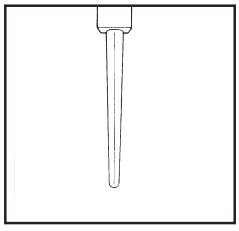
Top Mount





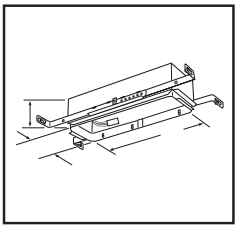
With Pendant Mounting Kit

KEY FEATURES



Unique wedge-shaped panel design concentrates light for uniform letter illumination.

Trim fits flush against wall or ceiling for clean, attractive appearance.



Small rough-in section.

LITHONIA LIGHTING®
An AcuityBrands Company

Sheet #: LRP

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Lithonia Lighting
Emergency Lighting Systems
One Lithonia Way, Conyers, GA 30012
Phone: 800-334-8694 Fax: 770-981-8141
www.lithonia.com

LIGHTPLANE LINEAR RECESSED- 2" Profile

Page 1 of 3

TYPE "F"

ARCHITECTURAL LIGHTING WORKS

TYPE:

Specification and Ordering Information:

1. Style:

- ❑ Trim (LPLRT)
- ❑ Trimless (LPLR)

2. Mounting:

- ❑ Drywall (DRY)
- ❑ Exposed T-Grid -15/16" (TGRID)
- ❑ Exposed Slot T-Grid -9/16" (SLOT)
- ❑ Hunter Douglas® Techstyle Classic (HDC)
- ❑ Hunter Douglas® Techstyle Traditional (HDT)
- ❑ Hunter Douglas® Integrated - Consult Factory (HDI)
- ❑ Armstrong® Techzone - Consult Factory (ATZ)

3. Overall Run Length:

- ❑ Individual (2',3',4',5',6',7',8')
- ❑ Continuous (Enter total run length, i.e 20')

4. Lamping

- ❑ FSO - T5 Fluorescent - Standard Output (FSO)
- ❑ FHO - T5 Fluorescent - High Output (FHO)
- ❑ LEDW - LED White (LEDW)
- ❑ RGB - LED Color Changing (RGB)
- ❑ T8 - Fluorescent - Standard Output T8 (T8SO)
- ❑ T8 - Fluorescent - High Output T8 (T8HO)
- ❑ OTHER - Other (Consult factory)

5. Lamp Configuration:

- ❑ R - Regular (R)
- ❑ S - Staggered (S)

6. Ballast Specification:

- ❑ LED - LED Power Supply (LED)
- ❑ STD - Standard (STD) - Electronic, non-dim <10%THD
- ❑ * MK7 - Mark 7® Dimming 0-10V (MK7)
- ❑ * MK10 - Advance Mark 10® Dimming (MK10)
- ❑ * HILUME - Lutron Hilume® (HILUME)
- ❑ * ECOSYS- Lutron ECOSYSTEM® Dimming (ECOSYS)
- ❑ * BALSTAR - Ballastar® Light level switching (BALSTAR)
- ❑ * USD - Superdim® Dimming (USD)

Note: Please consult ballast manufacturer for lamp/ballast compatability

7. Voltage:

- ❑ 120 - 120 volt (120)
- ❑ 277 - 277 volt (277)
- ❑ UNV - Universal voltage (UNV) (Fluorescent Only)
- ❑ 347 - 347 volt (not available in dimming) (347)

8. Accessory options:

- ❑ WD - Lens (WD)
- ❑ EXT - Extra Diffuse Lens (EXT)
- ❑ LV - Louver (LV)

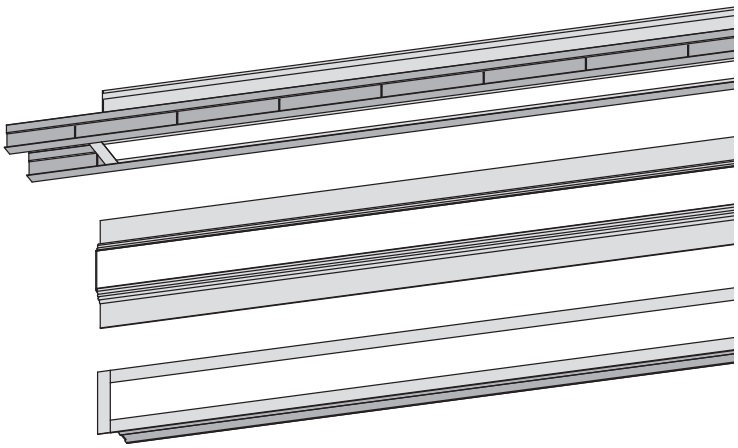
9. Finish:

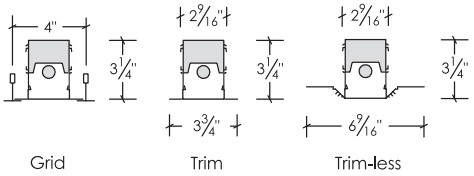
- ❑ * AL (Natural "Ultimatte" aluminum)
- ❑ BK (Black powdercoat)
- ❑ WH (White powdercoat)
- ❑ RAL (Specify RAL # of powdercoat of your choice)

* AL is standard on all Lightplane Linear product

10. Additional Options:

- ❑ OS - Occupancy Sensor
- ❑ PH - Photocell - Consult Factory (OS)
- ❑ EM - Emergency Ballast (EM)





Lamp Configuration Chart: Individual and Continuous

Regular	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'
14 or 24w T5	1								1		
21 or 39w T5		1			2	1		3		1	
28 or 54w T5			1			1	2		2	2	3
35 or 80w T5				1							

Staggered	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'
14 or 24w T5											
21 or 39w T5					1		3	2	1		3
28 or 54w T5					1	2		1	2	3	1
35 or 80w T5											

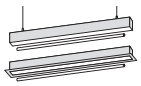
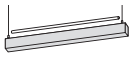
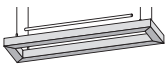
Architectural Lighting Works reserves the right to make changes to fixture design, finish and engineering at any time.

www.architgworks.com

LIGHTPLANE LINEAR RECESSED- 2" Profile

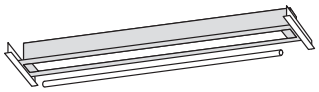
ARCHITECTURAL LIGHTING WORKS

TYPE:

Nominal Length	T5 Lamp Configurations	Stagger Overlap	LPLR, LPLD LPLR3.5 Fixture Length	LPLI Fixture Length	LP11, LP15 Fixture Length
2'	14/24W	none	2'	2'1"	2'5"
3'	21/39W	none	3'	3'1"	3'5"
4'	28/54W	none	4'	4'1"	4'5"
5'	35/80W	none	4'11"	5'1"	5'5"
6'	21/39W 21/39W	none	5'10"	6'	6'5"
6'	28/54W 21/39W	6"	6'3"		
7'	28/54W 21/39W	none	6'10"	7'	7'5"
7'	28/54W 28/54W	6"	7'3"		
8'	28/54W 28/54W	none	7'10"	8'	8'5"
8'	21/39W 21/39W 21/39W	4.5"	7'10"		
9'	21/39W 21/39W 21/39W	none	8'7"	8'9"	9'5"
9'	21/39W 21/39W 28/54W	5"	8'7"		
10'	28/54W 28/54W 14/24W	none	9'9"	9'11"	10'5"
10'	28/54W 28/54W 21/39W	5"	9'9"		
11'	28/54W 28/54W 21/39W	none	10'8"	10'11"	11'5"
11'	28/54W 28/54W 28/54W	5"	10'8"		
12'	28/54W 28/54W 28/54W	none	11'8"	11'11"	12'5"
12'	28/54W 21/39W 21/39W 21/39W	4"	11'4"		
Notes:	14/24W = 2' 21/39W = 3' 28/54W = 4' 35/80W = 5'		Contact factory for exact sizes, or custom		Downlight modules may affect length

All chart data reflects an estimated length. For exact measurements, please consult factory and submittal drawings per specification. Lengths subject to change.



TBar Distance	T5 configurations	Stagger Overlap	End Panels	Direct Lamp Fixture Length
2'	14/24W	none	none	23.75"
4'	28/54W	none	none	47.75"
6'	21/39W 21/39W	none	2x1"	71.75"
6'	21/39W 21/39W	4"	2x3"	71.75"
8'	28/54W 28/54W	none	2x1"	95.75"
8'	21/39W 21/39W 21/39W	5"	2x1"	95.75"
10'	28/54W 28/54W 14/24W	none	2x2"	119.75"
10'	28/54W 28/54W 21/39W	4"	2x1"	119.75"
12'	28/54W 28/54W 28/54W	none	2x2"	143.75"
12'	28/54W 28/54W 28/54W 14/24W	4"	2x1"	143.75"

End Panels are small aluminum plates to optimize staggered lamping for a more continuous lamp quality. End panels are placed at the end of runs to cover any dark space.

Architectural Lighting Works reserves the right to make engineering changes at any time. Always consult factory for exact measurements.

www.archltgworks.com

LIGHTPLANE LINEAR RECESSED- 2" Profile

ARCHITECTURAL LIGHTING WORKS

TYPE:

Colors and Finishes:

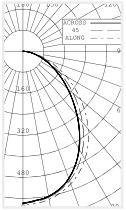
STANDARD: "Ultimatte" Natural aluminum : A two step, clear anodizing process that creates a smooth and durable surface.

OPTION: Black - BK powdercoat

OPTION: White - WH powdercoat

RAL

OPTION: RAL - powdercoat the RAL color of your choice. Specify RAL code.



Spacing Criterion 1.2
1.1

Efficiency 49.9 %

Catalog # LPLRT-4-FSO-WD

Design Specifications

Construction
Extruded architectural grade T6061 aluminum. Minimum wall thickness is .080" 100% recyclable.
Reflectors are formed from .040 aluminum and finished in Titanium white powdercoat.
Lenses are made from twin layered extruded high-impact acrylic.
WD is a full frosted/transparent combination.
EXT is a half frosted/white combination.
Single piece construction aluminum louver with clear matte anodized finish.

Electrical Details
All ballasts are electronic <10% THD
Class P electronic ballasts - Programmed start
Standard and dimming ballasts are integral to channel (unless otherwise noted).
LED options available (consult factory)
Multiple interface options available including dimming, motion sensing, daylight harvesting and DALI.
ETL listed for Indoor location only.

Emergency
Fixtures can be wired for emergency circuit or emergency battery backup.
Emergency one-lamp ballasts provide 90 minutes of illumination.
T5/T5HO = Initial output of 1300 Lumens

Finish
All fixtures are standard in Ultimatte aluminum finish (AL) - A deep etch and two-step clear anodizing process that gives a smooth, clean and durable surface.
Powder Coat options are available. Consult factory.

Architectural Lighting Works reserves the right to make changes to fixture design, finish and engineering at any time.

www.archltgworks.com

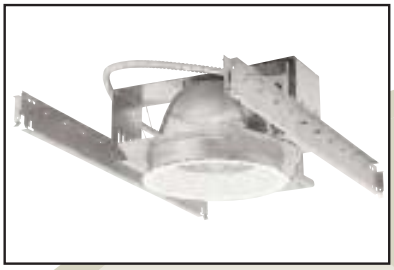
REVELATION REV. 05/09

SPEC SHEET # **RV1-31**

OM82H42PLTSPL

TYPE "H"

8'' Splay Lens Reflector Downlights



CAT. NO:

TYPE: "H" **PROJECT:** LIBERAL ART BLD

PRODUCT INFORMATION

Applications

A soft edged, lensed downlight for use with energy efficient compact fluorescent lamps. Provides broad, uniform light distribution while concealing lamp image and maintaining good visual cutoff. Ideal for areas such as lobbies, corridors, canopies, soffits, restaurants and offices.

Specifications

1. **Ballast** - One (1) Type 1 Class P, high power factor universal voltage electronic compact fluorescent ballast. Offer both 1 or 2 lamp operation for 120 through 277 volt input voltage.

	(2) 18W 120V	18W 277V	(2) 26W 120V	26W 277V	(2) 32W 120V	32W 277V	(2) 42W 120V	42W 277V
Line current amps	.34	.15	.49	.21	.58	.26	.76	.32
Input watts including ballast loss	40	40	56	56	69	67	91	90
Ballast factor	.98	.98	.98	.98	1.00	1.00	.98	.98
Minimum starting temperature	0°F	0°F	0°F	0°F	0°F	0°F	0°F	0°F

2. **Mounting pan** - Precision die-stamped 16 gauge galvanized steel. Accommodates ceiling materials up to 1-3/8" thick.

3. **Installation** - Mounting pan has pre-installed C-channel with vertical and horizontal adjustments. Ballasts and junction box are accessible from below ceiling. For 27" flat bar hanger pair, specify Q1031 accessory, ordered separately.

4. **Splay trim** - Spun aluminum regressed splay trim with white powder paint finish. Torsion spring mounting for ease of installation. Flat fresnel and prismatic lens for smooth, even distribution of light. Flat clear tempered lens for enclosed application.

5. **Baffle** - Precision machined .051 aluminum with deep grooves to minimize aperture glare, anodized matte black or matte white finish. Standard flat flange is painted white. Optional black flange available, add FF to catalog number.

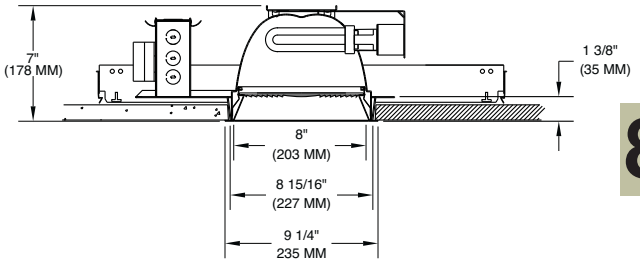
6. **Sockets** - CFM42W/GX24q, CFM32W/GX24q, CFM26W/GX24q, CFM18W/GX24q, CFQ26W/G24q, CFQ18W/G24q.

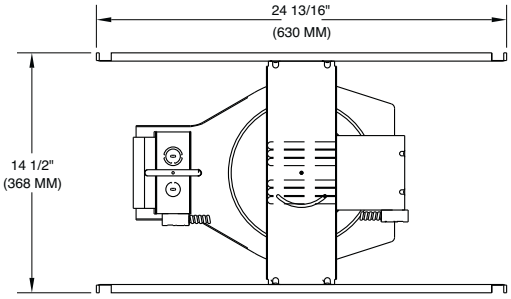
7. **Junction box** - Extra large 43.75-cubic inch 16 gauge galvanized steel with snap-on cover and ground wire riveted to frame. Approved for through wiring with up to 8 #12 AWG conductors.

8. **Optional emergency system** - Emergency system includes battery, electronic circuitry, charger, and test/monitor plate with test switch and charging indicator light. Test monitor plate may be installed in the ceiling near the fixture or other remote location. Operates appropriate lamp wattage for a minimum of 90 minutes following power failure. Battery is recharged automatically following restoration of power. Emergency system complies with NFPA life safety code, OSHA and NEC. Suitable for dry locations.

9. **U.L. Listed** - For use in wet locations in covered ceiling applications only. Approved for Through Branch Circuit Wiring. I.B.E.W. union made.

♣ Canadian Specifications may vary from these shown, consult Canadian Division.





8

CATALOG SYSTEM AND OPTIONS

EXAMPLE OF COMPLETE CATALOG NUMBER: **OM82H42PLTSPL-FL-120/277**

OMEGA Aptr.	No. of Lamps*	Lamps Position	Lamp (by others)	Reflector Option	Lens Option (required)	Options	Slope Ceiling Adapter Angle	Supply Voltage
OM8	1 2	H Horizontal	**42 PLT** Triple Tube CFL **32 PLT** Triple Tube CFL **26 PLT** Triple Tube CFL **18 PLT** Triple Tube CFL **26 QPL** Quad Tube CFL **18 QPL** Quad Tube CFL	**SPL** Splay Lens (white) **CSSPL** Clear Specular Splay **BBSPL** Black Baffle Splay **BKSPL** Splay Lens (Black)	**FL** Fresnel Lens **PL** Prismatic Lens **CL** Clear Lens **Poly** Polycarbonate Lens	**EM** Emergency **FZ120** Fusing **FZ277** Fusing **FZ347** Fusing **CP** Chicago Plenum **Q1031** Flat Bar Hangers **SA6** Sloped Ceiling Adpt. **DL1** Dimming, Lutron Compact SE, 120v **DL2** Dimming, Lutron Compact SE, 277v **DX1** Dimming, Advance Mark X, 120v **DX2** Dimming, Advance Mark X, 277v	5 10 15 20 25 30	120/277 347 ♣

Accesories (ordered seperately)

SA8 Sloped ceiling Adapter (must specify angle in 5° increments)
TPVR Tamper Proof Screws

made with pride in the United States of America

FIVE YEAR Warranty

OMEGA LIGHTING: 776 South Green St., Tupelo, MS 38804 Phone 662.842.7212 FAX 662.841.5501

Omega Lighting is a Philips group brand

PHILIPS

REV. 12/07

SPEC SHEET # **RV1-31**

REVELATION

OM82H42PLTSPL-FL Photometric Data

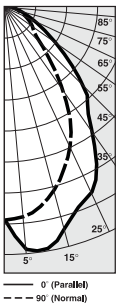
Fresnel Lens with White Regressed Splay

Report Number: ITL49872
Lamp: (2) CFM42W
Total Lumens: 6400
Fixture Efficiency: = 38.1%
IES File: ITL49872.IES
S/MH Ratio = 1.0, 1.2
Beam Angle: 79.56

LIGHTING PERFORMANCE DATA

CEILING HEIGHT* (FT.)	INITIAL FOOTCANDLES	BEAM DIAMETER (FT.-IN.)
8	43.9	9-2
10	23.6	12-6
12	14.7	15-10
14	10.0	19-2
16	7.3	22-6

DISTRIBUTION CURVE



DEGREES	CANDELA AT 0°	CANDELA AT 90°	FOOT-LAMBERTS
90	0	0	
85	9	9	2949
75	50	57	5904
65	118	161	9428
55	197	353	13694
45	279	663	19025
35	606	933	
25	954	1273	
15	1180	1427	
5	1312	1515	
0	1328	1328	

COEFFICIENTS OF UTILIZATION ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC	80		70		50	
RW	50	30	50	30	50	30
0	45	45	44	44	41	41
1	40	40	40	39	39	38
2	36	34	35	34	34	33
3	33	30	33	29	32	29
4	29	27	29	27	28	27
5	28	25	27	23	26	23
6	25	22	25	22	23	22
7	23	20	23	20	22	20
8	22	19	20	19	20	17
9	20	17	20	17	19	17
10	19	16	17	16	17	16

OM82H42PLTSPL-PL Photometric Data

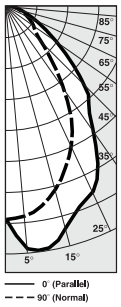
Prismatic Lens with White Regressed Splay

Report Number: ITL49871
Lamp: (2) CFM42W
Total Lumens: 6400
Fixture Efficiency: = 38.7%
IES File: ITL49871.IES
S/MH Ratio = 1.4, 1.2
Beam Angle: 86.16

LIGHTING PERFORMANCE DATA

CEILING HEIGHT* (FT.)	INITIAL FOOTCANDLES	BEAM DIAMETER (FT.-IN.)
8	39.3	10-3
10	21.2	14-0
12	13.2	17-9
14	9.0	21-6
16	6.5	25-3

DISTRIBUTION CURVE



DEGREES	CANDELA AT 0°	CANDELA AT 90°	FOOT-LAMBERTS
90	0	0	
85	11	10	1004
75	65	63	2061
65	157	143	2959
55	308	249	4048
45	584	466	6189
35	1047	832	
25	1248	1061	
15	1237	1153	
5	1193	1188	
0	1190	1190	

COEFFICIENTS OF UTILIZATION ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC	80		70		50	
RW	50	30	50	30	50	30
0	46	46	45	45	42	42
1	40	40	40	39	39	38
2	36	34	35	34	34	33
3	33	30	33	29	32	29
4	29	27	29	27	28	26
5	27	23	27	23	26	23
6	25	22	25	22	23	20
7	23	20	23	20	22	19
8	20	17	20	17	20	17
9	20	17	19	17	19	16
10	17	14	17	14	17	14

OM82H26QPLSPL-FL Photometric Data

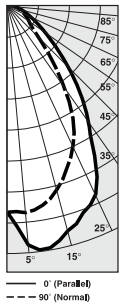
Fresnel Lens with White Regressed Splay

Report Number: ITL49870
Lamp: (2) CFQ26W Quad
Total Lumens: 3600
Fixture Efficiency: = 43.3%
IES File: ITL49870.IES
S/MH Ratio = 1.2, 1.0
Beam Angle: 76.31

LIGHTING PERFORMANCE DATA

CEILING HEIGHT* (FT.)	INITIAL FOOTCANDLES	BEAM DIAMETER (FT.-IN.)
8	29.2	8-8
10	15.7	11-9
12	9.8	14-11
14	6.7	18-1
16	4.8	21-3

DISTRIBUTION CURVE



DEGREES	CANDELA AT 0°	CANDELA AT 90°	FOOT-LAMBERTS
90	0	0	
85	4	5	430
75	31	37	1095
65	67	91	1558
55	105	181	2078
45	168	354	3077
35	410	597	
25	660	888	
15	813	994	
5	887	1025	
0	882	882	

COEFFICIENTS OF UTILIZATION ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC	80		70		50	
RW	50	30	50	30	50	30
0	52	52	50	50	47	47
1	46	45	46	45	44	42
2	41	40	41	39	40	38
3	38	35	38	34	35	34
4	34	32	34	32	33	30
5	32	28	32	28	30	28
6	28	26	28	26	28	26
7	27	23	27	23	26	23
8	25	22	25	22	23	22
9	23	20	23	20	23	20
10	22	19	22	19	20	19

OM82H26QPLSPL-PL Photometric Data

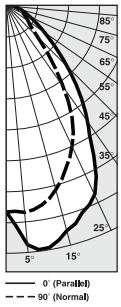
Prismatic Lens with White Regressed Splay

Report Number: ITL49869
Lamp: (2)CFQ26W Quad
Total Lumens: 3600
Fixture Efficiency: = 44.1%
IES File: ITL49869.IES
S/MH Ratio = 1.3, 1.2
Beam Angle: 81.03

LIGHTING PERFORMANCE DATA

CEILING HEIGHT* (FT.)	INITIAL FOOTCANDLES	BEAM DIAMETER (FT.-IN.)
8	27.0	9-5
10	14.5	12-10
12	9.1	16-3
14	6.2	19-8
16	4.5	23-1

DISTRIBUTION CURVE



DEGREES	CANDELA AT 0°	CANDELA AT 90°	FOOT-LAMBERTS
90	0	0	
85	8	8	765
75	41	39	1288
65	94	86	1775
55	181	151	2413
45	339	279	3643
35	649	508	
25	893	746	
15	878	817	
5	830	824	
0	818	818	

COEFFICIENTS OF UTILIZATION ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC	80		70		50	
RW	50	30	50	30	50	30
0	53	53	51	51	48	48
1	46	46	46	45	45	44
2	42	40	41	40	40	39
3	38	35	38	34	36	34
4	34	32	34	30	33	30
5	32	28	30	28	29	28
6	28	26	28	26	28	25
7	27	23	26	23	26	23
8	25	20	23	20	23	20
9	23	20	23	20	22	19
10	20	17	20	17	20	17

*Readings at working plane, 2'6" above floor. Beam Angle and Diameter Cutoff at 50% of max.
Candlepower Coefficients used at effective reflectances of: 70% Ceiling, 50% Walls, 20% Floor
Additional photometric test files are available @ omegalighting.com

To convert values for optional reflector colors, multiply by:
Gold .90 Bronze .82 Pewter .87

OMEGA LIGHTING

OMEGA LIGHTING:
776 South Green St., Tupelo, MS 38804
Phone 662.842.7212 FAX 662.841.5501

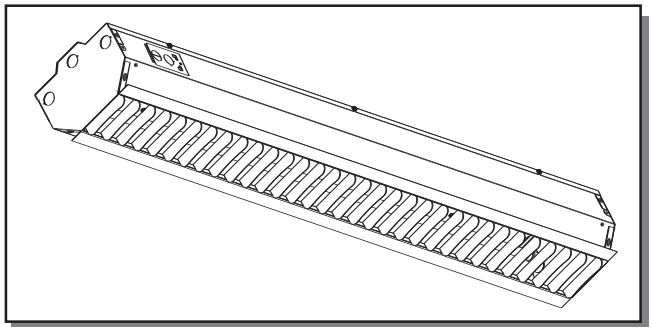
CANADIAN DIVISION:
189 Bullock Drive, Markham, Ontario, Canada L3P 1W4
Phone 905.294.9570 FAX 800.268.0003

8

TYPE J

Day-Brite® Lighting

microslot™



optix™ multifocus technology

1 Lamp
T5 or High Output T5

APPLICATION

- Patented (#5,921,666) luminaire provides high-impact lighting ideal for illuminating retail shelves, library stacks, corridors and other special applications.
- Optix reflector technology provides high horizontal and vertical illumination, making the luminaire suitable for area lighting as well as vertical illumination.
- Symmetric 1 lamp reflector creates a narrow light distribution to provide excellent horizontal illumination from the single lamp, as well as outstanding vertical illumination.
- 1 lamp 54wT5HO model emits as much light as a traditional 2 lamp 2x4 troffer, while consuming 85% less ceiling area.
- Narrow 3-1/2" aperture for use where aesthetics demand an architecturally clean ceiling.
- Narrow aperture consumes 85% less ceiling area than 2x4 luminaires and 71% less ceiling area than 2x2 or 1x4 luminaires.
- Suitable for individual or row mounting.
- Knockouts in ends allow through wiring for continuous row applications.
- Available for grid type (NEMA G) T-bar or flange type (NEMA F) drywall or plaster ceiling applications.

CONSTRUCTION/FINISH

- Housing is multi-stage phosphate treated for maximum corrosion resistance and finish coat is high reflectance baked white enamel.
- Reflector is constructed from Miro® by Alanod, providing 95% minimum reflectance and high specularity.
- Two piece reflector allows removal through aperture and ballast access from below.
- Easy to attach grid clips are included for ease of installation on T-bar ceilings.
- Solid white architecturally shaped baffles are standard to provide longitudinal shielding.
- Flush, perforated and/or silver baffles are available to provide different architectural features.

ELECTRICAL

- Class P, HPF ballasts comply with ⒺFederal Ballast Law (Public Law 100-357, 1988).
- UL listed for damp locations. Canadian model optional.
- Self contained fluorescent emergency power packs can be incorporated, UL listed for dry locations. Some models will require a secondary ballast enclosure on top, consult factory for details.
- Energy saving electronic ballast is standard.

CATALOG NUMBER

MS [ ] 1 [ ] – [ ] – [ ] – [ ] – [ ]

FIXTURE FAMILY
MS - Microslot

CEILING TYPE
G - Grid
F - Flange

NO. OF LAMPS PER CROSS SECTION
1

LAMP TYPE/WATTAGE
(not included)
14 - 14wT5 (22")
24HO - 24wT5HO (22")
21 - 21wT5 (34")
39HO - 39wT5HO (34")
28 - 28wT5 (46")
54HO - 54wT5HO (46")

LOUVER
W - white solid architectural blades (standard)
WF - white solid blades flush w/ceiling
PW - white perforated architectural blades
PWF - white perforated blades flush with ceiling
S - silver solid architectural blades
SF - silver solid blades flush w/ceiling
PS - silver perforated architectural blades
PSF - silver perforated architectural blades flush w/ceiling

VOLTAGE
120
277

BALLAST
Generic Electronic Ballasts
(Brand selected by Day-Brite)
Suffix Catalog # with
– **Ballast Quantity** – ___ / ___ **-EB** **Lamps Per Ballast.**
Example: –1/1-EB = One 1 Lamp Electronic Ballast.

OPTIONS
CM - Canadian Market
LPT830 - factory installed 85+ CRI 3000K lamp
LPT835 - factory installed 85+ CRI 3500K lamp
LPT841 - factory installed 85+ CRI 4100K lamp
E500 - emergency ballast, not available with HO, 370-520 lumens (520 lumens with F28T5)
E550 - emergency ballast, T5 or T5HO, 390-700 lumens (700 lumens with F28T5 or F54T5HO)
E600 - emergency ballast, T5 or T5HO, 725-1325 lumens (1325 lumens with F28T5, 1250 lumens with F54T5 HO)

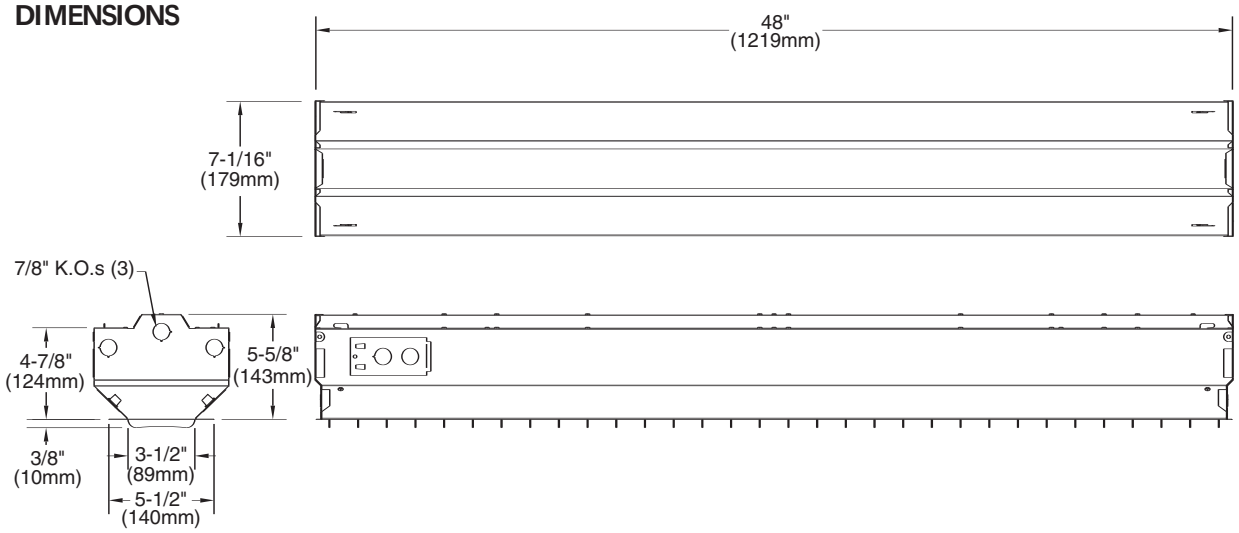
JOB INFORMATION

0605-AR

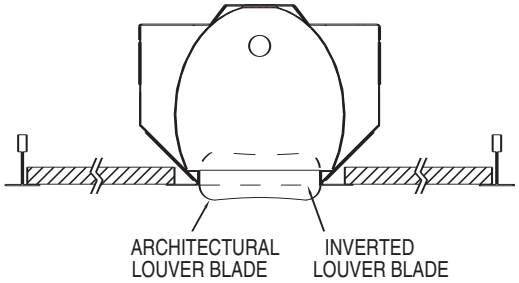
microSLOT™

Day-Brite® Lighting

DIMENSIONS

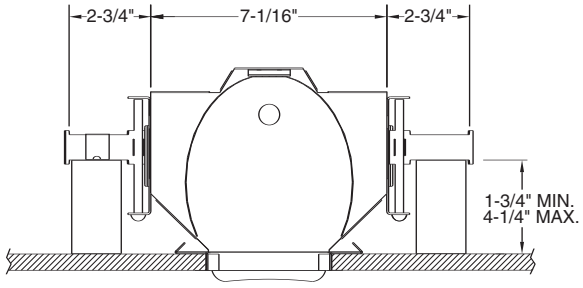


CROSS SECTIONS



Grid Type

	Ceiling Opening Required	Trim Flange Dimension
2'	4" x 23-1/2"	4-7/16" x 24"
3'	4" x 35-1/2"	4-7/16" x 36"
4'	4" x 47-1/2"	4-7/16" x 48"



Flange Type

Due to the small aperture, flange option MicroSlot luminaires install much like downlights. The fixture must be installed into the plenum and anchored to a structural member before the plaster or drywall ceiling is constructed. After the ceiling is completed around the luminaire flange, the opening is finished by means of a "baffle trim" that snaps in from below.

PHOTOMETRIC DATA

CATALOG # MSG128-W-1/1-EB **LAMPS** = F28T5 **INPUT WATTS** = 30
TEST #20277 **S/MH=** 1.1 **BALLAST =** ELECTRONIC **BALLAST FACTOR =** .94

LER = FL-73

COMPARATIVE YEARLY LIGHTING ENERGY COST PER 1000 LUMENS = **$3.29** BASED ON 3000 HRS. AND $.08 PER KWH.

FIXTURE EFFICIENCY= 80.4%

CANDLEPOWER

Angle	End	45	Cross
0	1130	1130	1130
5	1129	1117	1118
10	1091	1089	1102
15	1038	1049	1139
20	975	1032	1205
25	893	1027	980
30	806	928	779
35	709	704	672
40	606	571	552
45	500	471	502
50	397	369	499
55	300	307	644
60	209	258	506
65	148	216	129
70	112	126	51
75	80	89	51
80	50	60	32
85	22	34	13

MAINTAINED ILLUMINATION TABLE- Square Feet/Fixture*

- 80-50-20 Reflectances (Ceiling-Wall-Floor)
- LLF = 0.84 2900 Lumens/Lamp very clean
- Room width divided by room height = 5 or more, 2 or 1

Fixture Size & # of Lamps	Room Width / Room Height =	Approx. Area (sq. ft.) per Fixture 10 ft-c	30 ft-c	50 ft-c	70 ft-c	100 ft-c
4' 1 LAMP	5	-	69	41	-	-
	2	147	49	-	-	-
	1	111	37	-	-	-

*Observe Fixture S/MH Requirements for Specific Applications

AVERAGE LUMINANCE CD/SQ.M WITH 2900 LUMEN LAMPS

ANGLE	END	45°	CROSS
45	6121	5766	6145
55	4527	4633	9719
65	3031	4424	2642
75	2676	2977	1706
85	2185	3377	1291

TYPICAL V.C.P.'s

Room Size	Mounting Height Lengthwise 8.5	Lengthwise 10	Crosswise 8.5	Crosswise 10
30x30	45	48	48	50
40x40	43	46	48	49
60x30	50	52	51	53
60x60	41	43	47	48
100x100	40	41	47	48

COEFFICIENT OF UTILIZATION

pfc	20								
pcc	80			70			50		
pw	70	50	30	70	50	30	50	30	
RCR									
0	95	95	95	93	93	93	89	89	
1	89	84	81	85	82	81	80	78	
2	81	76	70	80	73	69	70	68	
3	75	68	61	72	66	60	64	58	
4	68	60	54	68	59	54	57	52	
5	64	55	47	63	54	47	52	46	
6	59	50	42	57	48	42	47	41	
7	56	45	39	54	45	39	44	38	
8	52	41	34	51	40	34	40	34	
9	48	39	32	47	38	32	36	32	
10	46	35	29	45	34	29	34	28	

LIGHT DISTRIBUTION

DEGREES	LUMENS	% LAMP	% FIXTURE
0-30	854	29.4	36.6
0-40	1296	44.7	55.6
0-60	2028	69.9	87.0
0-90	2331	80.4	100.0
0-180	2331	80.4	100.0

LLF = .84 LLF = LIGHT LOSS FACTOR LLF = LDD X LLD X BF LDD = VERY CLEAN 0.94 CLEAN 0.90
LLD = 0.95 @ 40% RATED LAMP LIFE BF = 0.94 ELECTRONIC BALLAST & F28T5 LAMP (RELAMP AT 70% LAMP LIFE)

NVLAP® The photometric results were obtained in the Day-Brite Lighting Laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

0605-AR

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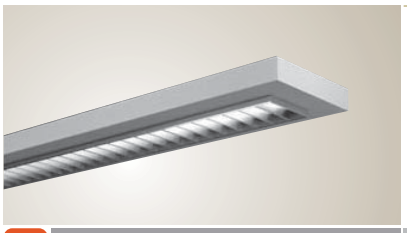
TYPE "K"

PEERLESS®



Bruno®

Indirect / Direct T8

Type: K

Project:

SPECIFICATIONS Pendant Mount — Modular / 8" X 2" Rectangular BRM4

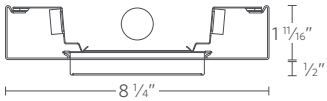
CATALOG NUMBER

FT

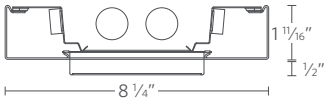
Examples: BRM4 2 32 SPR 40FT R8 277 GEB10 DCT LP835 F1/18 SCEP — BRM4 3 32 SPR 32FT R8 277 GEB10 1SE EL DCT LP835 F1/21

AVAILABLE FIXTURES

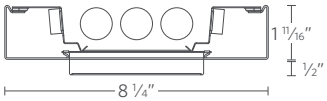
☐ **BRM4 - 1**



☐ **BRM4 - 2**



☐ **BRM4 - 3**



SPECIFICATIONS

Construction
Housing is a nominal 8 1/4" x 1 11/16" rectangular channel formed from cold-rolled steel. 5/8" thick aluminum die cast end cap is standard, 4" sculpted die cast aluminum end cap is optional.

Reflectors
Die formed specular reflector with 95% reflectance.

Shielding
Two choices: 1) Aluminum semispecular parabolic louver. 2) Optional white painted aluminum parabolic baffle. Each available with optional acrylic opal overlay.

Finish
Fine textured white polyester powder paint is standard. Consult factory for special finish requirements.

Electrical
Specify 120V, 277V, or 347V. Pre-wired with 16AWG fixture wire. For special circuiting or wire gauge, consult factory. Plug-in electrical connectors included. UL and C-UL listed and labeled.

Fixture Length
4' 3/8" and 8' lengths in a single section for nominal support spacing 4'-0" and 8'-0". For total fixture length, add 5/8" for each flat end cap and 4" for each sculpted end cap. Using internal joiners, 4' and 8' sections can be joined to form longer rows. Consult factory for availability of 12' length fixture section.

ORDERING LOGIC

Use guide below to order complete fixture runs from four feet to one-hundred feet in increments of four.

Fixture	# of Lamps in Cross Section	Lamp Type	Distribution	Reflector	Shielding	Baffle	Nominal Row Length[1]	Maximum Section Length	Voltage	Ballast Type	# of Emergency Modules[2]
BRM4	1 2 3	32	**Blank** Standard 65/35 **20/80** 20% Up, 80% Down **40/60** 40% Up, 60% Down **0/100** 0% Up, 100% Down **CLI** Center Lamp Isolater[5]	**SPR**[4] Specular Reflector	**Blank** **OPD** Baffle w/ std brightness diffuser/ Opal overlay	**SSB** Semi Specular Louver **WPB** White Parabolic Baffle	FT	**R4** **R8**	**120** **277** **347**	**GEB10** <10% THD ELECTRONIC **ADEZ**[6] Advance Mark 10 dimming **ECO10**[6] Lutron ECO-10 dimming **ADZT**[6] Advance Mark 7 0-10v dimming *Reference Ballast Chart on website or consult factory for other options.*	**Blank** No Emergency **1SE** 1 section **2SE** 2 sections **XSE** X sections

Emergency Type[2,3]	Switching	Lamp Color	Mounting Type /	Overall Suspension	Finish	Options
Blank No Emergency or Night Light **EL** Emergency Battery Pack **EC** Emergency / Night Light Circuit **EN** Emergency Battery Pack with Night Light Circuit	**SCT** Single Circuit **DCT** Dual Circuit	**L/LP** No Lamp **LP730** 3000K 70+ CRI **LP735** 3500K 70+ CRI **LP741** 4100K 70+ CRI **LP830** 3000K 80+ CRI **LP835** 3500K 80+ CRI **LP841** 4100K 80+ CRI *Reference Lamp Chart on website or consult factory for other options.*	**F1** T-Bar Ceiling (Universal Mounting Bracket) **F1A** T-Bar Ceiling (UMB with Integrated J-Box) **F2** Hard Ceiling (Horizontal J-Box) **F3** Stem Mount **F4A** IDS Clip 15/16" Tee **F4B** IDS Clip 9/16" Tee **F4C** IDS Clip Screw Slot	**12** 12" overall suspension **15** 15" overall suspension **18** 18" overall suspension **21** 21" overall suspension **24** 24" overall suspension **XX** XX" overall suspension	**C210** Standard White (fine-textured low gloss) **C110** Painted to match Aluminum Finish **C099** Custom Color	**ACG** Adjustable Cable Grippers **APF** Alternate Power Feed **CP** Chicago Plenum **DL** Damp Location Label **DU** Dust Cover **ELH** EM Through wire w/ Separate Feed **ELS** EM Through Wire w/ Single Feed **GLR** Fusing (Fast blow) **GMF** Fusing (Slow Blow) **NYC** New York City Code **SCEP** Sculptured End Cap

Notes:
1 Must be in 4' increments.
2 Optional.
3 EL and EC are installed in last 4' of fixture sections and are not available concurrently with each other. Separate feed required for each EL or EC unless ELS/ELH is specified.
4 Available with standard distribution only.
5 Available with 3 lamp cross section only.
6 Not available in 347 volt.

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BRM-15

PEERLESS®

Bruno®

Indirect / Direct T8

Type: K

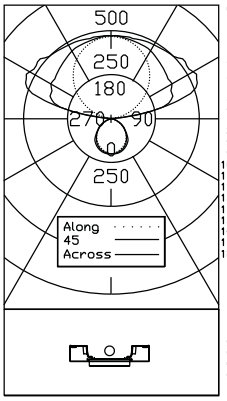
Project:

PHOTOMETRICS | Pendant Mount — Modular / 8" X 2" Rectangular | BRM4

1-LAMP T8 WITH SPECULAR REFLECTOR AND OPD

FAR-FIELD PHOTOMETRY
DATE: 1-28-2008
REPORT NUMBER: 7426

CATALOG NUMBER: BRM4-1-32-SPR-OPD
LUMINAIRE: 8 1/4"W X 1 5/8"H INDIRECT/DIRECT LIGHT WITH SPECULAR REFLECTOR AND SEMI-SPECULAR BAFFLE WITH OPAL DIFFUSER
LAMP(S): 1-F32T8-SP35 RATED @ 2850 LUMENS EACH
BALLAST: QTP1X32T8/UNV ISN-SC
MOUNTING:
LUMEN TO CANDELA RATIO USED = 9.15
TOTAL INPUT WATTS = 30.8 AT 120.0 VOLTS
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.



CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	201	201	201	201	201	
5	198	199	200	202	202	19
15	185	189	192	195	197	54
25	167	171	174	180	184	81
35	144	148	150	156	163	95
45	115	118	117	117	122	91
55	78	78	78	80	86	71
65	31	35	40	42	45	37
75	4	5	4	5	6	6
85	0	1	1	1	1	1
90	0	0	1	0	0	
95	9	71	60	50	47	69
105	72	181	338	393	393	296
115	152	238	373	502	535	362
125	233	291	393	497	523	350
135	306	345	413	477	500	317
145	368	391	434	473	489	271
155	414	425	453	475	482	208
165	447	453	480	468	471	130
175	463	467	470	472	473	45
180	470	470	470	470	470	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	154	5.4	6.1
0- 40	249	8.7	9.9
0- 60	410	14.4	16.4
0- 90	454	15.9	18.1
90-120	727	25.5	29.0
90-130	1077	37.8	43.0
90-150	1665	58.4	66.5
90-180	2048	71.9	81.9
0-180	2502	87.8	100.0

LUMINANCE DATA IN FOOTLAMBERTS

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	389.	396.	412.
55	326.	326.	357.
65	173.	226.	257.
75	40.	38.	54.
85	11.	21.	21.

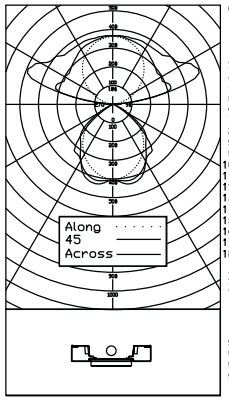
TOTAL LUMINAIRE EFFICIENCY = 87.8 %
CIE TYPE - SEMI-INDIRECT
APPROVED BY:

TESTED IN ACCORDANCE WITH IES PROCEDURES, TEST DISTANCE EXCEEDS 25.0 FEET

1-LAMP T8 WITH SPECULAR REFLECTOR

FAR-FIELD PHOTOMETRY
DATE: 1-28-2008
REPORT NUMBER: 7428

CATALOG NUMBER: BRM4-1-32-SPR
LUMINAIRE: 8 1/4"W X 1 5/8"H INDIRECT/DIRECT LIGHT WITH SPECULAR REFLECTOR AND SEMI-SPECULAR BAFFLE
LAMP(S): 1-F32T8-SP35 RATED @ 2850 LUMENS EACH
BALLAST: QTP1X32T8/UNV ISN-SC
MOUNTING:
LUMEN TO CANDELA RATIO USED = 9.15
TOTAL INPUT WATTS = 30.8 AT 120.0 VOLTS
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.



CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	406	406	406	406	406	
5	399	405	410	415	417	39
15	374	392	415	429	435	116
25	335	363	380	388	393	172
35	283	309	306	313	330	194
45	218	231	249	260	258	188
55	138	157	147	105	95	117
65	52	45	22	7	7	29
75	6	5	3	5	6	5
85	0	1	1	1	1	1
90	0	0	1	0	1	
95	6	70	61	51	49	68
105	51	134	319	384	386	272
115	111	167	291	435	478	296
125	173	212	288	379	405	263
135	231	260	306	353	371	237
145	280	298	329	356	368	205
155	318	326	348	365	372	160
165	345	350	356	363	366	101
175	360	362	366	368	369	35
180	365	365	365	365	365	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	326	11.5	13.1
0- 40	520	18.3	20.8
0- 60	825	29.0	33.0
0- 90	861	30.2	34.5
90-120	635	22.3	25.5
90-130	899	31.5	36.0
90-150	1341	47.0	53.7
90-180	1636	57.4	65.5
0-180	2497	87.6	100.0

LUMINANCE DATA IN FOOTLAMBERTS

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	736.	842.	873.
55	574.	615.	397.
65	294.	122.	38.
75	51.	31.	55.
85	11.	22.	22.

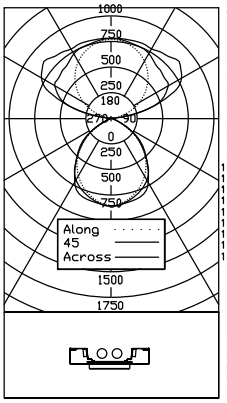
TOTAL LUMINAIRE EFFICIENCY = 87.6 %
CIE TYPE - SEMI-INDIRECT
APPROVED BY:

TESTED IN ACCORDANCE WITH IES PROCEDURES, TEST DISTANCE EXCEEDS 25.0 FEET

2-LAMP T8 WITH SPECULAR REFLECTOR

FAR-FIELD PHOTOMETRY
DATE: 1-28-2008
REPORT NUMBER: 7361

CATALOG NUMBER: BRM4-2-32-SPR
LUMINAIRE: 8 1/4"W X 1 5/8"H INDIRECT/DIRECT LIGHT WITH SPECULAR REFLECTOR AND SEMI-SPECULAR BAFFLE
LAMP(S): 2-F32T8-SP35 RATED @ 2850 LUMENS EACH
BALLAST: QTP2X32T8/UNV ISN-SC
MOUNTING:
LUMEN TO CANDELA RATIO USED = 9.15
TOTAL INPUT WATTS = 60.4 AT 120.0 VOLTS
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.



CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	855	855	855	855	855	
5	841	849	851	853	855	81
15	786	795	804	820	829	228
25	701	711	742	774	788	342
35	587	603	627	618	625	383
45	441	460	444	440	456	346
55	252	279	276	278	285	243
65	52	64	85	69	60	74
75	10	11	9	12	11	14
85	2	3	3	3	3	3
90	1	1	2	2	2	
95	13	72	62	58	57	74
105	117	283	389	393	391	346
115	250	373	586	692	719	525
125	382	461	650	793	827	562
135	501	566	671	783	836	520
145	603	644	703	764	803	441
155	680	699	748	780	790	342
165	735	746	758	777	784	215
175	766	773	777	782	784	74
180	778	778	778	778	778	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	650	11.4	13.5
0- 40	1034	18.1	21.5
0- 60	1623	28.5	33.7
0- 90	1714	30.1	35.6
90-120	945	16.6	19.6
90-130	1507	26.4	31.3
90-150	2468	43.3	51.3
90-180	3099	54.4	64.4
0-180	4813	84.4	100.0

LUMINANCE DATA IN FOOTLAMBERTS

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	1491.	1501.	1542.
55	1052.	1153.	1186.
65	294.	479.	338.
75	93.	83.	103.
85	61.	69.	92.

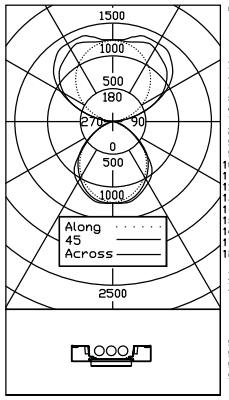
TOTAL LUMINAIRE EFFICIENCY = 84.4 %
CIE TYPE - SEMI-INDIRECT
APPROVED BY:

TESTED IN ACCORDANCE WITH IES PROCEDURES, TEST DISTANCE EXCEEDS 25.0 FEET

3-LAMP T8 WITH SPECULAR REFLECTOR

FAR-FIELD PHOTOMETRY
DATE: 1-28-2008
REPORT NUMBER: 7430

CATALOG NUMBER: BRM4-3-32-SPR
LUMINAIRE: 8 1/4"W X 1 5/8"H INDIRECT/DIRECT LIGHT WITH SPECULAR REFLECTOR AND SEMI-SPECULAR BAFFLE
LAMP(S): 3-F32T8-SP35 RATED @ 2850 LUMENS EACH
BALLAST: QTP1X32T8/UNV ISN-SC & QTP2X32T8/UNV ISN-SC
MOUNTING:
LUMEN TO CANDELA RATIO USED = 9.15
TOTAL INPUT WATTS = 85.1 AT 120.0 VOLTS
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.



CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	1244	1244	1244	1244	1244	
5	1222	1237	1245	1250	1254	118
15	1147	1175	1205	1226	1236	338
25	1031	1067	1081	1109	1131	500
35	882	908	925	971	1016	586
45	689	705	733	732	735	553
55	443	474	453	410	416	396
65	148	187	199	205	227	192
75	18	19	17	20	20	30
85	2	3	3	2	3	3
90	2	3	3	2	2	
95	23	76	77	73	72	84
105	189	367	395	395	393	381
115	401	614	740	749	747	662
125	612	804	978	1062	1081	824
135	801	987	1147	1237	1265	850
145	966	1103	1231	1333	1373	758
155	1090	1153	1312	1360	1378	584
165	1177	1197	1256	1319	1339	357
175	1224	1235	1242	1248	1250	118
180	1244	1244	1244	1244	1244	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	956	11.2	13.0
0- 40	1542	18.0	21.0
0- 60	2491	29.1	34.0
0- 90	2716	31.8	37.0
90-120	1126	13.2	15.4
90-130	1950	22.8	26.6
90-150	3558	41.6	48.5
90-180	4617	54.0	63.0
0-180	7333	85.8	100.0

LUMINANCE DATA IN FOOTLAMBERTS

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	2332.	2482.	2488.
55	1848.	1888.	1736.
65	836.	1124.	1284.
75	168.	160.	184.
85	62.	70.	93.

TOTAL LUMINAIRE EFFICIENCY = 85.8 %
CIE TYPE - SEMI-INDIRECT
APPROVED BY:

TESTED IN ACCORDANCE WITH IES PROCEDURES, TEST DISTANCE EXCEEDS 25.0 FEET

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BRM-16

PEERLESS®

Bruno®

Indirect / Direct T8 — 20/80 VDR

Type: K

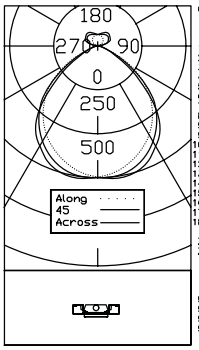
Project:

PHOTOMETRICS | Pendant Mount — Modular / 8" X 2" Rectangular | BRM4

1-LAMP T8 WITH WHITE REFLECTOR

FAR-FIELD PHOTOMETRY
DATE: 3-19-2008
REPORT NUMBER: 7485

CATALOG NUMBER: BRM4-1-32-WHR-20/80
LUMINAIRE: 8 1/4"W X 1 5/8"H DIRECT/INDIRECT LIGHT WITH WHITE PAINTED REFLECTOR AND SEMI-SPECULAR BAFFLE
LAMP(S): F32T8-SP35 RATED @ 2850 LUMENS EACH
BALLAST: QTP1X32T8/UNV ISN-SC
MOUNTING:
LUMEN TO CANDELA RATIO USED = 9.15
TOTAL INPUT WATTS = 31.5 AT 120.0 VOLTS
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.



CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	748	748	748	748	748	
5	734	744	749	754	756	71
15	689	707	728	746	754	205
25	623	648	669	690	704	308
35	536	563	575	591	614	360
45	422	447	454	429	429	337
55	278	306	283	218	213	230
65	99	101	83	70	74	87
75	11	10	7	7	6	11
85	1	1	1	1	0	1
90	0	0	0	0	0	
95	3	14	17	19	20	17
105	14	34	52	54	54	46
115	25	46	65	77	79	59
125	34	53	74	84	85	60
135	43	57	78	89	90	56
145	50	60	76	88	90	46
155	56	61	70	78	82	32
165	59	62	66	70	71	19
175	61	63	64	65	64	6
180	63	63	63	63	63	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	584	20.5	29.9
0- 40	944	33.1	48.4
0- 60	1511	53.0	77.4
0- 90	1611	56.5	82.5
90-120	122	4.3	6.2
90-130	182	6.4	9.3
90-150	284	10.0	14.5
90-180	341	12.0	17.5
0-180	1951	68.5	100.0

LUMINANCE DATA IN FOOTLAMBERTS

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	1429.	1538.	1450.
55	1153.	1098.	890.
65	559.	472.	422.
75	97.	61.	59.
85	25.	19.	0.

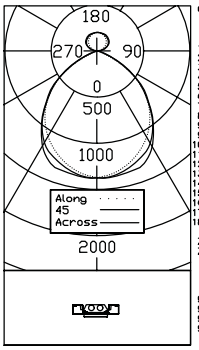
TOTAL LUMINAIRE EFFICIENCY = 68.5 %
CIE TYPE - SEMI-DIRECT
APPROVED BY:

TESTED IN ACCORDANCE WITH IES PROCEDURES, TEST DISTANCE EXCEEDS 25.0 FEET

2-LAMP T8 WITH WHITE REFLECTOR

FAR-FIELD PHOTOMETRY
DATE: 3-19-2008
REPORT NUMBER: 7489

CATALOG NUMBER: BRM4-2-32-WHR-20/80
LUMINAIRE: 8 1/4"W X 1 5/8"H DIRECT/INDIRECT LIGHT WITH WHITE PAINTED REFLECTOR AND SEMI-SPECULAR BAFFLE
LAMP(S): 2-F32T8-SP35 RATED @ 2850 LUMENS EACH
BALLAST: QTP2X32T8/UNV ISN-SC
MOUNTING:
LUMEN TO CANDELA RATIO USED = 9.15
TOTAL INPUT WATTS = 59.8 AT 120.0 VOLTS
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.



CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	1375	1375	1375	1375	1375	
5	1351	1366	1372	1376	1379	130
15	1272	1291	1312	1339	1354	371
25	1145	1170	1219	1261	1284	560
35	982	1016	1043	1039	1058	643
45	767	802	774	761	783	601
55	491	523	505	490	501	447
65	116	156	190	179	187	174
75	16	16	12	14	16	21
85	2	2	1	1	1	2
90	0	0	0	0	0	
95	8	22	27	24	19	24
105	44	69	81	74	65	73
115	77	97	120	123	119	108
125	108	125	142	155	155	124
135	136	148	162	171	173	123
145	160	167	181	186	187	110
155	176	180	188	194	197	87
165	189	192	193	195	196	55
175	195	197	198	198	199	19
180	199	199	199	199	199	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	1062	18.6	28.9
0- 40	1705	29.9	46.4
0- 60	2753	48.3	75.0
0- 90	2950	51.8	80.3
90-120	205	3.6	5.6
90-130	329	5.8	9.0
90-150	563	9.9	15.3
90-180	723	12.7	19.7
0-180	3673	64.4	100.0

LUMINANCE DATA IN FOOTLAMBERTS

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	2595.	2617.	2648.
55	2049.	2104.	2088.
65	656.	1075.	1062.
75	151.	108.	151.
85	48.	40.	32.

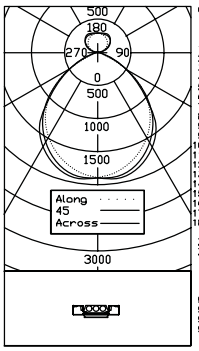
TOTAL LUMINAIRE EFFICIENCY = 64.4 %
CIE TYPE - SEMI-DIRECT
APPROVED BY:

TESTED IN ACCORDANCE WITH IES PROCEDURES, TEST DISTANCE EXCEEDS 25.0 FEET

3-LAMP T8 WITH WHITE REFLECTOR

FAR-FIELD PHOTOMETRY
DATE: 3-18-2008
REPORT NUMBER: 7473

CATALOG NUMBER: BRM4-3-32-WHR-20/80
LUMINAIRE: 8 1/4"W X 1 5/8"H DIRECT/INDIRECT LIGHT WITH WHITE PAINTED REFLECTOR AND SEMI-SPECULAR BAFFLE
LAMP(S): 3-F32T8-SP35 RATED @ 2850 LUMENS EACH
BALLAST: QTP1X32T8/UNV ISN-SC & QTP2X32T8/UNV ISN-SC
MOUNTING:
LUMEN TO CANDELA RATIO USED = 9.15
TOTAL INPUT WATTS = 85.5 AT 120.0 VOLTS
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.



CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	1898	1898	1898	1898	1898	
5	1864	1890	1902	1912	1917	181
15	1755	1805	1853	1885	1899	520
25	1586	1651	1682	1724	1753	775
35	1364	1418	1440	1475	1519	902
45	1071	1113	1107	1077	1081	843
55	698	736	673	628	649	606
65	173	224	273	271	288	255
75	23	23	18	22	26	31
85	3	3	2	2	1	3
90	1	0	1	1	1	
95	14	36	38	33	30	36
105	76	113	113	101	94	109
115	127	168	176	169	160	162
125	170	208	228	225	219	191
135	206	235	254	273	270	195
145	237	257	287	299	303	174
155	259	269	291	306	311	133
165	275	279	286	293	297	81
175	283	286	288	288	290	27
180	288	288	288	288	288	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	1476	17.3	28.3
0- 40	2379	27.8	45.5
0- 60	3827	44.8	73.3
0- 90	4115	48.1	78.8
90-120	307	3.6	5.9
90-130	498	5.8	9.5
90-150	867	10.1	16.6
90-180	1108	13.0	21.2
0-180	5223	61.1	100.0

LUMINANCE DATA IN FOOTLAMBERTS

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	3624.	3747.	3656.
55	2909.	2808.	2707.
65	978.	1544.	1632.
75	215.	165.	241.
85	73.	58.	29.

TOTAL LUMINAIRE EFFICIENCY = 61.1 %
CIE TYPE - SEMI-DIRECT
APPROVED BY:

TESTED IN ACCORDANCE WITH IES PROCEDURES, TEST DISTANCE EXCEEDS 25.0 FEET

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BRM-17

PEERLESS®

Bruno®

Indirect / Direct T8 — 40/60 VDR

Type: K

Project:

PHOTOMETRICS | Pendant Mount — Modular / 8" X 2" Rectangular | BRM4

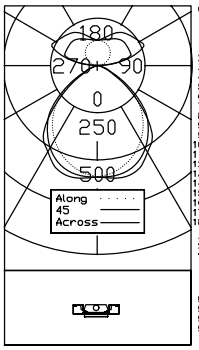
1-LAMP T8 WITH WHITE REFLECTOR

FAR-FIELD PHOTOMETRY

DATE: 3-19-2008

REPORT NUMBER: 7483

CATALOG NUMBER: BRM4-1-32-WHR-40/60
LUMINAIRE: 8 1/4"W X 1 5/8"H DIRECT/INDIRECT LIGHT WITH WHITE PAINTED REFLECTOR AND SEMI-SPECULAR BAFFLE
LAMP(S): F32T8-SP35 RATED @ 2850 LUMENS EACH
BALLAST: QTP1X32T8/UNV ISN-SC
MOUNTING:
LUMEN TO CANDELA RATIO USED = 9.15
TOTAL INPUT WATTS = 31.5 AT 120.0 VOLTS
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.



CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	591	591	591	591	591	
5	581	588	592	594	597	56
15	545	560	581	598	606	164
25	490	514	538	558	569	247
35	417	445	460	478	498	287
45	322	349	363	347	345	267
55	200	234	207	172	168	178
65	51	66	67	61	68	65
75	7	7	5	8	11	10
85	1	1	1	1	1	1
90	0	1	2	4	2	
95	7	48	60	64	65	55
105	29	92	171	185	191	146
115	54	114	185	243	267	173
125	75	124	186	229	247	157
135	93	128	184	219	229	134
145	110	131	172	203	214	104
155	120	130	154	176	184	71
165	128	133	142	151	154	40
175	132	133	136	138	138	13
180	133	133	133	133	133	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	467	16.4	21.5
0- 40	764	26.5	34.7
0- 60	1200	42.1	55.3
0- 90	1277	44.8	58.8
90-120	375	13.1	17.3
90-130	531	18.6	24.5
90-150	769	27.0	35.5
90-180	894	31.4	41.2
0-180	2170	76.2	100.0

LUMINANCE DATA IN FOOTLAMBERTS

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	1089.	1230.	1169.
55	832.	863.	702.
65	291.	381.	386.
75	65.	51.	98.
85	24.	24.	24.

TOTAL LUMINAIRE EFFICIENCY = 76.2 %
CIE TYPE - GENERAL DIFFUSE

APPROVED BY:

TESTED IN ACCORDANCE WITH IES PROCEDURES, TEST DISTANCE EXCEEDS 25.0 FEET

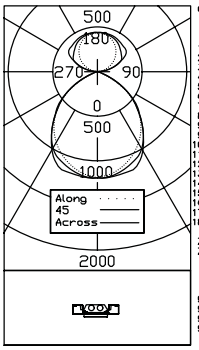
2-LAMP T8 WITH WHITE REFLECTOR

FAR-FIELD PHOTOMETRY

DATE: 3-19-2008

REPORT NUMBER: 7491

CATALOG NUMBER: BRM4-2-32-WHR-40/60
LUMINAIRE: 8 1/4"W X 1 5/8"H DIRECT/INDIRECT LIGHT WITH WHITE PAINTED REFLECTOR AND SEMI-SPECULAR BAFFLE
LAMP(S): 2-F32T8-SP35 RATED @ 2850 LUMENS EACH
BALLAST: QTP2X32T8/UNV ISN-SC
MOUNTING:
LUMEN TO CANDELA RATIO USED = 9.15
TOTAL INPUT WATTS = 59.8 AT 120.0 VOLTS
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.



CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	1192	1192	1192	1192	1192	
5	1170	1183	1190	1193	1196	113
15	1098	1116	1138	1164	1176	322
25	989	1011	1060	1096	1113	485
35	844	877	898	886	899	552
45	656	688	656	645	663	511
55	417	441	430	421	431	380
65	95	129	156	144	149	144
75	14	13	10	11	13	17
85	3	3	3	2	2	3
90	1	2	2	2	2	
95	16	51	62	58	55	57
105	86	158	183	181	178	171
115	158	211	294	305	300	255
125	229	268	326	379	395	289
135	292	322	359	393	405	275
145	347	366	394	412	419	244
155	388	399	417	429	435	191
165	417	422	429	434	437	121
175	433	436	438	440	440	42
180	437	437	437	437	437	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	920	16.1	22.1
0- 40	1472	25.8	35.3
0- 60	2363	41.5	56.6
0- 90	2528	44.3	60.6
90-120	483	8.5	11.6
90-130	771	13.5	18.5
90-150	1291	22.6	30.9
90-180	1645	28.9	39.4
0-180	4173	73.2	100.0

LUMINANCE DATA IN FOOTLAMBERTS

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	2220.	2221.	2244.
55	1741.	1792.	1799.
65	541.	882.	844.
75	129.	92.	124.
85	96.	72.	48.

TOTAL LUMINAIRE EFFICIENCY = 73.2 %
CIE TYPE - SEMI-DIRECT

APPROVED BY:

TESTED IN ACCORDANCE WITH IES PROCEDURES, TEST DISTANCE EXCEEDS 25.0 FEET

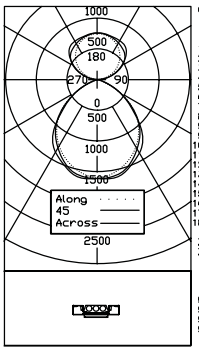
3-LAMP T8 WITH WHITE REFLECTOR

FAR-FIELD PHOTOMETRY

DATE: 3-19-2008

REPORT NUMBER: 7475

CATALOG NUMBER: BRM4-3-32-WHR-40/60
LUMINAIRE: 8 1/4"W X 1 5/8"H DIRECT/INDIRECT LIGHT WITH WHITE PAINTED REFLECTOR AND SEMI-SPECULAR BAFFLE
LAMP(S): 3-F32T8-SP35 RATED @ 2850 LUMENS EACH
BALLAST: QTP1X32T8/UNV ISN-SC & QTP2X32T8/UNV ISN-SC
MOUNTING:
LUMEN TO CANDELA RATIO USED = 9.15
TOTAL INPUT WATTS = 85.3 AT 120.0 VOLTS
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.



CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	1612	1612	1612	1612	1612	
5	1586	1605	1614	1620	1624	153
15	1488	1520	1558	1580	1589	437
25	1344	1387	1394	1417	1445	645
35	1152	1183	1187	1230	1271	752
45	908	921	928	909	917	706
55	594	618	576	538	557	516
65	202	238	243	234	245	234
75	25	25	19	19	17	29
85	5	5	3	3	3	4
90	2	2	3	3	3	
95	25	72	75	72	69	73
105	154	230	230	223	220	229
115	284	366	391	381	375	364
125	404	457	533	536	527	445
135	511	543	617	656	661	463
145	600	624	663	705	720	416
155	669	684	703	724	733	325
165	719	727	733	739	744	207
175	744	753	754	758	758	72
180	755	755	755	755	755	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	1235	14.4	20.3
0- 40	1986	23.2	32.7
0- 60	3208	37.5	52.9
0- 90	3475	40.8	57.3
90-120	666	7.8	11.0
90-130	1111	13.0	18.3
90-150	1989	23.3	32.8
90-180	2593	30.3	42.7
0-180	6069	71.0	100.0

LUMINANCE DATA IN FOOTLAMBERTS

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	3072.	3139.	3102.
55	2476.	2403.	2323.
65	1144.	1377.	1386.
75	234.	180.	161.
85	139.	93.	93.

TOTAL LUMINAIRE EFFICIENCY = 71.0 %
CIE TYPE - GENERAL DIFFUSE

APPROVED BY:

TESTED IN ACCORDANCE WITH IES PROCEDURES, TEST DISTANCE EXCEEDS 25.0 FEET

PEERLESS LIGHTING • Box 2556, Berkeley, CA 94702-0556 • **Tel:** 510.845.2760 • **Fax:** 510.845.2776 • **peerless-lighting.com**

An AcuityBrands Company

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BRM-18

PEERLESS®

Bruno®

Indirect / Direct T8 — 0/100 VDR

Type: K

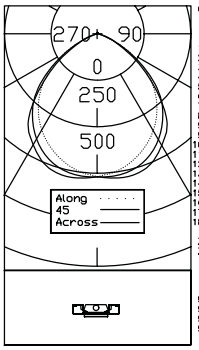
Project:

PHOTOMETRICS | Pendant Mount — Modular / 8" X 2" Rectangular | BRM4

1-LAMP T8 WITH WHITE REFLECTOR

FAR-FIELD PHOTOMETRY
DATE: 3-19-2008
REPORT NUMBER: 7488

CATALOG NUMBER: BRM4-1-32-WHR-0/100
LUMINAIRE: 8 1/4"W X 1 5/8"H DIRECT LIGHT WITH WHITE PAINTED REFLECTOR AND SEMI-SPECULAR BAFFLE
LAMP(S): F32T8-SP35 RATED @ 2850 LUMENS EACH
BALLAST: QTP1X32T8/UNV ISN-SC
MOUNTING:
LUMEN TO CANDELA RATIO USED = 9.15
TOTAL INPUT WATTS = 31.5 AT 120.0 VOLTS
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.



CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	769	769	769	769	769	
5	756	765	771	776	778	73
15	711	730	753	773	782	212
25	642	669	698	722	736	320
35	551	583	602	622	646	375
45	433	465	476	457	460	355
55	283	320	288	253	256	252
65	102	115	106	95	100	105
75	11	10	8	9	10	15
85	1	1	1	1	0	1
90	0	0	0	0	0	
95	1	1	1	1	1	1
105	2	1	2	1	1	1
115	3	2	2	2	2	2
125	4	3	3	3	3	3
135	4	4	4	4	4	3
145	5	4	5	5	4	3
155	6	5	6	6	6	3
165	7	6	6	6	5	2
175	7	7	7	7	6	1
180	7	7	7	7	7	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	605	21.2	35.1
0- 40	981	34.4	56.8
0- 60	1588	55.7	92.0
0- 90	1708	59.9	99.0
90-120	5	0.2	0.3
90-130	7	0.3	0.4
90-150	13	0.5	0.8
90-180	18	0.6	1.0
0-180	1726	60.6	100.0

LUMINANCE DATA IN FOOTLAMBERTS

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	1466.	1812.	1558.
55	1178.	1200.	1065.
65	579.	599.	569.
75	99.	76.	95.
85	24.	18.	0.

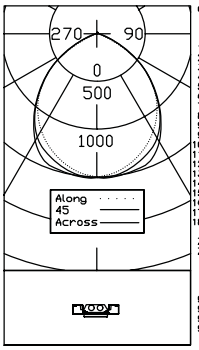
TOTAL LUMINAIRE EFFICIENCY = 60.6 %
CIE TYPE - DIRECT
APPROVED BY:

TESTED IN ACCORDANCE WITH IES PROCEDURES, TEST DISTANCE EXCEEDS 25.0 FEET

2-LAMP T8 WITH WHITE REFLECTOR

FAR-FIELD PHOTOMETRY
DATE: 3-19-2008
REPORT NUMBER: 7494

CATALOG NUMBER: BRM4-2-32-WHR-0/100
LUMINAIRE: 8 1/4"W X 1 5/8"H DIRECT/INDIRECT LIGHT WITH WHITE PAINTED REFLECTOR AND SEMI-SPECULAR BAFFLE
LAMP(S): 2-F32T8-SP35 RATED @ 2850 LUMENS EACH
BALLAST: QTP2X32T8/UNV ISN-SC
MOUNTING:
LUMEN TO CANDELA RATIO USED = 9.15
TOTAL INPUT WATTS = 59.8 AT 120.0 VOLTS
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.



CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	1507	1507	1507	1507	1507	
5	1481	1498	1505	1509	1513	143
15	1394	1417	1441	1470	1484	407
25	1258	1286	1334	1380	1404	614
35	1077	1116	1141	1136	1160	705
45	844	882	848	832	855	658
55	544	574	546	527	538	486
65	124	169	208	198	208	192
75	17	16	12	17	20	24
85	2	2	2	1	1	2
90	0	0	0	0	0	
95	2	3	3	3	3	3
105	3	3	3	3	3	3
115	4	4	5	5	5	4
125	5	6	6	7	6	6
135	6	8	8	9	9	6
145	8	8	10	11	10	6
155	9	9	10	12	12	5
165	10	10	10	10	10	3
175	10	11	11	10	10	1
180	11	11	11	11	11	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	1164	20.4	35.6
0- 40	1869	32.8	57.2
0- 60	3013	52.9	92.2
0- 90	3231	56.7	98.9
90-120	10	0.2	0.3
90-130	16	0.3	0.5
90-150	28	0.5	0.9
90-180	37	0.6	1.1
0-180	3268	57.3	100.0

LUMINANCE DATA IN FOOTLAMBERTS

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	2855.	2870.	2894.
55	2270.	2277.	2243.
65	702.	1177.	1180.
75	156.	113.	189.
85	48.	48.	32.

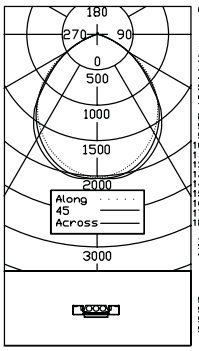
TOTAL LUMINAIRE EFFICIENCY = 57.3 %
CIE TYPE - DIRECT
APPROVED BY:

TESTED IN ACCORDANCE WITH IES PROCEDURES, TEST DISTANCE EXCEEDS 25.0 FEET

3-LAMP T8 WITH WHITE REFLECTOR

FAR-FIELD PHOTOMETRY
DATE: 3-21-2008
REPORT NUMBER: 7477

CATALOG NUMBER: BRM4-3-32-WHR-0/100
LUMINAIRE: 8 1/4"W X 1 5/8"H DIRECT LIGHT WITH WHITE PAINTED REFLECTOR AND SEMI-SPECULAR BAFFLE
LAMP(S): 3-F32T8-SP35 RATED @ 2850 LUMENS EACH
BALLAST: QTP1X32T8/UNV ISN-SC & QTP2X32T8/UNV ISN-SC
MOUNTING:
LUMEN TO CANDELA RATIO USED = 9.15
TOTAL INPUT WATTS = 85.3 AT 120.0 VOLTS
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.



CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	2033	2033	2033	2033	2033	
5	2000	2021	2030	2037	2043	193
15	1885	1917	1961	1990	2005	551
25	1701	1748	1769	1804	1837	817
35	1464	1501	1509	1534	1574	946
45	1157	1181	1147	1107	1109	881
55	765	779	701	659	689	641
65	262	300	315	309	329	302
75	30	28	23	24	22	39
85	5	4	3	2	1	2
90	0	1	0	1	1	
95	5	3	4	4	3	4
105	8	5	5	5	5	6
115	9	5	5	5	5	6
125	11	8	8	8	7	8
135	12	10	9	9	8	8
145	16	13	16	14	12	8
155	16	13	14	17	16	7
165	17	15	13	14	14	4
175	17	16	15	15	13	1
180	17	17	17	17	17	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	1561	18.3	35.3
0- 40	2508	29.3	56.7
0- 60	4030	47.1	91.1
0- 90	4372	51.1	98.8
90-120	16	0.2	0.4
90-130	24	0.3	0.5
90-150	39	0.5	0.9
90-180	51	0.6	1.2
0-180	4423	51.7	100.0

LUMINANCE DATA IN FOOTLAMBERTS

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	3914.	3881.	3754.
55	3188.	2922.	2875.
65	1486.	1783.	1863.
75	281.	213.	205.
85	128.	72.	32.

TOTAL LUMINAIRE EFFICIENCY = 51.7 %
CIE TYPE - DIRECT
APPROVED BY:

TESTED IN ACCORDANCE WITH IES PROCEDURES, TEST DISTANCE EXCEEDS 25.0 FEET

PEERLESS LIGHTING • Box 2556, Berkeley, CA 94702-0556 • **Tel:** 510.845.2760 • **Fax:** 510.845.2776 • peerless-lighting.com

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BRM-19

LITHONIA LIGHTING®

Catalog Number	
Notes	Type

FEATURES & SPECIFICATIONS

INTENDED USE

Intended for mounting heights up to 16' requiring low to medium light levels. Ideal for light duty task lighting, utility, storage rooms or retail.

CONSTRUCTION

Channel constructed of die-formed cold rolled steel. Sturdy combination reflector and channel cover constructed of die-formed cold rolled steel and secured by quarter-turn latch for easy access to wire-way. Screw on endplates. Accepts plug-in option for 1, 2 or 3 primary circuits.

FINISH

Five-stage iron phosphate pretreatment ensures superior paint adhesion and corrosion-resistance. Reflector and channel finished with a high-gloss baked white enamel.

OPTICAL SYSTEM

Solid top or apertured 8% uplight available. Both reflectors are die-embossed.

ELECTRICAL SYSTEM

MVOLT ballasts are NEMA Premium®/CEE qualified ballasts. Full light output - reduced energy. Less than 10% THD. Multi-volt operation, 120-277V.
120V ballasts are ENERGY STAR® qualified FCC Class B for residential and commercial applications. Less than 10% THD. Quieter applications.

INSTALLATION

For unit or row installations, surface or suspended mounting.

LISTINGS

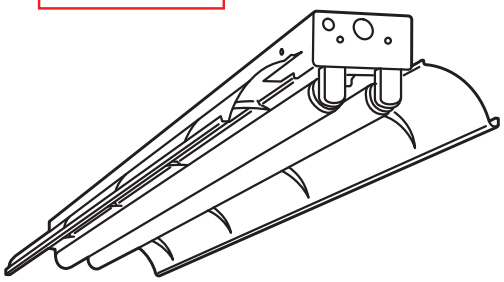
120V, 277V and MVOLT are UL Listed and CSA Certified (standard). 347V is CSA Certified (see Options). NOM Certified (see Options). Suitable for damp locations.

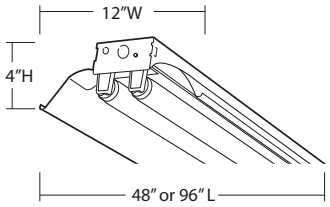
WARRANTY

Fixtures, including ballasts, are covered by Lithonia Lighting 24-month warranty against mechanical defects in manufacture.

General-Purpose Industrials

TYPE "M"





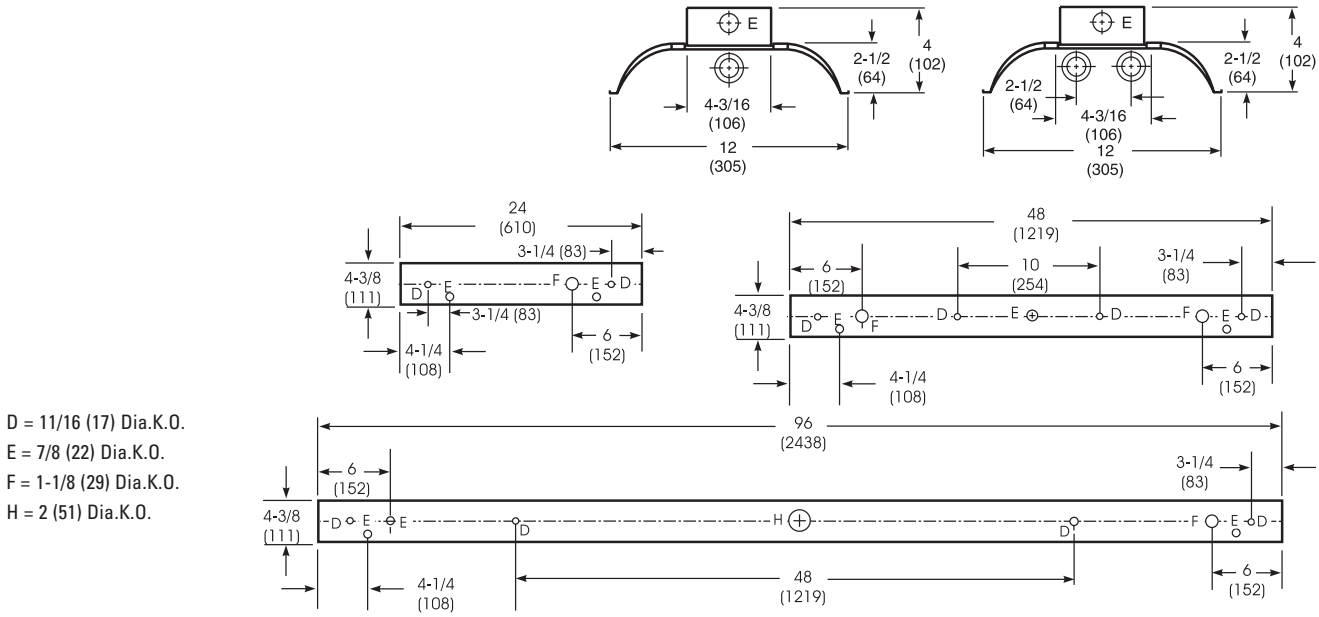
ORDERING INFORMATION

Catalog Number	*UPC*	*Description*	*# of Lamps*	*Length*	*Wattage*	*Voltage*	*Ballast Type*	*ENERGY STAR® Qualified*	*Lamp Included*	*Pallet Qty.*	*Standard Carton Qty.*
L232MV	745975276394	T8 general-purpose industrial	2	48"	32	120-277	NEMA Premium, instant start	N	N	51	1
TL232MV	745975276387	T8 general-purpose industrial	4	96"	32	120-277	NEMA Premium, instant start	N	N	51	1
L296	745973858325	T12 general-purpose industrial	2	96"	75	120	Electronic, rapid start	N	N	51	1

General-Purpose Industrials

DIMENSIONS

Inches (millimeters).
Subject to change without notice.



D = 11/16 (17) Dia.K.O.
E = 7/8 (22) Dia.K.O.
F = 1-1/8 (29) Dia.K.O.
H = 2 (51) Dia.K.O.

PHOTOMETRICS

Calculated using the zonal cavity method in accordance with IESNA LM41 procedure. Floor reflectances are 20%. Full photometric data available upon request.

L232 MV
Report LTL 5180
S/MH 1.5

Coefficient of Utilization

Ceiling	80%			70%			50%		
Wall	70%	50%	30%	70%	50%	30%	50%	30%	10%
1	96	92	88	94	90	87	86	83	81
2	87	80	74	85	78	72	75	70	66
3	79	70	63	77	68	62	66	60	55
4	72	61	54	70	60	53	58	52	46
5	66	54	45	64	53	45	51	44	39
10	43	31	23	42	30	23	29	23	18

Zonal Lumens Summary

Zone	Lumens	%Lamp	%Fixture
0-30	1165	20.1	22.7
0-40	1971	34.0	38.5
0-60	3758	64.8	73.3
0-90	5125	88.4	100.0
90-180	0	0.0	0.0
0-180	5125	88.4	100.0

Energy (Calculated in accordance with NEMA standard LE-5)

LER.FL	ANNUAL ENERGY COST*	LAMP DESCRIPTION	LAMP LUMENS	BALLAST FACTOR	WATTS
86.2	$2.79	(2)T8 F32	2900	.88	55

* Comparative yearly lighting energy cost per 1000 lumens

LITHONIA LIGHTING®
An AcuityBrands Company

Sheet #: Gen-Purpose-Industrials

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Lithonia Lighting
Industrial
One Lithonia Way, Conyers, GA 30012
Phone: 770-922-9000 Fax: 770-981-8141
www.lithonia.com

LITHONIA LIGHTING®

Catalog Number	
Notes	Type E

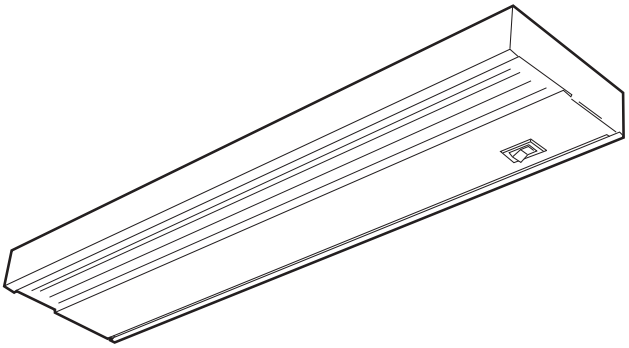
FINESSE™

TYPE "N"

Undercabinet Light

N2S

Solid Front
T8 or T5 Lamps



FEATURES & SPECIFICATIONS

CONSTRUCTION — Solid-front housing design eliminates direct glare.

Trim, low-profile design is aesthetically appealing. Clean surface.

Ideal for office, hospital, laboratory and kitchen applications.

Suitable for confined undercabinet spaces.

Hinged, removable, service tray design allows hands-free wiring and quick installation.

Snap-in, optically-designed, proprietary lens provides uniform side-to-side and front-to-back light distribution to eliminate sharp cut-offs and shadowing.

Positive-retention, shatter-resistant DR acrylic diffuser. Locking clips secure lens to prevent shifting and possible lamp breakage.

Utilizes T8 lamp technology for energy efficiency and maximum visual clarity.

Convenience outlet and on/off rocker switch available.

All metal parts finished with electrostatically-deposited, thermally-set polyester powder paint after fabrication.

Six fixture lengths available.

Housing is precision die-formed from 20-gauge cold-rolled steel. Diffuser is shatter-resistant DR acrylic. No asbestos is used in this product.

Finish is five-stage iron-phosphate pretreatment ensures superior paint adhesion and rust resistance. Painted parts finished with polyester powder paint.

Certain airborne contaminants can diminish integrity of acrylic. Click here for Acrylic Environmental Compatibility table for suitable uses.

ELECTRICAL — Ballasts are thermally-protected, Class P, HPF, non-PCB, UL-listed, CSA certified ballast is standard. Ballasts are sound rated A. Standard combinations are CBM approved and conform to UL 935.

Fixture conforms to UL 1570 and is suitable for damp locations. AWM, TFN or THHN wire used throughout, rated for required temperatures.

LISTING — UL listed and labeled. Listed and labeled to comply with Canadian and Mexican Standards (see options).

WARRANTY — Limited lifetime warranty.

Specifications subject to change without notice.

ORDERING INFORMATION

Lead times will vary depending on options selected. Consult with your sales representative.

Example: N2S 17 MVOLT GEB10IS

N2S

Series	Lamp number and type (length)	Voltage	Options
N2S Undercabinet light, solid front, T8	13T8 13W T8, preheat (12")[1] 15T8 15W T8, preheat (18")[1] 15T8 15W T8, trigger start, HPF (18")[2] 17 17W T8 (24") 25 25W T8 (36") 32 32W T8 (48") 60T8 40W T8 (60") 14T5 14W T5 (24")[3] 21T5 21W T5 (36")[3] 28T5 28W T5 (48")[3]	120 277 347 MVOLT[4] Others available.	GEB Electronic ballast, ≤20% THD GEB10IS Electronic ballast, ≤ 10% THD, instant start GEB10PS Electronic ballast, ≤10% THD, program start GEB10RS Electronic ballast, ≤ 10% THD, rapid start L/B Less ballast; required with TW2 option GLR Internal fast-blow fuse GMF Internal slow-blow fuse CSW 6-foot, 3-wire, grounded cordset, right end[1,5,6] CSWL 6-foot, 3-wire, grounded cordset, left end[1,5,6] CSWC 6-foot, 3-wire, grounded cordset, back center[1,5,6] TW1 Tandem-wired, section 1; supplied with one 2-lamp ballast TW2 Tandem-wired, section 2; requires L/B option CSA Listed and labeled to comply with Canadian Standards NOM Listed and labeled to comply with Mexican Standards CO Convenience outlet, bottom right[1,7] COL Convenience outlet, bottom left[1,7] SWR Rocker switch, bottom right[1] SWRL Rocker switch, bottom left[1] SWRC Rocker switch, bottom center[1,8]

NOTES:

1 Available with 120V ballasting only. Not available with GEB.

2 15T8 277V configurations must be ordered with electronic ballast. 15T8 not available with MVOLT.

3 T5 lamp types must be ordered with GEB10PS ballast.

4 MVOLT available with GEB10IS only.

5 Not available with CO/COL convenience outlet options.

6 Cordset must always be specified for installation on same end of fixture as switch location.

7 Not available with CSW/CSWL/CSWC cordset options.

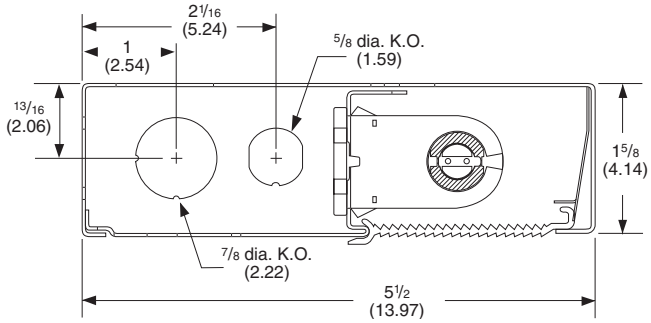
8 Not available on 12", 18" or 24" wide units.

Fluorescent **Sheet #: N2S** UNC-100

N2S Undercabinet Light, Solid Front

MOUNTING DATA

For unit installation, surface mounting only.

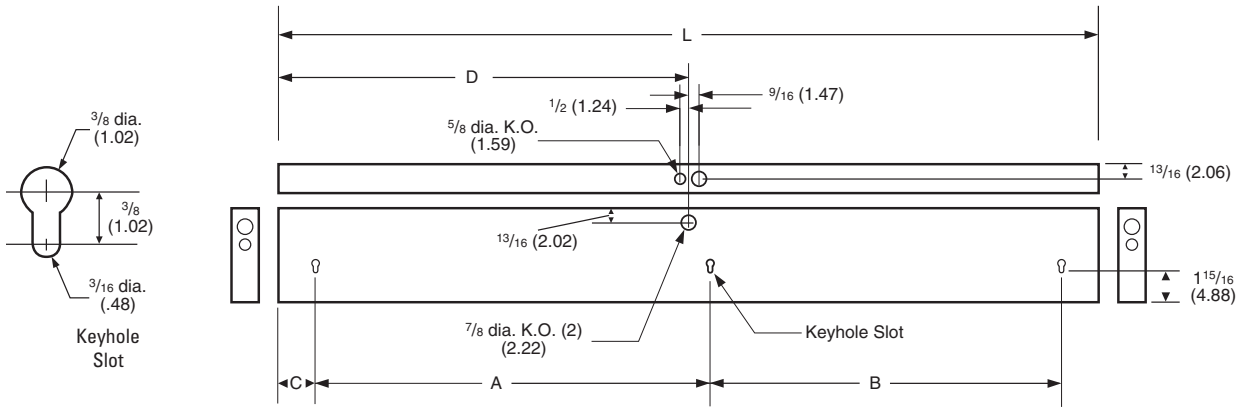


DIMENSIONS

Inches (centimeters). Subject to change without notice.

Length (L)	A	B	C	# KEYHOLES	D
12 1/8" (30.80)	7 1/4" (18.44)	----	2 7/16" (6.20)	2	4 1/4" (10.85)
18 1/8" (46.04)	13 3/4" (34.95)	----	2 3/16" (5.56)	2	6 1/16" (15.42)
18 1/8" (46.04) **TS***	13 3/4" (34.95)	----	2 3/16" (5.56)	2	14 1/16" (35.74)
24 1/8" (61.28)	19 3/4" (50.19)	----	2 3/16" (5.56)	2	8 5/8" (21.92)
36 1/8" (91.76)	31 3/4" (80.67)	----	2 3/16" (5.56)	2	18 1/16" (45.90)
48 1/8" (122.24)	20 1/16" (50.93)	23 3/4" (60.22)	2 3/16" (5.56)	3	24 1/16" (61.14)
60" (152.40)	26" (65.95)	29 5/8" (75.25)	2 3/16" (5.56)	3	30" (76.17)

***15T8TS** Trigger Start



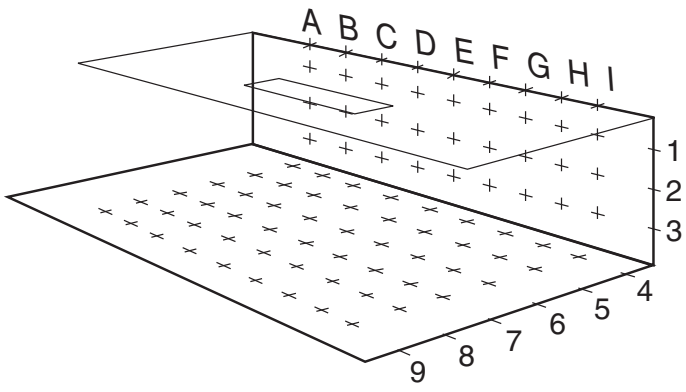
PHOTOMETRICS

Photometry derived in accordance with IESNA LM41 procedure. Vertical and horizontal illuminance is calculated with fixture mounted 15" from work surface. Full photometric data available upon request.

UCSF 1 17
Report LTL 5851
Initial Point Illuminance on wall and horizontal work surface. (fc)

X and Y coordinates are on 6" centers.

	X	A	B	C	D	E	F	G	H	I
	Y									
	1	.4	.3	2.1	3.8	3.5	3.8	2.1	.3	.4
Vert.	**2**	2.7	10.2	33.3	55.7	61.3	55.7	33.2	10.3	2.7
	3	4.6	13.3	31.0	47.9	53.9	47.9	30.9	13.4	4.6
	4	10.8	27.2	56.2	83.7	94.2	83.7	56.2	27.2	10.8
	5	9.4	27.1	58.5	88.3	98.3	88.3	58.5	27.1	9.4
Horiz.	**6**	11.0	22.4	45.1	66.6	74.5	66.6	45.1	22.4	11.0
	7	7.63	16.1	28.4	39.5	44.1	39.5	28.4	16.1	7.6
	8	6.03	10.7	16.6	21.6	23.6	21.6	16.6	10.7	6.0
	9	4.3	6.6	9.0	11.0	11.8	11.0	9.0	6.6	4.3



Horizontal	Vertical
Avg. = 31.7 fc	**Avg. = 19.6 fc**
Max. = 98.3 fc	**Max. = 61.3 fc**
Min. = 4.3 fc	**Min. = .31 fc**
Max. to min. ratio = 22.9	**Max. to min. ratio = 197.7**

LITHONIA LIGHTING®
An AcuityBrands Company

Sheet #: N2S

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Lithonia Lighting
Fluorescent
One Lithonia Way, Conyers, GA 30012
Phone: 800-858-7763
www.lithonia.com

TYPE "P"

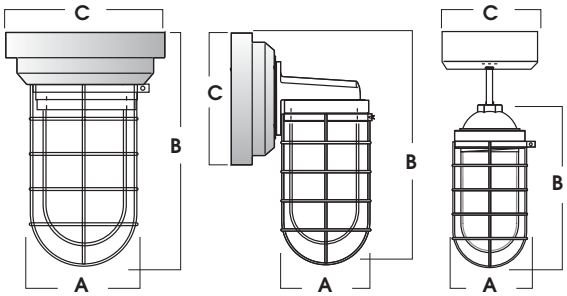
VAPOR TIGHT SERIES
CF / MH

RLM SERIES

PRODUCT INFORMATION:

- The Vapor Tight Series offers rugged design and three mounting options.
- Fixture is constructed of die cast aluminum.
- For compact fluorescent and metal halide lamping. See companion pages for incandescent fixtures.
- Choose from 20 powdercoat finishes.
- Standard fixture WL-Wet location listed.
- Manufactured and built to UL standard No 1598.

SURFACE MOUNT **WALL MOUNT** **STEM MOUNT**



MODEL #	A	B	C
SJ1-CF/MH	4.2″	9.55″	7″
SJ2-CF/MH	5.38″	11.55″	7″
WJ1-CF/MH	4.2″	11.75″	7″
WJ2-CF/MH	5.38″	13.5″	
PJ1-CF/MH	4.2″	10″	7″
PJ2-CF/MH	5.38″	12″	7″

MODEL		WATTS
SJ1CF	Surface	**13/18/26/32**
SJ2CF	Mounted	**13/18/26/32/42**
WJ1CF	Wall	**13/18/26/32**
WJ2CF	Mounted	**13/18/26/32/42**
PJ1CF	Stem	**13/18/26/32**
PJ2CF	Mounted	**13/18/26/32/42**
SJ1MH	Surface	**50/70**
SJ2MH	Mounted	**50/70/100**
WJ1MH	Wall	**50/70**
WJ2MH	Mounted	**50/70/100**
PJ1MH	Stem	**50/70**
PJ2MH	Mounted	**50/70/100**

WJ2CF **26**

BALLAST

EX -Electronic 120v/277v

EX

LAMP ENCLOSURE

3" JAR-32w CF/70w MH MAX
GJ1 -Glass Lamp Enclosure
FJ1 -Frosted Lamp Enclosure
LJ1 -Lexan Lamp Enclosure
PJ3 -Prismatic Lamp Enclosure
WL -Wet Location

4" JAR-42w CF/100w MH MAX
GJ2 -Glass Lamp Enclosure
FJ2 -Frosted Lamp Enclosure
WL -Wet Location

FJ2 WL

GUARDS

FITS 3" JAR
CG1 -Cast Wire Guard
SS1 -Side Lamp Shield
BS1 -Half Round Bottom Lamp Shield

FITS 4" JAR
WG2 -Ballast Wire Guard
SS2 -Side Lamp Shield
BS2 -Half Round Bottom Lamp Shield

WG2

MOUNTING

SURFACE MOUNT
CP9 -Ballast Compartment

WALL MOUNT
CP9 -Ballast Compartment

STEM MOUNT
CP13 -Ballast Compartment
HM* -Hang Straight Pendant
PM* -Pendant/Straight Mount

* Specify Length in inches

CP9

FINISH***

GW -Gloss White
GB -Gloss Black
EG -Evergreen
VE -Verde Green
AY -Aero Yellow
BL -Blue Streak
OR -Orange
RD -Red Baron
BZ -Bronze
CO -Copper Metalic
SI -Silver
CC -Cusom Color

SF

*** See SPECTRUM Color Chart for a full list

Dimensions shown are nominal. Spectrum Lighting is continually improving products and reserves the right to make changes that will not alter performance or appearance with or without written notice.

SPECTRUM LIGHTING, INC
www.speclight.com

PROJECT:	TYPE:
MODEL NO.:	

MADE IN THE USA

994 Jefferson Street, Fall River, MA 02721 508.678.2303 FAX 508.678.2260

PHILIPS GARDCO

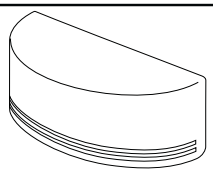
Notes:

Job: **LIBERAL ART BLD-CERRITOS**
Type: K

100 LINE

CosmoPolis™

TYPE "U"



104 HALF CYLINDER SCONCES

GENERAL DESCRIPTION: The Gardco 104 half-cylinder high performance sconces are architecturally refined luminaires designed to integrate naturally to wall surfaces. The 104 provides a choice of three (3) highly efficient downlight optical systems. Each luminaire is designed to accept HID sources up to 175MH, and Compact Fluorescent up to (2) 42 watt. Housings are sealed throughout, completely excluding moisture, dust, insects and contaminants.

CUTOFF PERFORMANCE: 104 luminaires installed in the normal downlight position, with a flat glass lens, provide full cutoff performance.

ORDERING

PREFIX	DISTRIBUTION	WATTAGE	VOLTAGE	FINISH	OPTIONS
104		32TRF			

Enter the order code into the appropriate box above. Note: Gardco reserves the right to refuse a configuration. Not all combinations and configurations are valid. Refer to notes below for exclusions and limitations. For questions or concerns, please consult the factory.

PREFIX

104	Half Cylinder
104EM	Emergency Sconce
104EMR	Remote Emergency Sconce

Refer to confiiguration Chart below for available combinations.

DISTRIBUTION

FT	Forward Throw *Not available with Fluorescent Lamps.*
WT	Wide Throw *Not Available with Fluorescent Lamps.*
MT	Medium Throw

WATTAGE AND VOLTAGE

LAMP / VOLTAGE CHART - 104

	Voltage					
*HID**	120	208	240	277	347	480
60CMPE		200 - 277				
50MH	●			●		
70MH	●	●	●	●	●	
100MH	●	●	●	●	●	●
150MH	●	●	●	●	●	
175MH**	●	●	●	●	●	●
50CMHE[1]	UNIV					
70CMHE[1]	UNIV					
100CMHE[1]	UNIV					
35HPS	●					
50HPS	●			●		
70HPS	●	●	●	●	●	●
100HPS	●	●	●	●	●	●
150HPS	●	●	●	●	●	
Fluorescent						
26QF[1]	UNIV				●	
226QF[1]	UNIV				●	
32TRF[1]	UNIV				●	
232TRF[1]	UNIV				●	
42TRF[1]	UNIV				●	
242TRF[1]	UNIV				●	

60CMPE
60 Watt CosmoPolis™ high performance electronic ceramic MH lamp and ballast system.
Avaialble in FT, WT and MT
Available 200V-277V only.

Combinations marked with a dot or shown with "UNIV" or "200-277" are available for ordering.

MH - Metal Halide
CMHE - Ceramic Metal Halide with Electronic Ballast
HPS - High Pressure Sodium
LPS - Low Pressure Sodium
TRF - Triple Tube Fluorescent
QF - Quad Fluorescent

** MH, CMHE and HPS types require medium based E17 lamps. All MH 150W and below are pulse start by design, including CMHE types.*

*** 175MH not available for sale in the United States.*

CONFIGURATION CHART - 104EM[5]

	Distribution			Voltage					
Fluorescent	FT	WT	MT	120	208	240	277	347	480
226QF[2]			●	●			●		
32TRF			●	●			●		
42TRF			●	●			●		

CONFIGURATION CHART - 104EMR[5]

	Distribution			Voltage					
Fluorescent	FT	WT	MT	120	208	240	277	347	480
226QF[2,3,4]			●	●			●		
32TRF			●	●			●		
232TRF[2,3,4]			●	●			●		
42TRF			●	●			●		
242TRF[2,4]			●	●			●		

1. *Fluorescent and CMHE luminaires feature electronic ballasts that accept 120V through 277V, 50hz to 60hz, input. Specify "UNIV" voltage for 120V through 277V.*
2. *One (1) lamp is powered in emergency mode with EM, and EMR types with the B84CG option.*
3. *Available with ICE420 option, which powers two (2) lamps in emergency mode. ICE420 option only available with 226QF or 232TRF. CAUTION: Maximum battery pack input power for EMR units with ICE420 option is 100 watts (.83 amps) when heating element is on. This is in addition to the normal input power for luminaire lamps and ballast.*
4. *Available with I162 option, which powers two (2) lamps in emergency mode. Lamps are wired in parallel. In emergency mode, should one lamp become inoperable, the remaining lamp will operate with a minimum total initial output of 2,250 lumens.*
5. *Refer to "104 Emergency Sconce Table" on page 2 for additional information.*

FINISH

BRP	Bronze Paint
BLP	Black Paint
WP	White Paint
NP	Natural Aluminum Paint
BGP	Beige Paint
OC	Optional Color Paint *Specify Optional Color or RAL ex: OC-LGP or OC-RAL7024.*
SC	Special Color Paint *Specify. Must supply color chip.*

OPTIONS

F	Fusing *120V through 277V only.*
PCB	Button Type Photocontrol *N/A w/480V.*
QS[6]	Quartz Standby
QST[6]	Quartz Standby - Timed Delay
Q924[7]	Quartz Emergency
QT924[7]	Quartz Emergency - Timed Delay
Q12V[7]	Quartz 12V Emergency
Q20MR[8]	(2)MR16 12V Emergency - 20 Watt
Q35MR[8]	(2)MR16 12V Emergency - 35 Watt
SL	Solite® Diffusing Lens
UT	5° Uptilt
WS	Wall Mounted Box for Surface Conduit *Rear entry permitted.*
WS/UT	WS Option w/5° Uptilt *Rear entry permitted.*
WG	Wire Guard

EMR Luminaires Only: [9]

B84CG	Bodine Remote Emergency Pack
ICE420[10]	IOTA Remote Emergency Pack *226QF / 232TRF only.*
I162[11]	IOTA Remote Emergency Pack *226QF / 232TRF / 242TRF only.*

6. HID only, Not available with CMHE Ballasts, FT Optics or in 480V. 100w Quartz maximum.
7. WT Optic only. 150w HID max. 100w Quartz maximum.
8. WT Optic only. 50CMHE or 70CMHE only. Supplied with two (2) 20W MR16 or two (2) 35W MR16 Flood (40° beam) lamps.
9. All Emergency Battery Packs for EMR types MUST be ordered with luminaires and supplied by Gardco.
10. CAUTION: Maximum battery pack input power for EMR units with ICE420 option is 100 watts (.83 amps) when heating element is on. This is in addition to the normal input power for luminaire lamps and ballast.
11. Lamps are wired in parallel. In emergency mode, should one lamp become inoperable, the remaining lamp will operate with a minimum total initial output of 2,250 lumens.

Philips Gardco 1611 Clovis Barker Road San Marcos, TX 78666 (800) 227-0758 (512) 753-1000 FAX: (512) 753-7855 www.sitelighting.com
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79115-132/0909

PHILIPS GARDCO

100 LINE

CosmoPolis™

104 HALF CYLINDER SCONCES

SPECIFICATIONS

GENERAL: Each Gardco 104 luminaire is a wall mounted cutoff luminaire for high intensity discharge or compact fluorescent lamps. Internal components are totally enclosed in a rain-tight, dust-tight and corrosion resistant housing. The housing, back plate and door frame are die cast aluminum. Three (3) highly efficient downlight optical systems are available. Luminaires are suitable for wet locations (damp locations if inverted).

HOUSING: Housings are die cast aluminum. A memory retentive gasket seals the housing to the door frame to exclude moisture, dust, insects and pollutants from the optical system. Units feature a prismatic tempered glass top lens which is mechanically secured and silicone sealed. A black, die cast ribbed backplate dissipates heat for longer lamp and ballast life.

DOOR FRAME: A single-piece die cast aluminum door frame integrates to the housing form. The door frame is hinged closed and secured to the housing with two (2) captive stainless steel fasteners. The heat and impact resistant 1/8 (.32cm) tempered glass lens and one-piece gasket are mechanically secured to the door frame with four (4) galvanized steel retainers.

OPTICAL SYSTEMS: Reflectors are composed of specular extruded and faceted components, electropolished, anodized and sealed. Reflector segments are set in arc tube image duplicating patterns to achieve the wide throw, forward throw or medium throw downlight distributions.

ELECTRICAL:

STANDARD LUMINAIRES: Each high power factor HID core and coil ballast is the separate component type. For luminaires provided with CosmoPolis™, each high power factor ballast is electronic, designed specifically for the CosmoPolis™ high performance ceramic metal halide electronic sytem. All HID ballasts are capable of providing reliable lamp starting down to -20°F/-29°C. Standard fluorescent units have a starting temperature of 0°F/-18°C. Standard fluorescent ballasts are high power factor electronic solid state. Component-to-component wiring within the luminaire will carry no more than 80% of rated current and is listed by UL for use at 600 VAC at 150°C or higher. Plug disconnects are listed by UL for use at 600 VAC, 15A or higher.

LUMINAIRES with Q924 / G12V /QMR20 / QMR35 OPTIONS: Luminaires with the Q924 option require a separate source of 120V power (by others.) Luminaires with Q12V, Q20MR or Q35MR options require a separate source of 12V power (by others.)

EMERGENCY LUMINAIRES: All emergency luminaires feature an indicator light visible through the lens and a test switch accessible through the door assembly. Minimum battery pack ambient temperatures are as indicated in the 104 Emergency Sconce Table. In the event of a power interruption, emergency luminaires will power compact fluorescent lamps as indicated in the 104 Emergency Sconce Table at reduced light levels for a minimum of 90 minutes.

EMR LUMINAIRES include a 7.5'/2.29m, 12 wire, quick disconnect assembly for wiring through conduit (by others) to a B84CG, I162 or ICE420 fluorescent emergency battery pack. *The fluorescent emergency battery pack MUST be supplied by Gardco. The B84CG , I162 or ICE420 option required on the order to the factory.*

CAUTION: *Maximum battery pack input power for EMR units with ICE420 option is 100 watts (.83 amps) when heating element is on. This is in addition to the normal input power for luminaire lamps and ballast.*

104 Emergency Sconce Table[12]

104 Emergency Luminaire	Battery Pack Min. Ambient Temperature	Lamps Powered in Emergency Mode
104EM (Integral)	32°F / 0°C	(1) 26, (1) 32, or (1) 42 Watt Compact Fluorescent Lamp
104EMR (Remote) with B84CG Option	32° F/ 0°C	
104EMR (Remote) with I162 Option[13]	32° F/ 0°C	(2) 26, (2) 32, or (2) 42 Watt Compact Fluorescent Lamps
104EMR (Remote) with ICE420 Option[14]	0°F / -18°C	(2) 26, or (2) 32 Watt Compact Fluorescent Lamps

Notes:
12. See *Gardco Emergency Light Output Information* (79115-155) for emergency lumen output data.
13. Lamps are wired in parallel. In emergency mode, should one lamp become inoperable, the remaining lamp will operate with a minimum total initial output of 2,250 lumens.
14. CAUTION: Maximum battery pack input power for EMR units with ICE420 option is 100 watts (.83 amps) when heating element is on. This is in addition to the normal input power for luminaire lamps and ballast.

LAMPHOLDER: Pulse rated medium base sockets are glazed porcelain with nickel plated screw shell. Fluorescent sockets are high temperature (PBT) with brass contacts.

FINISH: Each standard color luminaire receives a fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) textured polyester powdercoat finish. Standard colors are as listed. Consult factory for specs on custom colors.

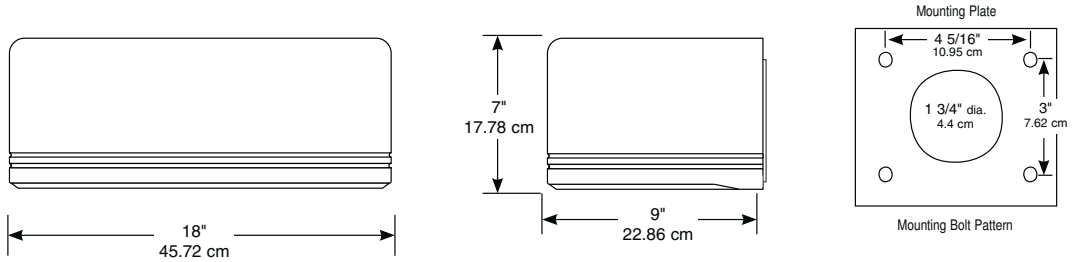
LABELS: All luminaires bear UL or CUL (where applicable) labels, except as noted. Lens down application is Wet Location and lens up is Damp Location. Emergency luminaires do not bear CUL label.

WARRANTY: Gardco luminaires feature a 5 year limited warranty. See Warranty Information on www.sitelighting.com for complete details and exclusions. Polycarbonate lenses carry a 1 year warranty only.

FULL CUTOFF PERFORMANCE: Full cutoff performance means a luminaire distribution where zero candela intensity occurs at an angle of 90° above nadir. Additionally, the candela per 1000 lamp lumens does not numerically exceed 100 (10 percent) at a vertical angle of 80° above nadir. This applies to all lateral angles around the luminaire.

CUTOFF PERFORMANCE: Cutoff performance means a luminaire distribution where the candela per 1000 lamp lumens does not numerically exceed 25 (2.5 percent) at an angle at or above 90° above nadir, and 100 (10 percent) at a vertical angle of 80° above nadir. This applies to all lateral angles around the luminaire.

DIMENSIONS



Note: Mounting plate center is located in the center of the luminaire width and 3.5"(8.89cm) above the luminaire bottom (lens down position). Splices must be made in the J-box (by others). Mounting plate must be secured by max. 5/16" (.79cm) diameter bolts (by others) structurally to the wall.

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79115-132/0909

EDGE 2A

Project Name | Date

Catalog Number | Type V

1T5 Recessed Linear with Straight and Staggered Lamp / Satine Lens

PowerDensity | MADE IN USA | Sustainable

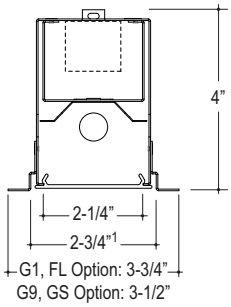
CONSTRUCTION Formed cold-rolled steel housing. Highly reflective die-formed white painted steel reflector, .125" diffuse snap-in acrylic lens with matte finish, removable for lamp replacement.

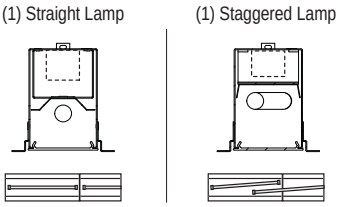
ELECTRICAL Standard programmed start UL listed Class P, T5 electronic, sound rated A, thermally protected, high power factor ballasts less than 10% THD, universal voltage (120/277) with 50/60Hz operation. Through wiring with quick connects standard. Standard single circuit. Integral battery packs with remote test switch are provided with 1B option. Each ballast provided with disconnects to meet luminaire disconnect code requirement.

MOUNTING Edge is designed to install into acoustical grid and inaccessible ceilings. Specify GXG, FLF, SFS, NFN for individual, unjoinable units (individual units will fall on-grid). Specify GX, FL, SF, NF for continuous runs (runs designed to fall on-grid). Consult factory for detailed installation instructions.

FINISH Standard powder-coat textured white painted finish on exposed trim, consult factory for custom colors.

LABELS UL and cUL Listed, approved for dry/damp location unless otherwise noted.





See Straight or Staggered Lamp Guide for row configuration, wattage and number of lamps per run.

LUMINAIRE SPECIFICATION

Sample Catalog #: E2A-1T5-24'-FL-120-1C-W

E2☐A- | 1T5☐- | ☐- | ☐- | ☐- | ☐- | ☐- | ☐

HOUSING

E2A- Edge 2 Acrylic Lens, Straight Lamp

E2SA- Edge 2 Acrylic Lens, Staggered Lamps

LAMPS

1T5- (1) T5

1T5HO- (1) T5HO

LENGTH

Individual Units[2]

2- 2', 23" fixture (Staggered not available)[2]
3- 3', 35" fixture (Staggered not available)[2]
4- 4', 47" fixture (Staggered not available)[2]
6- 6', 71" fixture[2]
8- 8', 95" fixture[2]

Continuous Runs[3]

xx'- Specify nominal overall row length in 1' increments

MOUNTING[1]

INDIVIDUAL UNITS (CANNOT BE JOINED)[2]

Acoustical Grid Ceiling
G1G- 1" Ceiling Grid
G9G- 9/16" Ceiling Grid
GSG- Screw Slot Ceiling Grid

Inaccessible Ceiling
FLF- Standard 1/2" Flange
SFS- Spackle Flange
NFN- Flangeless[4]

CONTINUOUS RUNS (JOINABLE)[3]

Acoustical Grid Ceiling
G1- 1" Ceiling Grid
G9- 9/16" Ceiling Grid
GS- Screw Slot Ceiling Grid

Inaccessible Ceiling
FL- Standard 1/2" Flange
SF- Spackle Flange
NF- Flangeless[4]

VOLTAGE

120- 120 V
277- 277 V
347- 347 V[5]
UNV- UNV[5] (120/277)

CIRCUITING

1C- Single Circuit
1D- Single Circuit Dimming[6]
1B- Single Circuit with Battery Pack[6,9]
1E- Single Circuit with Emergency Circuit[6]

FINISH

W- Matte White
CC- Custom Color

OPTIONS

PM- Perimeter Mount[7]
CP- Chicago Plenum
RC- Rotating Crossbar[8]
CN- Non-Illuminated Connector

[1]See back page for mounting detail. [2]Individual units cannot be joined. All end trims are factory installed and cannot be removed in the field. [3]Continuous Rows made up of both even and odd length fixtures. Designed to fall on-grid. [4]NF to be utilized for metal pan / millwork ceiling. [5]347 and UNV not available with battery pack. [6]Some Edge configurations will not accommodate all electrical options. Consult factory. [7]Available for acoustical grid ceilings. Wall rail painted white unless otherwise specified. [8]1/2" to 5/8" drywall thickness. Available for standard 1/2" flange (FL). [9]Integral battery packs with remote test switch are provided with 1B option.

PINNACLE ARCHITECTURAL LIGHTING®

Pinnacle Architectural Lighting 12655 East 42nd Avenue, Suite 50 Denver, CO 80239
Phone 303.322.5570 Fax 303.322.5568 www.pinnacle-ltg.com
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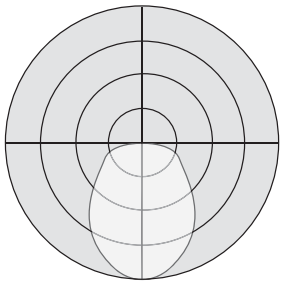
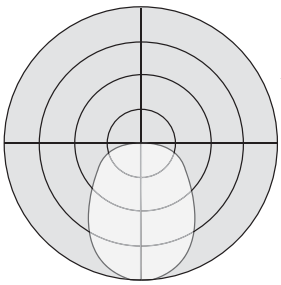
Specifications and dimensions subject to change without notice. Specification sheets that appear on pinnacle-ltg.com are the most recent version and supersede all other previously printed or electronic versions.

PHOTOMETRICS

EDGE 2A

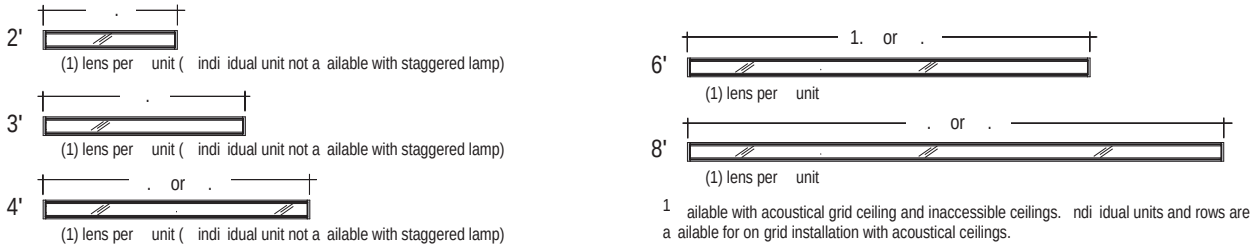


Test# 203075
Part #: E2A-1T5
Lamp: (1) 28W T5
Total Luminaire Efficiency: 68.4%



Test# 203076
Part #: E2A-1T5HO
Lamp: (1) 54W T5HO
Total Luminaire Efficiency: 66.3%

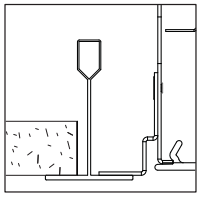
• INDIVIDUAL AND CONTINUOUS RUN MODULES[1]



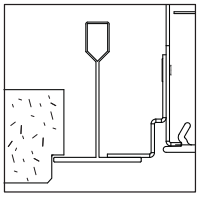
[1] ailable with acoustical grid ceiling and inaccessible ceilings. ndi idual units and rows are a ailable for on grid installation with acoustical ceilings.

• MOUNTING DETAILS

1" Grid Mounting Options

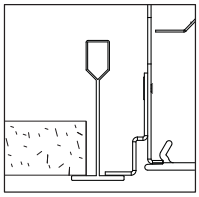


1" Grid, Standard Tile:
Specify **G1** or **G1G** in part #

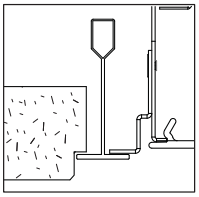


1" Grid, Tegular Tile:
Specify **G1** or **G1G** in part #

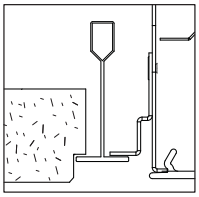
9/16" Grid Mounting Options



9/16" Grid, Standard Tile:
Specify **G9** or **G9G** in part #

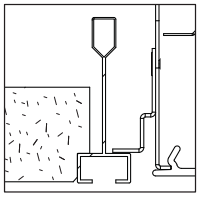


9/16" Grid, Tegular Tile:
Specify **G9** or **G9G** in part #



9/16" Grid, Tegular Tile:
Specify **GS** or **GSG** in part #

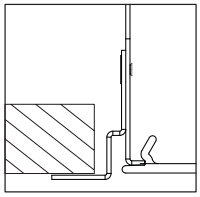
Screw Slot Mounting



Screw Slot Grid:
Specify **GS** or **GSG** in part #

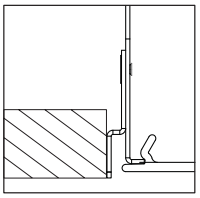
• INACCESSIBLE CEILING MOUNTING

Flange Detail



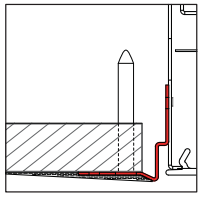
Exposed Flange Detail:
Specify **FL** or **FLF** in part #

Non-Flange



Metal Pan or Millwork:
Specify **NF** or **NFN** in part #

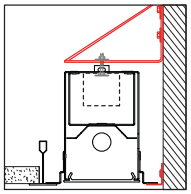
Spackle Flange



Drywall, Flangeless Look:
Specify **SF** or **SFS** in part #

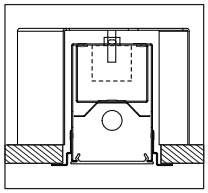
• SPECIALTY MOUNTS

Perimeter Mount



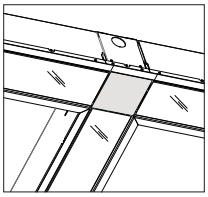
Bracket and Wall Rail:
Specify **PM** in part #

Rotating Crossbar



Unavailable Structure Support:
Specify **RC** in part #

• NON-ILLUMINATED CONNECTOR



APPLICATION: Utilize non-illuminated connectors to create unique configurations. Recommended for gypsum board or inaccessible ceilings using the standard 1/2" flange mount (FL)

INSTALLATION: Non-illuminated connector easily joins to linear fixtures using standard Pinnacle Lighting joiner kits.

ORDERING INFORMATION: Specify Non-Illuminated Connector (CN) in the options section of the part number. Sample Catalog #: E2A-1T5-24-FL-120-1C-W-**CN**.

PINNACLE ARCHITECTURAL LIGHTING®

Pinnacle Architectural Lighting 12655 East 42nd Avenue, Suite 50 Denver, CO 80239
Phone 303.322.5570 Fax 303.322.5568 www.pinnacle-ltg.com
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Specifications and dimensions subject to change without notice. Specification sheets that appear on pinnacle-ltg.com are the most recent version and supersede all other previously printed or electronic versions.

LITHONIA LIGHTING®

Catalog Number	
Notes	
Type	W

FEATURES & SPECIFICATIONS

INTENDED USE — Slim, low-profile housing for ceiling or wall mounting. Matches AW Series in appearance.

Choice of flat-bottom diffusers — prismatic acrylic or matte white opal acrylic. Both available in high-impact versions. **Certain airborne contaminants can diminish integrity of acrylic.** Click here for Acrylic Environmental Compatibility table for suitable uses.

Diffuser hinges open from either side for easy cleaning and servicing.

For surface or stem mounting, individual or row installation.

Available in tandem-wired lengths.

CONSTRUCTION — Housing formed from cold-rolled 20-gauge steel. End plates welded to housing. Standard product complies with NYC requirements; no options necessary. No asbestos is used in this product.

Thermally protected, resetting, Class P, HPF, non-PCB, UL listed, CSA certified ballast is standard. Ballasts are sound rated A. Standard combinations are CBM approved and conform to UL 935.

Finish: High-gloss, baked white enamel finish. Five-stage iron-phosphate pretreatment ensures superior paint adhesion and rust resistance. Painted parts finished with high-gloss, baked white enamel.

ELECTRICAL — Fixture conforms to UL 1570 and is suitable for damp locations. AWM, TFN or THHN wire used throughout, rated for required temperatures.

ENERGY
Luminaire Efficacy Rating (LER) and Annual Energy Cost:

Two-lamp LER.FW = 62. Annual Energy Cost = $3.87.
Based on 32W T8 lamp, 2850 lumens, and energy-saving electronic ballast. Ballast factor = .88, input watts = 61.

Calculated in accordance with NEMA standard LE-5.

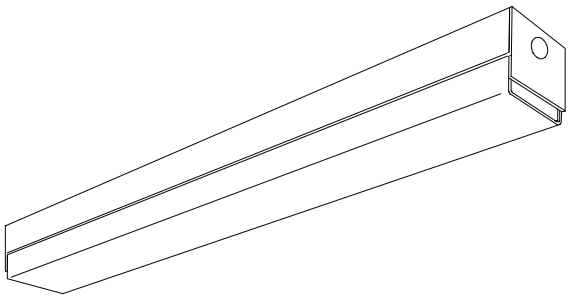
LISTING — UL listed to US and Canadian safety standards (see Options). NOM Certified (see Options).

WARRANTY — 1-year limited warranty. Complete warranty terms located at
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx
Note: Specifications subject to change without notice.

Corridor Acrylic Wraparound

CA

2', 3', 4' and 8' Length
1 or 2 Lamps



ORDERING INFORMATION Lead times may vary depending on options selected. Consult with your sales representative.

Example: CA 2 32 MVOLT GEB10IS

Series	Number of lamps	Lamp type	Diffuser	Voltage	Options
CA Corridor wraparound For tandem double-length unit, add prefix T. Example: TCA	1 2 Not included.	14T5 14W T5 (22-1/2") 17 17W T8 (24") 21T5 21W T5 (34") 24T5HO 24W T5HO (22-1/2") 25 25W T8 (36") 28T5 28W T5 (46-1/2") 32 32W T8 (48") 54T5HO 54W T5HO (46-1/2")	(blank) Prismatic AR High-impact prismatic ACW Matte white AWR High-impact matte white	347[1] MVOLT[2] Others available.	GEB10IS Electronic ballast, ≤10% THD, instant start GEB10RS Electronic ballast, ≤10% THD, program rapid start GEB10PS Electronic ballast, ≤10% THD, programmed start EL Emergency battery pack (nominal 300 lumens, see Life Safety Section)[3] GLR Internal fast-blow fuse[4] GMF Internal slow-blow fuse[4] RIF1 Radio interference filter (1 per fixture) CSA Listed and labeled to comply with Canadian Standards NOM NOM certified

Accessories: *Order as separate catalog number.*

SQ_	Swivel-stem hanger (specify length in 2" increments).
1B	Ceiling spacer (1-1/2" to 2-1/2" from ceiling).
DSH24	Double stem hanger for 4' fixtures, 24" stems.

Notes

1. Not availale in GEB10PS.
2. Electronic ballast operates 120V through 277V.
3. Not available in T5 2' configuration.
4. Specify voltage.

CA Corridor Acrylic Wraparound

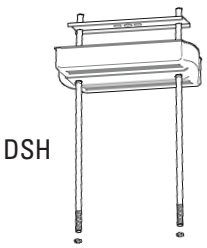
MOUNTING DATA

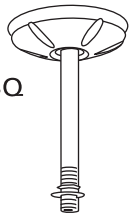
For unit or row installation, surface or stem mounting. Stem mounting not available on TCA units.

Individual installation — One double-stem (4' only) or two single-stem hangers required.

Row installation — One hanger per fixture plus one per row required.

See ACCESSORIES below for hanging devices.

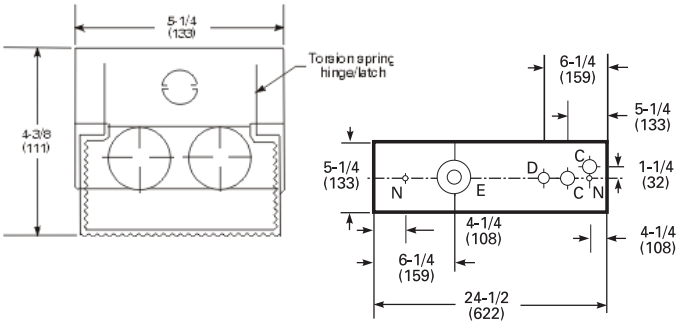


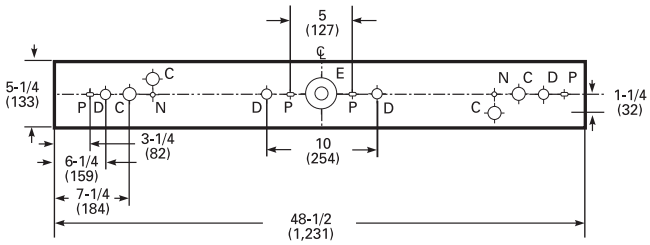


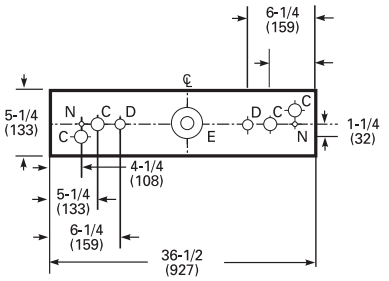
C = 7/8 (22) Dia.K.O.
D = 11/16 (17) Dia. K.O.
E = 2 (51) Dia. K.O. and
7/8 (22) Dia. K.O.
F = 7/16 (11) Dia.K.O.
J = 11/16 x 1 (17 x 25) K.O.
N = 5/16 (8) Dia. hole
P = 5/16 x 3/4 (8 x 19) K.O.

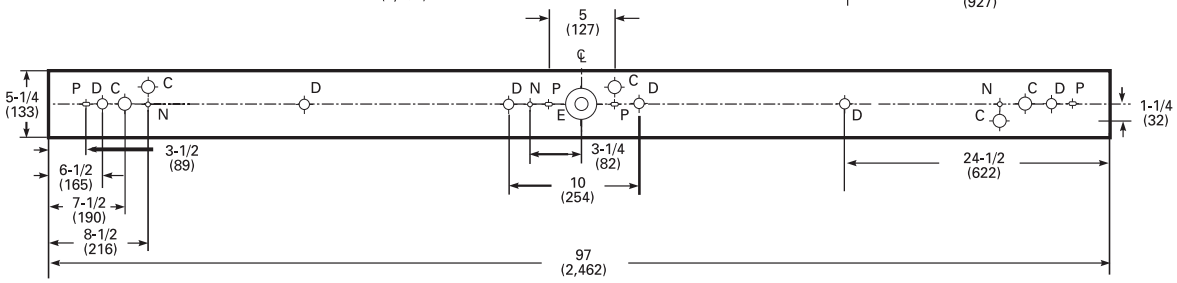
DIMENSIONS

Inches (millimeters). Subject to change without notice.









PHOTOMETRICS

Calculated using the zonal cavity method in accordance with IESNA LM41 procedure. Floor reflectances are 20%. Lamp configurations shown are typical. Full photometric data on these and other configurations available upon request.

CA 2 32

Report LTL 6020 – Lumens per lamp = 2900

S/MH (along) 1.2 (across) 1.5

Coefficient of Utilization

Ceiling		80%			70%			50%			0%
Wall	70%	50%	30%	70%	50%	30%	50%	30%	10%	0%	
0	87	87	87	83	83	83	77	77	77	64
1	78	774	70	75	71	68	66	63	61	51
2	71	64	59	68	62	57	57	53	50	42
3	65	57	50	62	54	49	51	46	42	36
4	59	50	43	56	48	42	45	40	36	30
5	54	44	37	52	43	36	40	34	30	26
6	50	39	33	47	38	32	36	30	26	22
7	46	35	29	44	34	28	32	27	23	19
8	42	32	25	40	31	25	29	23	20	17
9	39	29	22	37	28	22	26	21	17	14
10	36	26	20	35	25	19	24	18	15	12

Zonal Lumens Summary

Zone	Lumens	%Lamp	%Fixture
0-30	886	15.3	20.4
0-40	1481	25.5	34.0
0-60	2627	45.3	60.4
0-90	3696	63.7	85.0
90-180	654	11.3	15.0
0-180	4350	75.0	100.0

LITHONIA LIGHTING®
An AcuityBrands Company

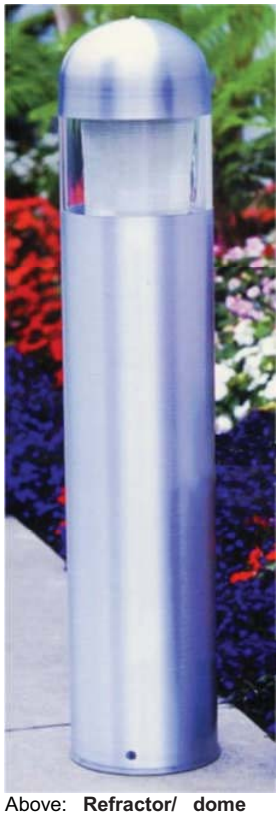
FLUORESCENT: One Lithonia Way Conyers, GA 30012 Phone: 800-315-4963 Fax: 770-981-8191 www.lithonia.com © 1996-2012 Acuity Brands, Inc. All rights reserved Rev. 05/16/12

Type "X"

Bieber Lighting Consultants™
P. O. Box 280212 Northridge, CA 91328 Phone: 818-701-1548 FAX: 818-993-3199
Email: ricc@bieberlc.com Web Site: http://www.bieberlc.com
Our Service Hours: M-F 8:00 AM to 5:00 PM Pacific Time After Hours: By Appointment
Phone: 818-701-1548 FAX: 818-993-3199

Bollard Lighting

The Virgo Series



Above: **Refractor/ dome top**
Virgo shown with custom natural satin aluminum finish with clear top coat.

UL & CSA LISTED FOR WET LOCATIONS

FACTORY TESTED BEFORE SHIPMENT

Left: Stacked cone/ dome top; Right: Paracline/ radius top

HOUSING — Round or square extruded aluminum, .125" thick, The standard height is 42". Custom heights available.

SHAPE — Round or square, 6" and 8" sizes. Custom sizes available.

TOP CAP — Spun, cast, die-formed or extruded from heavy-gauge aluminum. Available in four shapes:• flat top, for round or square Virgo bollards.

- Dome top, for round Virgo bollards.
- Pyramid top, for square Virgo bollards.
- Radiused top, for square Virgo bollards.

LENS — The standard lens is 3/8" thick, clear. UV-stabilized high impact resistant acrylic. It is rabbeted for flush fit, and silicone sealant creates a tight gasketting. Other lenses are available.

SOCKET — HID sockets are glazed porcelain, medium base, rated to 600V. Fluorescent sockets are standard PL-type.

ELECTRICAL COMPONENTS — Available in HPS, MH, induction, and fluorescent. All ballasts are CWA/HPF regulating auto-transformers. Starting temperature for UPS is -40°F, and MH starts at -20°F. Maximum wattage is 150W HPS, 175W MH and 42W PL fluorescent. Fluorescent is available in 120V or 277V only. Induction available in 120, 240, or 277V.

MOUNT —Anchor base and bolt. Three (3) 3/8" x 12" hot dip galvanized anchor bolts are supplied, complete with two each nuts and washers.

OPTICS — Three different optical systems are offered for the Virgo:

- Specular spun-aluminum paracline reflector.
- Specular aluminum stacked cone reflector.
- Borosilicate glass refractor.

Additionally, a "house side" cut-off shield is available; please see the Options table below.

FINISH — The finish is thermoset polyester oven-baked powder coat, available in any standard Bieber Lighting color. Custom colors are also available to your specifications.

Choose Your Own Mix-and-Match Specs

The combination of these codes below will make you a unique catalog number!

Example:

Fixture	Size	Source	Volts	Lamp	Top Cap	Optics	Color	Options
VIR	**10**	**E1**	**2**	**L**	**1**	**A**	**DB**	**MT,LS**

Gives you a unique catalog number of:

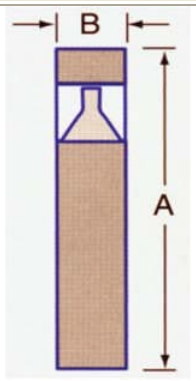
VIR-10-E1-2-L-1-A-DB-MT,DS

Write down your codes in this order, and refer to it when talking to Bieber's Customer Support Representative. *Select a codes marked in yellow for each of the 9 categories below:)*

1. Choose a Size: #10, #11, #20, #21, or #30

Choose one:

Size	Shape	A	B	Max. Watts
10	Round	42"	6" diameter	100W HID, 42W fluorescent
11	Square	42"	6" x 6"	100W HID, 42W fluorescent
20	Round	42"	8" diameter	150W HID, 175W MH 42W fluorescent
20	Square	42"	8" x 8"	150W HID, 175W MH 42W fluorescent
30	*	*	*	* Custom: please specify



2. Choose a Light Source:

Choose one:

	HPS	MH
50W	C1	C2
70W	E1	E2
100W	H1	H2
150W	J1	J2
175W	-	K2

HPS is High Pressure Sodium; MH is Metal Halide.
Induction available in 18W and 23W
Also available with Pulse Start.

Fluorescent:
X = single PL
Y = dual PL
Specify wattage up to single 42W or dual 13W

3. Select Your Voltage

Choose one:

Voltage	Code #	
120V	**2**	*Also available in Multi-Tap (see **Options** table below)*
208V	**0**	
240V	**4**	
277V	**7**	
480V	**8**	*Not available in Multi-Tap*

Note: Fluorescent sources available in 120V or 277V only.

4. Select a Lamp

Choose one:

Code	Description
L	= With Lamp
N	= No Lamp

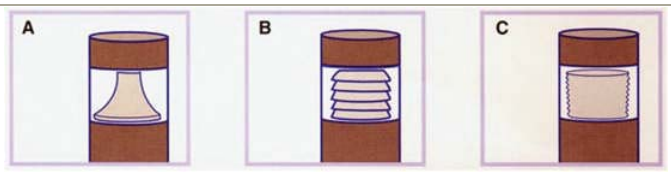
5. Select a Top Cap

Choose one:

Code	Description
1	= Flat (all sizes)
2	= Dome (round sizes only)
3	= Pyramid (square sizes only)
4	= Radiused (square sizes only)

6. Optics

Choose one:

Code	Description
A = Paracline reflector	
B = Stacked cone reflector	
C = Glass refractor	

7. Select a Color

Choose one:

Code	Color
BK	= Black
GR	= Green
WH	= White
DB	= Dark Bronze
SL	= Silver
GY	= Gray
BU	= Blue
VP	= Verde Patina
CC	= Custom Color

9. Other Options

Choose one:

Code	Description
QR	= Quartz restrike
LS	= 180 ° cut-off light shield
PC	= Photo Cell
PL	= Polycarbonate lens
TP	= Tamper-proof hardware
MT	= Multi-tap transformer
FV	= International ballast; Specify cycles and voltage

FILL-IN YOUR CATALOG NUMBER

Fixture	Size	Source	Volts	Lamp	Optics	Mount	Arm	Color	Options
VIR									

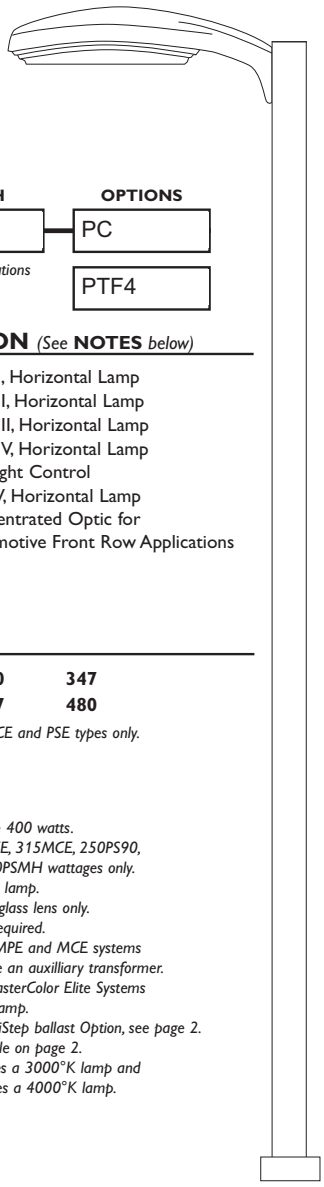
WE USE STATE-LICENSED AND BONDED CONTRACTORS ONLY

Job: Cerritos College Liberal Arts/DSPS Building
Type: Y
Notes:

Gullwing

Featuring CosmoPolis and MasterColor Elite Electronic HID Systems

G18 Area Luminaires



The Philips Gardco Gullwing is an area luminaire defined by its sleek profile and rugged construction. The housing is one-piece, die cast aluminum and mounts directly to a pole or wall without the need of a separate support arm. The multifaceted arc-image duplicating optical systems provide IES Types I, II, III, IV and V distributions. The door frame is single-piece diecast aluminum and retains an optically clear tempered flat glass lens. The luminaire is completely sealed and gasketed preventing intrusion from moisture, dust and insects. Gullwing luminaires are finished with a fade and abrasion resistant TGIC powdercoat. Flat glass lens luminaires provide full cutoff performance. Sag Lens luminaires provide cutoff performance.

PREFIX	MOUNTING	DISTRIBUTION	WATTAGE	VOLTAGE	FINISH	OPTIONS
G18	1	4XL	140CMPE	120	NP	PC
						PTF4

Enter the order code into the appropriate box above. Note: Gardco reserves the right to refuse a configuration. Not all combinations and configurations are valid. Refer to notes below for exclusions and limitations. For questions or concerns, please consult the factory.

PREFIX

G18	18" Gullwing Luminaire

MOUNTING

1	Single Pole Mount
2	Twin Pole Mount at 180°
2@90	Twin Pole Mount at 90°
3	3-way Pole Mount at 90°
3@120°	3-way Pole Mount at 120°
4	4-way Pole Mount
W	Wall Mount, Recessed J-Box
WS	Wall Mount, Surface Conduit

DISTRIBUTION *(See **NOTES** below)*

1[1]	Type I, Horizontal Lamp
2XL	Type II, Horizontal Lamp
3XL	Type III, Horizontal Lamp
4XL	Type IV, Horizontal Lamp
BLC[1]	Backlight Control
Q[1]	Type V, Horizontal Lamp
AF[2]	Concentrated Optic for Automotive Front Row Applications

WATTAGE

Pulse Start MH Magnetic Ballast	**100MH**[5] **150MH**[5] **175PSMH** Ⓔ	**250PSMH** Ⓔ **250PS90**** Ⓔ **320PSMH**[3] Ⓔ	**350PSMH**[3] Ⓔ **400PSMH**[3] Ⓔ **750PSMH**[4]	**875PSMH**[4]
Standard MH Magnetic Ballast	**175MH**[*]	**250MH**[*]	**400MH**[*,3]	
CosmoPolis Electronic System (See Notes 6,7,8,9)	**60CMPE**	**90CMPE** **140CMPE**		
MasterColor Elite Electronic System (See Notes 6,7,9,10)	**210MCE-3K** Ⓔ **210MCE-4K** Ⓔ	**315MCE-3K** Ⓔ **315MCE-4K** Ⓔ		
Pulse Start MH Electronic Ballast (See Note 9)	**150PSE**[5] Ⓔ	**175PSE** Ⓔ	**250PSE** Ⓔ	**320PSE**[3,] Ⓔ
High Pressure Sodium Magnetic Ballast	**70HPS** **100HPS**	**150HPS** **250HPS**	**400HPS** **600HPS**	**750HPS**[4]
Low Pressure Sodium Magnetic Ballast	**35LPS**			

* *175MH, 250MH and 400MH not available for sale in the United States.*

** *250PS90 includes a 90% efficient magnetic PSMH ballast, meeting the requirements of California Title 20, effective 1/1/2010.*

Ⓔ *Wattages marked with Circle "E" meet federal energy efficiency standards applicable to 150 watt through 500 watt metal halide luminaires only.*

VOLTAGE

120	**240**	**347**
208	**277**	**480**

200-277 *CMPE, MCE and PSE types only.*

NOTES:

1. *Not available above 400 watts.*
2. *Available in 210MCE, 315MCE, 250PS90, 250PSMH and 400PSMH wattages only.*
3. *Requires E28/BT28 lamp.*
4. *Furnished with sag glass lens only.*
5. *Mogul base lamp required.*
6. *347V and 480V CMPE and MCE systems include and require an auxilliary transformer.*
7. *CosmoPolis and MasterColor Elite Systems are supplied with lamp.*
8. *Available with LumiStep ballast Option, see page 2.*
9. *See QS / Q924 Table on page 2.*
10. *"-3K" suffix specifies a 3000°K lamp and "-4K" suffix specifies a 4000°K lamp.*

1611 Clovis Barker Road, San Marcos, TX 78666
(800) 227-0758 (512) 753-1000 FAX: (512) 753-7855 sitelighting.com

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79115-85/0612

PHILIPS
GARDCO

Featuring CosmoPolis and MasterColor Elite Electronic HID Systems

Gullwing

G18 Area Luminaires

FINISH

BRP	Bronze Paint
BLP	Black Paint
WP	White Paint
NP	Natural Aluminum Paint
OC	Optional Color Paint *Specify Optional Color or RAL ex: OC-LGP or OC-RAL7024.*
SC	Special Paint *Specify. Must supply color chip.*

OPTIONS

F[11]	Fusing In Head
LF	In-Line/In-Pole Fusing
PC[12]	Photocontrol and Receptacle
PCR	Photocontrol Receptacle only
POLY[13]	Polycarbonate Sag Lens
SG[14]	Sag Glass Lens
HS	Internal Houseside Shield
QS[9]	Quartz Standby
QST[9]	Quartz Standby - Timed Delay
Q924[9]	Quartz Emergency
QT924[9]	Quartz Emergency - Timed Delay
RPA1[15]	3" Round Pole Adapter
RPA2[16]	4" and 5" Round Pole Adapter
MF[17]	Mast Arm Fitter
TR1[18]	Single Transition
TR2[18]	Twin Transition
PTF2[19]	Pole Top Fitter - 2 3/8" - 3" Dia. Tenon
PTF3[19]	Pole Top Fitter - 3" - 3 1/2" Dia. Tenon
PTF4[19]	Pole Top Fitter - 3 1/2" - 4" Dia. Tenon
SQPTF[20]	Square Pole Top Fitter
GMR[21]	Provision for Gardco Motion Response
L6[22]	LumiStep Ballast 6 hour
L8[22]	LumiStep Ballast 8 hour
L10[22]	LumiStep Ballast 10 hour

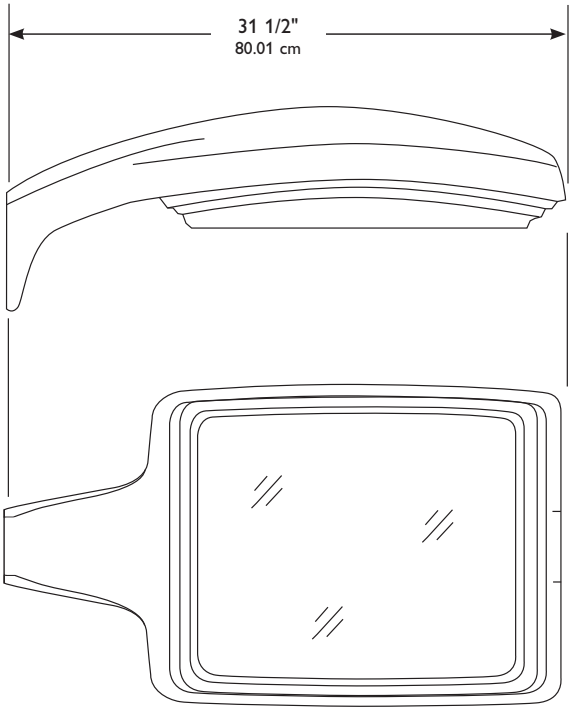
9. See QS/Q924 Table.
11. Not available above 400 watt.
12. Not available in 480V. Provide specific input voltage.
13. 250W maximum. Polycarbonate lenses carry a 1 year warranty only.
14. In lieu of flat glass. Supplied standard and required with 750 watt and higher wattages.
15. Required for 3" O.D. round or tapered round poles where top O.D. is less than 4".
16. Required for 4"- 5" O.D. round poles.
17. Mounts to a 2-3/8" O.D. mast arm.
18. Mounts to a 2-3/8" Top Tenon. Specify a pole with a 4.50" O.D. for a smooth transition.
19. Not available in 120° mounting configurations.
20. Requires a 2-3/8" O.D. x 4" tenon or a 2.4" round pole top O.D. Specify Drilling (1, 2, 2@90, 3 or 4 only.)
21. Available only with 175PSMH through 400PSMH and 150HPS through 400HPS wattages. Includes dual-level capacitor and wiring to connect to Gardco Motion Response System.
22. Available with CosmoPolis system only. See submittal sheet GE200-005 for complete information on LumiStep ballasts.

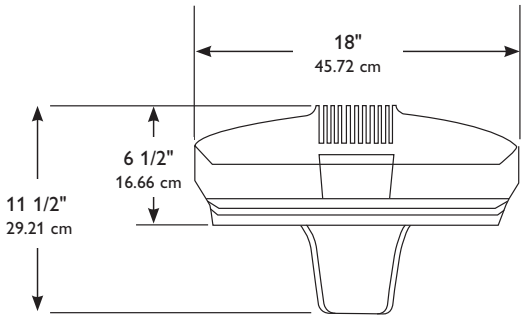
(Note 9) QS / Q924 Table

HID Lamp Watts	Maximum Quartz Lamp Watts
175 watts or less	100 Watts
Above 175 watts up to 400 watts	150 Watts

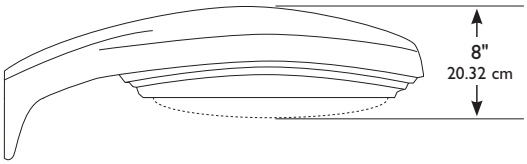
QS, QST, Q924, QT924 are not available with CMPE, MCE or PSE wattages or in luminaires above 400 watts HID.

DIMENSIONS AND EPA





With Sag Glass Lens



EPA Data

1	2	3-4
1.2 ft^2	2.4 ft^2	3.2 ft^2
.11 m^2	.22 m^2	.30 m^2

1611 Clovis Barker Road, San Marcos, TX 78666
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79115-85/0612

PHILIPS
GARDCO

Featuring CosmoPolis and MasterColor Elite Electronic HID Systems

Gullwing

G18 Area Luminaires

SPECIFICATIONS

GENERAL DESCRIPTION: The Philips Gardco Gullwing is an area luminaire defined by its sleek profile and rugged construction. The housing is one-piece, diecast aluminum and mounts directly to a pole or wall without the need of a separate support arm. The multifaceted arc-image duplicating optical systems provide IES Types I, II, III, IV and V distributions. The door frame is single-piece diecast aluminum and retains an optically clear tempered flat glass lens. The luminaire is completely sealed and gasketed preventing intrusion from moisture, dust and insects. The Gullwing luminaires are finished with a fade and abrasion resistant TGIC powdercoat.

HOUSING: A one-piece die cast aluminum housing mounts directly to a pole or wall without the need for a support arm. The low profile rounded form reduces the effective projected area of the luminaire to only 1.2 ft^2 /.11 m^2.

LENS ASSEMBLY: A single-piece diecast aluminum lens frame hinges down from the housing and is secured by a stainless steel lanyard and hinge pin.

An optically clear, heat and impact resistant tempered flat glass lens is mechanically secured with eight retainers. The electrical and optical chambers are thoroughly sealed with a one-piece memory retentive hollow-core EPDM gasket to prevent intrusion by moisture, dust, and insects.

OPTICAL SYSTEMS: The segmented optical systems are manufactured from homogenous sheet aluminum which has been electrochemically brightened, anodized and sealed. The multifaceted arc image duplicating systems are designed to produce IES Types I (1), II (2XL), III (3XL), IV (4XL and BLC), and V (Q). With the 2XL, 3XL and 4XL luminaries, the reflector facets form a conical fan around the arc tube with each facet positioned to be precisely tangent to the top of the arc tube.

The lampholder is glazed porcelain with a nickel plated screw shell. Position-oriented mogul base sockets to accept high output horizontal metal halide lamps are supplied standard.

ELECTRICAL: All electrical components are UL recognized and factory tested. Electronic and magnetic HID ballasts are high power factor and mounted on a unitized tray with quick electrical disconnects. Magnetic HID ballasts are the separate component type. Electronic and magnetic HID ballasts are capable of providing reliable lamp starting down to -20°F / -29°C.

Luminaires provided with the CosmoPolis or MasterColor Elite high performance ceramic metal halide electronic systems include high power factor electronic ballasts, designed specifically for the system selected.

FINISH: Each standard color luminaire receives a fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) textured polyester powdercoat finish. Standard colors include bronze (BRP), black (BLP), white (WP), and natural aluminum (NP). Consult factory for specs on optional or custom colors.

LABELS: All luminaires bear UL or CUL (where applicable) Wet Location labels.

WARRANTY: Philips Gardco luminaires feature a 5 year limited warranty. See Warranty Information on www.sitelighting.com for complete details and exclusions. Polycarbonate lenses carry a 1 year warranty only.

FULL CUTOFF PERFORMANCE: Full cutoff performance means a luminaire distribution where zero candela intensity occurs at an angle at or above 90° above nadir . Additionally, the candela per 1000 lamp lumens does not numerically exceed 100 (10 percent) at a vertical angle of 80° above nadir. This applies to all lateral angles around the luminaire.

CUTOFF PERFORMANCE: Cutoff performance means a luminaire distribution where the candela per 1000 lamp lumens does not numerically exceed 25 (2.5 percent) at an angle at or above 90° above nadir, and 100 (10 percent) at a vertical angle of 80° above nadir. This applies to all lateral angles around the luminaire.

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79115-85/0612

PHILIPS

GARDCO

HVAC Equipment

The HVAC equipment listed herein have been approved by the Campus for use as Standards. The following equipment will be the basis of design. The approval of these items will provide for consistent design and ease of maintenance throughout the campus.

HVAC:

1. Air Handlers
    - Alliance Air Products
    - Pace (York International Pace Division)
2. Packaged Gas/Elec Rooftop Unit
    - Carrier
3. Ductless Split-System AC
    - Mitsubishi Electric Corporation

Boilers:

1. Raypak

Furniture, Fixtures & Equipment (FF&E)

Furniture, Fixtures & Equipment (FF&E) consists of movable furniture, fixtures and equipment which have no permanent connection to the building structure and utilities. Examples of FF&E include desks, chairs, electronic components, tables, bookcases and moveable partitions.

Though FF&E items are typically not included in the construction documents scope of work, having knowledge of FF&E systems will aid the design team in planning facilities which best support the needs of the College. Having readily available FF&E standards will substantially benefit the project when designing spaces, infrastructure and finishes.

In an effort to improve the overall appearance and functionality of the interior environment, the College has implemented Cerritos College Campus Furniture Standards which may be accessed on the College's website at the following address:

http://cms.cerritos.edu/purchasing/cerritos-college-campus-furniture-standards.htm

Campus Wayfinding Signage Specifications

These specifications are provided for the signage, graphic elements and the signage fabricator, and are a supplement and subservient to the general project specifications provided by architect/developer of record. The sign fabricator is responsible for obtaining and complying with the general project specifications in addition to these.

I. QUALITY ASSURANCE

A. Quality of Workmanship

The Contractor shall be responsible for the quality and delivery of all materials, and workmanship required for the execution of the contract including the materials and workmanship of any firms or individuals who act as his or her subcontractors. It is desired that the Contractor for work of this type shall have in-house, broad knowledge, diverse shop and field experience, flexibility, coordinating ability, skilled craftsmen, and physical labor as necessary as well as facilities to produce quality products. Contractor shall be responsible for providing subcontractors with complete and up-to-date drawings, specifications, graphic schedule and other information issued by the selected sign designer.

B. Performance

The contractor shall base his or her proposal on the performance of all services, including all items of labor, material and equipment required for the complete fabrication and installation of the specified work within the time frame agreed to by Contractor, Developer, and the selected sign designer.

C. Dimensions

Written dimensions on the drawings shall take precedence over scaled dimensions. Contractor shall verify and be responsible for all dimensions and conditions shown by these drawings as they relate to actual material sizes, existing construction and related site conditions. If there are discrepancies with dimensions or materials, it is the responsibility of the Contractor to bring it to the selected sign designer's attention before fabrication for any clarifications deemed necessary.

D. Sign Package Graphics Schedule

Copy, quantities and references shown on the Graphics Schedule shall take precedence over drawings. Specification shall take precedence over the large scale details. The large scale details shall take precedence over the smaller scale drawings. If there are discrepancies it is the responsibility of the Contractor to bring it to the selected sign designer's attention before fabrication for any clarifications deemed necessary.

E. Execution

In the case of discrepancies, in quantities, dimensions, message, or any other related elements fabricator is to notify the selected sign designer before proceeding further in any operation, in order to resolve the issues in question. It is required that the Contractor not attempt to resolve the discrepancies without consulting the selected sign designer.

F. Contractor Recommendations

The contractor shall carefully study the detailed drawings for the various signs and make specific recommendations and changes if those changes will improve the quality of any sign. Such recommendations and changes shall be approved in writing by the selected sign designer or their technical representative prior to preparation of shop drawings or fabrication of any samples of signs.

G. Artwork

Electronic artwork as required by the sign contractor for symbols and custom designed graphic components (i.e., logos, logo types, arrow and patterns) will be provided at a scaled percentage of the final size. The appropriate art scan will be provided when necessary. All required copy layouts and text for project signage system is the responsibility of the sign contractor. All enlarging and reducing is the responsibility of the sign contractor. Contractor shall submit an itemized list of all required artwork at time of bid. Note: Any artwork required beyond electronic computer artwork noted above (i.e., additonal custom copy layouts, formatting for other platforms, linotronic output, or copying to other media, etc.) will be billed to the contractor on a time and materials basis by the selected sign designer. The selected sign designer may not provide copies of licensed fonts.

H. UL (or similar) Compliance

Complete Underwriters Compliance (for the United States) or approved recognized testing agency (for other countries), compliance, as required, is the responsibility of the Contractor. Contractor shall provide lighting fixtures and electrical

Campus Wayfinding Signage Specifications (Continued)

components that meet all UL (or similar) testing lab requirements for safety, operation, construction and are UL-labeled and listed. (Refer to Section II.C for related information)

I. Lamp Emission
All lighting fixtures/sources shall emit a color balanced, consistent and uniform light with no browning, flickering, haloing, or other uneven effect.

J. Electrical Hardware
All transformers and electrical hardware shall be concealed, non-audible and non-visible to pedestrian and vehicular traffic. Provide disconnect switch as required by local or international governing agencies. Confirm with Developer and General Contractor the necessity or desirability of Light Sensor Switches, Day-Night circuit connections, local restrictions on night time area lighting or other conditions that could affect the use and operation of any sign illumination.

K. Labeling
There shall be no visible labels, manufacturer's or otherwise, code permitting, on the completed signs. If labels are required, a sample label and intended location along with an explanation of the requirements must be submitted for review by the selected sign designer and Developer, prior to application and/or installation.

L. Stock
All material, hardware, electrical components, finish. etc. used to fabricate any and all sign components shall be "NEW" (not previously used or operated in any other application) and from the most recent original manufacturer's production run/supply and appropriately matched to the service conditions required of the site.

M. Testing
Contractor is required to provide Developer or Owner with a copy of all Testing Inspection Reports as may be required by local or international codes. An independent testing lab may be hired by the Developer to do inspection and material testing. Contractor is not to proceed with the work until all unsatisfactory conditions have been corrected by the contractor in a manner acceptable to the Developer.

II. SUBMITTALS

A. Shop Drawings
The Contractor shall submit five (5) sets of detailed shop drawings for each sign type. (2 sets of prints, 1 reproducible set of plans, elevations and scale drawings) to General Contractor and 2 sets to the selected sign designer for review prior to production. These drawings are to show and indicate all materials, finishes, construction details, lighting specifications and installation details of artwork and signage structure. This includes types and locations of fasteners, attachments, joint details, internal frames, reinforcements, support backing, and connection to support structure or mounting surface. Shop drawings and data shall be reviewed by the selected sign designer with such promptness as to cause no delay in the work. The Contractor shall make all corrections required by the selected sign designer and resubmit for final review. Shop drawings for all signs must be approved by the selected sign designer and the General Contractor or Developer before production starts.

B. Conflicts/Contradictions w/ Drawings or Conditions
The contractor should recognize and bring to the selected sign designer any conflicts or contradictions either in regards to the drawings or as the drawings relate to other disciplines or contractors. All conflicts should be described in writing and the Contractor is to provide alternative solutions to resolve the conflict. All conflicts are to be resolved and any changes approved by the selected sign designer and Developer prior to sign fabrication.

C. Product Data
The Contractor shall submit manufacturer's technical data and installation instructions for each type of sign and/or fixture required as will be provide in the completed, installed sign unit. Identification of all materials used, by manufacturer's descriptive literature, control number, name, code number, batch and formula when available shall be provided by the Contractor.

D. Specific Samples
The Contractor shall submit two samples and/or prototypes as specified on the drawing sheet, minimum size 8.5"x 11" or as requested by the selected sign designer of each color and finish on the specified materials and/or accessories required for signs. Samples must be submitted to the selected sign designer in a time frame allowable for review of

Campus Wayfinding Signage Specifications (Continued)

color, texture and aesthetic compatibility to any existing adjacent materials. Compliance with all other requirements is the exclusive responsibility of the Contractor. When specified, furnish full-size samples of sign materials. Resubmit samples if requested until all of the selected sign designer, General Contractor, and Developer specifications are met and approved.

E. Structure
Installation, internal structure, mounting assemblies and foundations are by Contractor and are to adhere to design intent of the selected sign designer if specified. Contractor to coordinate and provide Architect of Record and General Contractor with drawings indicating placement and structural requirements for architectural backing. Contractor shall submit three sets of prints and one reproducible set of comprehensive engineering drawings to the selected sign designer incorporating an adequate foundation and/or mounting structure for all sign components to meet all load and wind requirements and given site conditions. The contractor shall, at his or her expense, submit to General Contractor for distribution and review, calculations, sealed by certified engineers registered in the state or country of final installation, for all structural members including foundations.

F. Custom Fabricated Items
The Contractor is to submit shop drawings of all custom fabricated items and specifications on all standard pre-manufactured items.

G. Electrical Requirements
The contractor shall provide, within 30 days of the award of contract, the specific electrical requirements to the Developer and/or General Contractor.

H. Lamp Service
The contractor shall provide the General Contractor or Developer with complete lamp replacement information, brand, type, wattage, color, etc., for all lighted components. This information shall be in a typewritten format and shall indicate at least one local area (site) supplier.

I. Maintenance
The contractor shall provide the Developer with complete finish/component care instructions as specified by the manufacturer for on-going cosmetic sign cleaning and maintenance. Three sets are to be submitted. Contractor to provide Developer with one (1) gallon or one (1) liter (unopened and clearly marked) of each paint color/finish used on the project.

J. Copy/Text/Verbage Layouts
The Contractor shall provide the Developer full size black and white copy layouts required for all signs and all copy prior to fabrication. Layouts must be submitted to the Developer and/or the selected sign designer in a time frame allowable for review, multiple adjustments and approval without delay to the project. Final copy of all signs, including size and fonts used to be reviewed and approved by Developer prior to final fabrication. The selected sign designer is not responsible for correct adherence to code, copy information or location of signs. City, County, State, or Country sign requirements supersede information shown in the the selected sign designer's sign designs.

III. FINISHES

A. Colors and Surface Textures
All colors shall match exactly the color and finish specifications provided by the selected sign designer. Exercise care to assure that finished surfaces are unblemished in the completed work. For exposed signage, materials with applied colors or other characteristics related to appearance, Contractor shall provide color matches indicated, or if not indicated, as selected and reviewed by the selected sign designer.

B. Surface Preparation
All surfaces shall be thoroughly cleaned and free from dust, dirt, rust, scale, mill scale, oil, greasy materials or residue from cleaning. All structural metals shall be cleaned by sandblasting. Except as indicated or directed otherwise, finish all surfaces smooth. All coatings shall be applied in strict accordance with the manufacturer's recommendations. All paint products shall conform to local codes. All finished pieces shall present a uniform opaque color appearance unless specifically indicated otherwise by the selected sign designer.

C. Painted Finish
1. Ferrous Surfaces
   Using Matthews paint products, finish with 1 coat 74-734 & 74-735 Metal Pretreat @ .25 mils DFT, 1 coat

Campus Wayfinding Signage Specifications (Continued)

Matthews Acrylic Polyurethane 1 mil Dft (min.). Observe designer's specification regarding specularity (matte to gloss). If Matthews paints are not available, Contractor to use similar and submit to the selected sign designer for approval prior to fabrication.

2. Aluminum
Using Matthews paint products finish, with 1 coat 74-734/74-735 Metal Pretreat @ .25 mils DFT or 1 coat 74793 Spray Bond @ .15 to .25 mils DFT and 1 coat Matthews Acrylic Polyurethane 1 mil DFT (min). Matthews paints are not available, Contractor to use similar and submit to the selected sign designer for approval prior to fabrication.

3. Bright Metals
Match finish (polished, satin, brushed, etc.) detailed on drawing. If specified, coat with a non-yellowing polyurethane clear coat.

4. Plastic Surfaces
All plastic to be paint finished according to paint manufacturer's specifications.

D. Application
All applications of color coatings are to be equal and of consistent cover with no "streaking", "spotting", "gradation" or other variations within and from each similar application.

E. Ultra-Violet/Fading Protection
Contractor shall utilize materials, coatings and processes to minimize as much as possible any noticeable fading of pigmented coatings.

F. Neon Returns
All exposed neon returns and double backs are to be opaque with a top coat to match the field area immediately behind that neon unless otherwise specified.

IV. MATERIALS

A. Acrylic
Color Translucent Sheet
Where sheet material is indicated as a "color," provide color translucent sheet of density required to produce uniform brightness without halo-like effect. Material provided shall be appropriately matched to the intended permanent field conditions.
Note: Where translucent material is called out as 'cast', 'formed' or 'molded'resin, acrylic or polycarbonate (i.e. 'Lexan', 'Tuffac', etc), the Contractor shall research and specify the optimum material and fabrication method for the desired finish and/or effect. Contractor shall provide samples of such materials as indicated on the selected sign designer's drawings.

B. Acrylic/Transparent Sheet
Where sheet material is indicated as "clear" provide colorless sheet in gloss finish, with light transmittance of 92% where tested in accordance with the requirements of ASTM D-1103 (or similar local or country standards).

C. Aluminum Sheet
Provide aluminum sheet of alloy and temper recommended by the aluminum producer or finisher for the type of use and finish indicated and with no less than the strength and durability properties specified in ASTM B-109 for 5005-H15 (or similar local or country standards).

D. Aluminum Extrusion
Provide aluminum extrusion of alloy and temper recommended by the aluminum producer or finisher for the type of use and finish indicated and with not less than the strength and durability properties specified is ASTM B- 221 for 6063-T5 (or similar local or country standards).

E. Structural Steel
Contractor to coordinate with Architect of Record all internal structural steel support as required, to meet the requirements of the permanent installation. Contractor to provide Architect of Record and General Contractor with

Campus Wayfinding Signage Specifications (Continued)

drawings indicating placement and structural requirements for architectural backing.

F. Fasteners
Unless otherwise indicated, provide concealed fasteners fabricated from metals that are non-corrosive to either the signage materials or the mounting surface. Where screw-heads are necessarily visible, they shall be flat-head and 'painted out' to match the adjacent surface.

G. Electrical/Lamps
Provide new electrical components and respective lamps, so as to be easily repaired or replaced from local available stock (24 hr. max. turn-around).

H. Vinyl Machine-Cut Copy
Vinyl machine-cut copy shall be of 3M Scotchcal brand film or other product with provable identical performance specifications and warranty conditions. Any vinyl other then 3M must be submitted to the selected sign designer for review and approval prior to fabrication.

I. Paint
Paint shall be manufacturer's highest grade for best ultraviolet light resistance, weatherability and overall longevity of finish and color. Paint shall have a written warranty against premature fading and be approved by the selected sign designer prior to construction. Prior to close-out, Contractor shall turn over to Developer (3) copies of complete paint schedule indicating colors used on each sign type.

J. ENGINIEERING AND WINDLOADS
Signs should be detailed and engineered by selected sign Contractor to withstand severe windloads in potential hurricane or wind storm conditions; engineering should comply with local sign and building code requirments and calculations and drawing should be submitted with shop drawings for review.

V. FABRICATION

Intent of Specifications: It is intended that all finished work be of highest quality to pass eye-level examination and scrutiny by the selected sign designer and the Developer.

Contractor to assume responsibility for coordinating with the various team members (including General Contractor, Lead Architect of Record, Landscape Architect, and the selected sign designer) all locations of sign types, as well as footings and foundations, structural engineering, and blocking as may be necessary within walls.

Contractor is responsible for coordinating with General Contractor all electrical power requirements and connections to all applicable sign locations.

A. Copy Application:

All sign copy shall be crisp, sharp, clean, and free from "ticks," discontinuous curves, line waver, and similar type of imperfections.

1. Sign copy to comply with the requirements indicated for size, proportion, style, spacing, content, position, material, finish and color of letters, numbers, symbols and other graphic devices.
2. All letter forms shall be aligned so as to maintain a baseline parallel to the sign format, with margins and layout as indicated on design drawings and approved shop drawings.
3. Silk-screening copy: Finish sheen of copy to match sheen of copy panel background (gloss, semi-gloss, or sheens between). Edges of letters shall be straight and corners sharp. Surfaces of letters shall be uniform in color, finish and free from pinholes and other imperfections.
4. Routed copy: Cutting and routing shall be done in such manner that edges and corners of finished letter forms shall be sharp and true. Letter forms with nicked, cut, ragged, rounded (positive or negative) corners, and similar disfigurements will not be acceptable. Letter forms shall be aligned so as to maintain a base line parallel to the sign format, with margins and layout as indicated on the selected sign designer's design drawings and approved shop drawings. Vertical strokes shall be plumb. Mechanically fasten center of letters

Campus Wayfinding Signage Specifications (Continued)

to acrylic plastic as required.

B. Illumination:
Illuminate units in the manner indicated using the manufacturer's standard lighting components including fluorescent incandescent and/or neon, fixtures, transformers, insulators and other components. Make provision for servicing and for concealed connection to the building system. Coordinate the electrical components of signs with those of the power supply provided.

C. Signage/Cabinet:

1. Details shown on the drawing shall be followed for exterior appearance. Structural design shall utilize unitized, self-supportive framing. Fabricate cabinet, exposed faces and graphic devices to size and style indicated and produce surfaces free from oil canning, warping, distortion or any irregularities or inconsistencies. Include internal bracing for stability and attachment of mounting accessories as required.
2. Contractor may change interior construction shown on these details to conform with their shop practices. However, these changes must be submitted as part of the shop drawings and be reviewed by the selected sign designer prior to fabrication.
3. Construct all work to eliminate burrs, cutting edges and sharp corners.
4. Qualifications: Welding must be performed by operators who are currently qualified by tests as prescribed in AWS D1.1, D1.2, or D1.3 (or similar), as applicable, and/or certified by a recognized building or code authority. Submit qualifying data and certification to Developer for approval. Welding must conform to the acceptable requirement of AWS D1.1, D1.2, and D1.3 and MPS 11-0099 (or similar in country of project).
5. Parts indicated to be turned must be accurately machined/worked from solid stock to dimensions indicted or on approved shop drawings. Finished surfaces to be polished smooth unless otherwise indicated or directed by Developer, free of any visible pits, voids, or similar defects.
6. Make all signs tight fitting, between parts and sections, and with adjacent surfaces. Unless indicated otherwise, non-welded joints between various portions of signs must be weatherproof (for exterior signs) and have tight, hairline-type appearance, without gaps (varying or otherwise). Provide sufficient fastenings to preclude looseness, racking, or similar movement.
7. Conform with manufacturer's recommended fabricating procedures regarding fastening, restraining, expansion and contraction of dissimilar materials.
8. Isolate dissimilar materials. Exercise particular care to isolate non-ferrous metals from ferrous metals, including fasteners.
9. Metal thickness: Provide metal thicknesses most appropriate for the fabrication conditions. These must all be called out in the shop drawings. The selected sign designer to be advised of any changes to specified dimensions.
10. It is the responsibility of the contractor to schedule reviews of signs in production with Developer for approval. Review meetings are to be scheduled at the convenience of the Developer.
11. All non-painted exposed metal to be stainless steel unless otherwise specified.
12. Signs to be assembled and mounted so as to provide reasonable ease of access and replacement of all components. ie: use conforming, accessible, but not visible fasteners where possible.

D. Fastenings:

1. Fasteners on sign-face surface shall not be exposed, except where specifically noted.
2. Sign-face surfaces shall not be penetrated during fabrication or installation of signs, except where specifically noted.
3. Sign-face surface shall not be deformed, distorted, or discolored by attachment of concealed fasteners.
4. All fasteners shall be resistant to oxidation or other corrosive action completely through their cross sections.

Campus Wayfinding Signage Specifications (Continued)

5. Work shall be secured with fasteners of the same metal, color and finish as the components they secure where they are exposed to view.

E. Neon/Lamps
All exposed neon shall be installed in such a manner as to minimize double backs, exposed wires, etc. All exposed neon shall appear as a continuous line (4'0" min. seamless runs) of light with no irregularities from section to section. Contractor shall coordinate with the selected sign designer to select exact color of neon and/or lamps prior to fabrication. Contractor is responsible for referencing and following local code constraints.

F. Mock-Ups

1. Mock-Ups of specific sign(s) may be requested by the selected sign designer as part of the final Design Intent Documents. The cost of Mock-Ups will be a part of fabricators bid.
2. Mock-Ups will be specified in drawings as two or three dimensional, as well as being operational or not.
3. Mock-Ups will be specified in drawings for in-shop or on-site review, and coordinated with Developer and all interested parties.
4. Mock-Ups will be reviewed and signed off by Developer, the selected sign designer, and interested parties prior to fabrication and installation.

G. Aluminum Sheet:
Not less than 0.125" (or equivalent metric measurement) thick unless noted otherwise fabricate by the HELIARC or MIG welded, filled and ground smooth, unless the seam occurs along a color break. Then a clean butt joint with concealed backing channel and plug weld is acceptable upon receipt of the selected sign designer approved sample to match surrounding material finish. All binds, curves and folds to be geometrically correct and produced by a consistent mechanical method unless approved otherwise by the selected sign designer.

H. Jointing and Brake Forming:
All sheet metal shall have brake formed edges with radii not greater than sheet thickness unless otherwise specified. Adjacent stock shall have edges with similar radii.

I. Welding:
All exposed welds are to be ground smooth to match surface of adjacent material.

VI. INSTALLATION

A. Contractor shall be responsible for determining the erection and dismantling of all barricade or protective coverings necessary to safeguard the public and property during the performance and duration of his or her work.

B. Contractor shall attach signs to substrates in accordance with the structural engineer's and the manufacturer's instructions unless otherwise shown. Install level, plumb and at proper height. Repair or replace damaged units as directed by and to the approval of Developer or the selected sign designer.

C. Installation of all signage items shall be by the contractor. Installation includes provision of any required footing, to be reviewed by the selected sign designer, all anchor bolts, fastenings, attachment metals, and other miscellaneous metal items embedded in concrete or building wall material as required, and security of sign units in place with no visible fasteners.

D. The contractor shall provide required electrical equipment and connection to shell building. The point of connection is to be provided by the General Contractor. All electrical connections shall be made by a licensed electrician employed by the contractor for this purpose. All connections shall be made in accordance with the requirements of the National Electrical Code, NEC (or similar code in country of project) in addition to all applicable local codes. Electrical contractor shall provide and install all wiring, conduit, junction boxes and electrical devices necessary to provide electrical power to rough in connections unless otherwise noted. Contractor shall provide concealed neon transformers and all electrical connections beyond rough-in connections by electrical contractor, according to NEC approved methods.

Campus Wayfinding Signage Specifications (Continued)

E. Contractor shall be responsible for matching sign service available on site to the requirements of the sign, including transformers.

F. All necessary signage components as well as the entire signage assembly are to be UL listed, or by approved nationally recognized testing lab in country of project.

G. Contractor is responsible for compliance with all applicable environmental regulations.

H. Contractor is responsible for compliance with all OSHA regulations (or similar regulations in country of project).

I. Contractor must coordinate installation with General Contractor so that overall project schedule is not impacted.

J. Contractor is responsible for determining site wind load requirements and insuring that all signs comply.

VII. CLEANING/PROTECTION AND WARRANTIES

A. All items to be installed by the contractor shall be left in a clean condition. Upon completion of the installation of each sign, clean all soiled sign surfaces and "touch up" as directed by Developer or the selected sign designer. in accordance with the manufacturer's instructions. All debris and packing material shall be removed and disposed of in a legal manner. The protective masking of the plastic surfaces shall be removed by the contractor upon completion of installation. All excavation and site work shall be returned to its original grade configuration after contract items are installed.

B. Finish Surfaces
Sign units shall be warranted in writing by the contractor for a period of no less than one year from the date of Developer acceptance. All finishes are to be warranted for 3 years from the date of Developer acceptance. There shall be:

1. No delamination of any parts of the sign or of lettering from the sign face.
2. No cupping, warping or dishing in excess of the requirements stipulated in the specifications.
3. No bubbling, crazing, chalking, rusting or other disintegration of the sign face, messages or edge finish of the panels.
4. No corrosion developing beneath the paint surface of the support systems, except as the result of obvious vandalism.
5. No corrosion of the fasteners.
6. No movement of signs from their foundations. The signs must remain true and plumb on their foundations, except when the sign has sustained obvious post-installation external damage.
7. No fading of the colors when matched against a sample of the original color and material.
8. No variation of any other performance specified by the selected sign designer on the drawings or in the specifications.

C. Structure/Components

1. Contractor shall provide Developer with (3) copies of the written warranty prior to installation, guaranteeing to correct, to Developer's satisfaction, at contractor's sole expense, all defects in fabrication, faulty materials, workmanship, design, and installation of signage work for a period of one year after completed installation of signage work.
2. Fading, cracking, warping, peeling, delaminating, rusting, corroding, and structural failure, including distortion by whatever cause, shall be construed as failure because of faulty materials and workmanship.
3. Failures during warranty period shall be repaired or replaced to satisfaction or Developer.

D. External Lamps
All lamps shall be warranted against failure for 90 days, all neon three years and all ballast one year. Lamps are to be replaced within 48 hours of notice by Developer, in the event of failure within specified time. These items are to be

Campus Wayfinding Signage Specifications (Continued)

replaced by contractor at contractor's sole expense.

E. Contractor shall have total and complete responsibility for the security of all equipment, materials, and sign components until reviewed and accepted by the Developer.

VIII. PERMITS

A. Securing and paying for all permits required by local governmental agencies is the responsibility of the Contractor. Inspections and tests necessary for the construction and placement of all work required by the applicable governing agencies is by the Contractor.

B. Contractor shall secure and pay for all insurance required by law including but not limited to Liability, Worker's Compensation, Comprehensible Constructual Liability, Personal Injury, Comprehensible Auto and Property on-and off-sites. Contractor shall check insurance requirements for terminology and coordinate insurance requirements with project general specifications. Insurance requirements should be checked for terminology and coordinated with general specifications.

C. Contractor shall not reveal or disseminate any information to any persona(s), private or public, other than the selected sign designer, Developer, or contractor's personnel as necessary to execute the contract without first contacting the Developer for permission.

IX. LARGE FORMAT COMPUTER OUTPUT
High resolution large format computer output to comply with the following:

1. Minimum resolution 200 dpi.
2. Process: 3M SCOTCHPRINT (or approved equal).
3. Substrate: Opaque or Translucent Scotchcal film (or approved equal).
4. Finish: 2 mil matte overlaminate.
5. Input: Electronic art as specified to be provided by the selected sign designer.
6. Warranty: 5 year minimum

X. CODE REQUIREMENTS
All Signs Must Comply With ADA Guidelines (in the United States) and/or County/City/Fire Marshall Code Requirements:

A. Contractor to provide proofed "California Contracted Grade 2 Braille" for permanent room signs (CBC Section 1117B.5.6).

B. Signs must be mounted 60" (or metric equivalent) from finish floor to center of sign on latch side of the door where applicable.

C. Characters and background on ADA signage shall be eggshell, matte or other non-glare finish for projects within the United States.

D. Contractor to provide copy of approved city or county fire marshall drawing sets of all applicable signage.

E. Contractor responsible for all signs complying with all applicable codes for specified region.

Appendix B

- **Cerritos College 2011 Facilities Master Plan**
- **Cerritos College Building Signage Standard**
- **Wallace Laboratories – Soil, Plant & Water Analyses**
- **Cerritos College Tree, Shrub, Ground Cover & Vine List Matrices**
- **Landscape Irrigation Equipment**
- **Site Furnishings – Exterior Luminaries, Site Furniture**
- **Cerritos College Media Services – Media Support Requirements for New Construction**
- **Cerritos College Information Technology – Network Infrastructure Support Requirements for New Construction**
- **Door Hardware Catalog Cuts for Cerritos College**

Cerritos College 2011 Facilities Master Plan

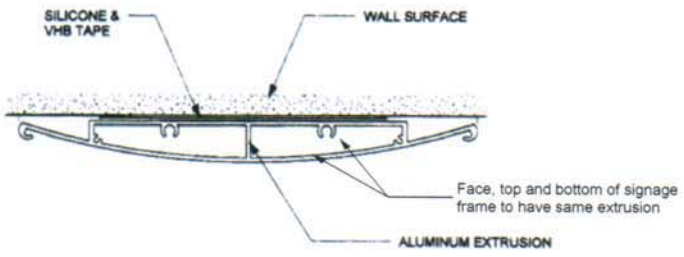
http://cms.cerritos.edu/business-services/2011-facilities-master-plan.htm

Cerritos College Building Signage Standard

Room Identification Sign

Size:	As shown with 5/8” high text.
Materials:	Aluminum Extrusion, Photopolymer Insert
Graphics:	Raised (min 1/32”) text. Room number to have corresponding grade 2 braille.
Mounting:	Sign to be mounted 60” from the finished floor to the vertical center of the sign, sign to be no closer than 4” and no farther than 12” away from the latch side of the door. Sign Mounted with 3m High Bond Tape and silicon glue.

Top View



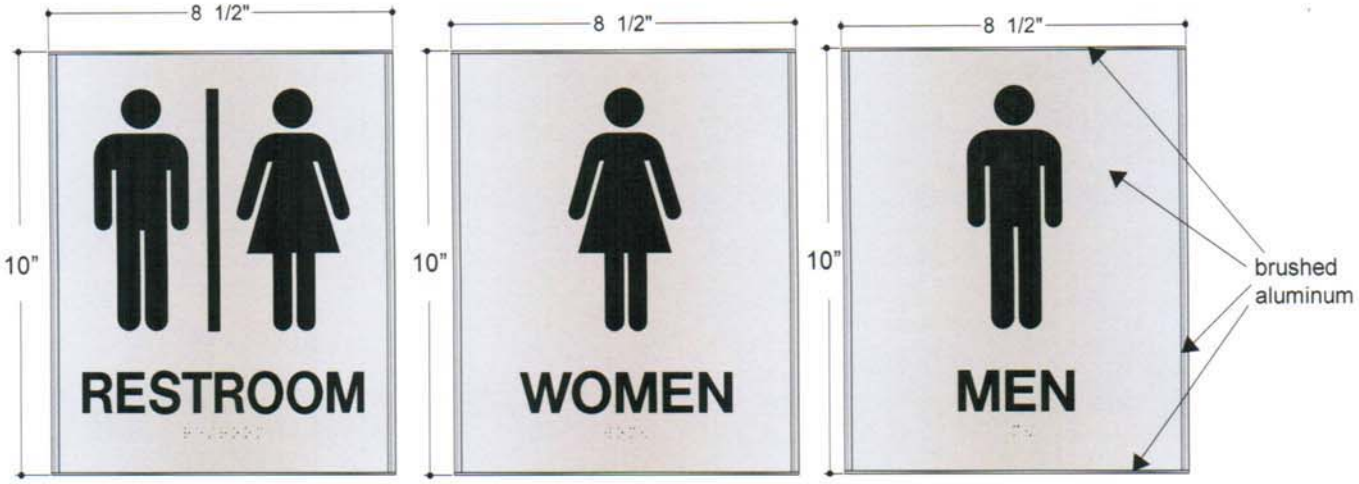
Colors

Plate Background Color:
Brushed Aluminum Anodized

Extrusion Color (Left and Right):
Satin Aluminum Anodized

Extrusion Color (Top and Bottom):
Satin Aluminum Anodized

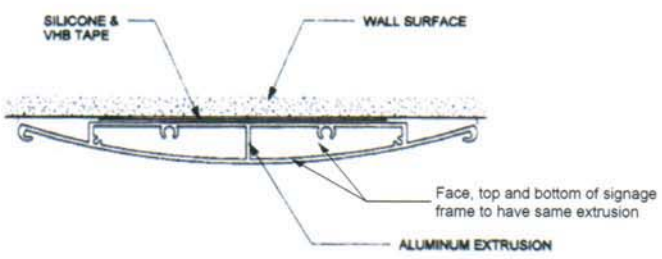
Text color:
Black



Restroom Wall Identification Sign

Size:	As shown with 1" high text, 6" High Sex Pictograms.
Materials:	Aluminum Extrusion, Photopolymer Insert
Graphics:	Raised (min 1/32") text. Room number to have corresponding grade 2 braille.
Mounting:	Sign to be mounted 60" from the finished floor to the vertical center of the sign, sign to be no closer than 4" and no farther than 12" away from the latch side of the door. Sign Mounted with 3m High Bond Tape and silicon glue.

Top View



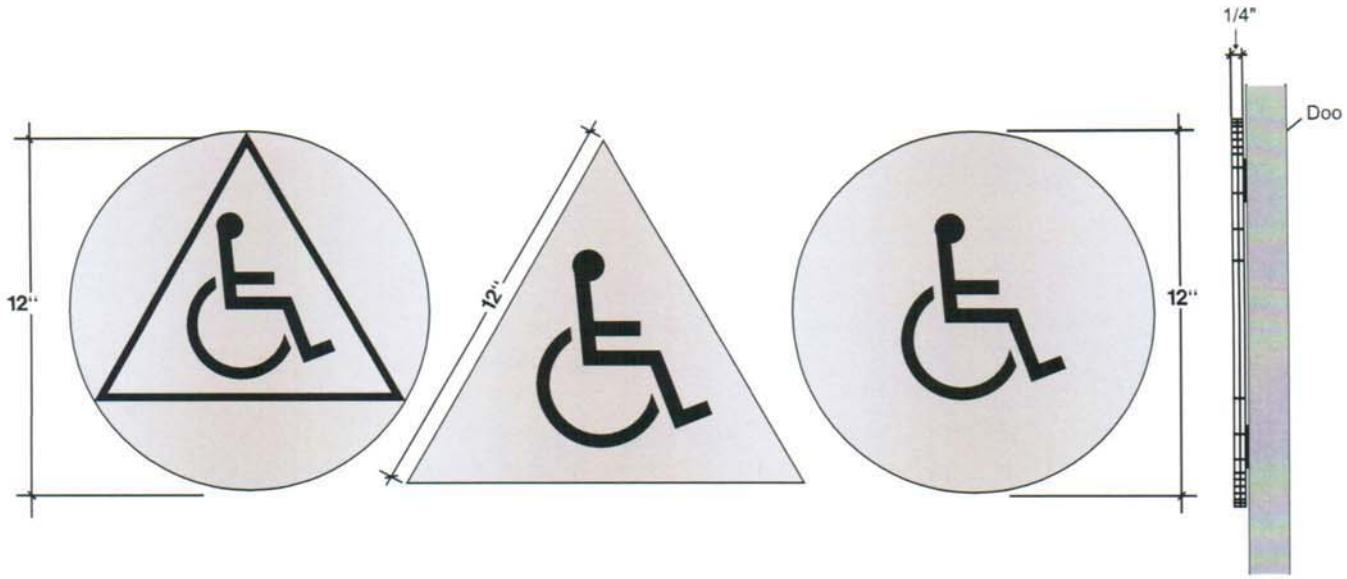
Colors

Plate Background Color:
Brushed Aluminum Anodized

Extrusion Color (Left and Right):
Satin Aluminum Anodized

Extrusion Color (Top and Bottom):
Satin Aluminum Anodized

Text color:
Black



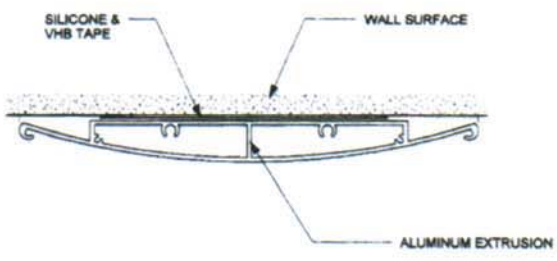
Size:	As shown
Graphics:	Subsurface printed black graphics on aluminum colored background.
	1/8" clear matte acrylic laminated onto 1/8" opaque acrylic backing.
Material:	On door surface, centered 60" above floor finish with one-way
Mounting:	tamerproof screws and silicone adhesive.

Colors to match Restroom wall identification signage.
Background to be aluminum colored.
Graphics to be black.

Evacuation Plans

Size:	As shown with 1" header text, 1/2" All other.
Materials:	Aluminum Extrusion, Paper insert with lexan cover
Graphics:	Screen Printed Graphics and Text
Mounting:	Sign to be mounted 60" from the finished floor to the vertical center of the sign, at desired locations. Sign Mounted with 3m High Bond Tape and silicon glue.

Top View



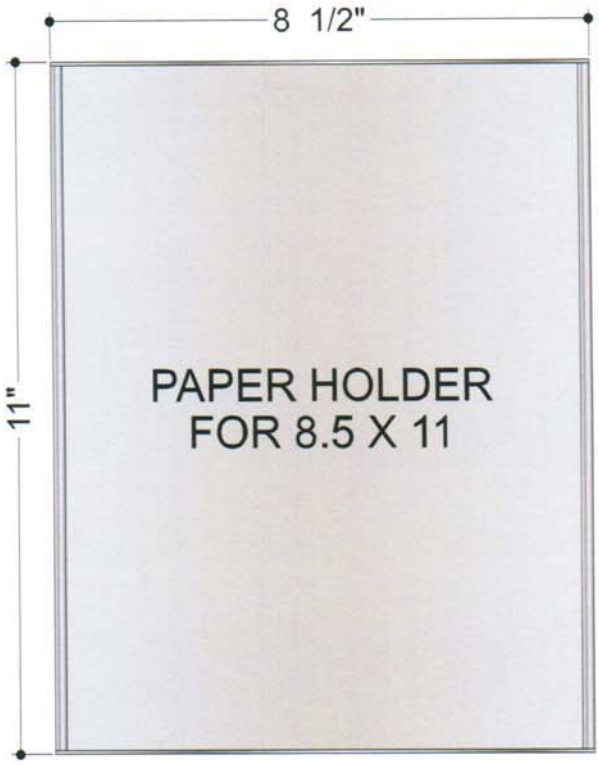
Colors

Plate Background Color:
Brushed Aluminum Anodized

Extrusion Color (Left and Right):
Satin Aluminum Anodized

Extrusion Color (Top and Bottom):
Satin Aluminum Anodized

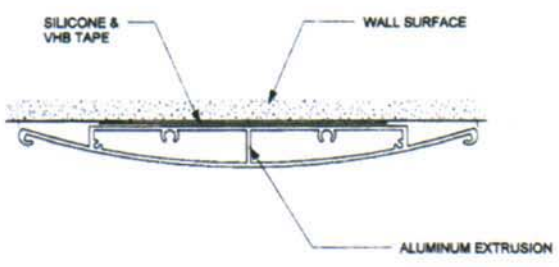
Text color:
Black



Paper Insert Holder

Size:	As shown
Materials:	Aluminum Extrusion, Paper Insert with lexan cover
Graphics:	NA
Mounting:	Sign to be mounted 60" from the finished floor to the vertical center of the sign, at desired locations. Sign Mounted with 3m High Bond Tape and silicon glue.

Top View



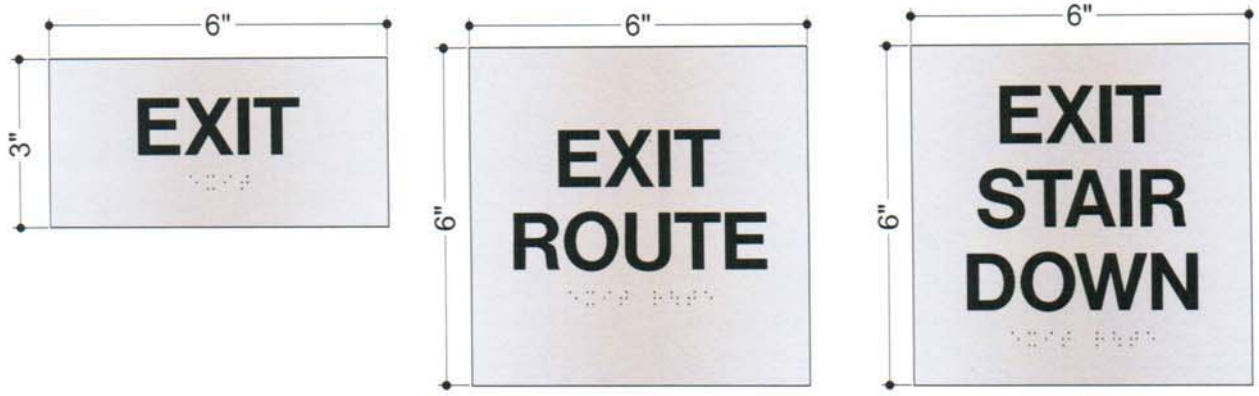
Colors

Plate Background Color:
Brushed Aluminum Anodized

Extrusion Color (Left and Right):
Satin Aluminum Anodized

Extrusion Color (Top and Bottom):
Satin Aluminum Anodized

Text color:
Black



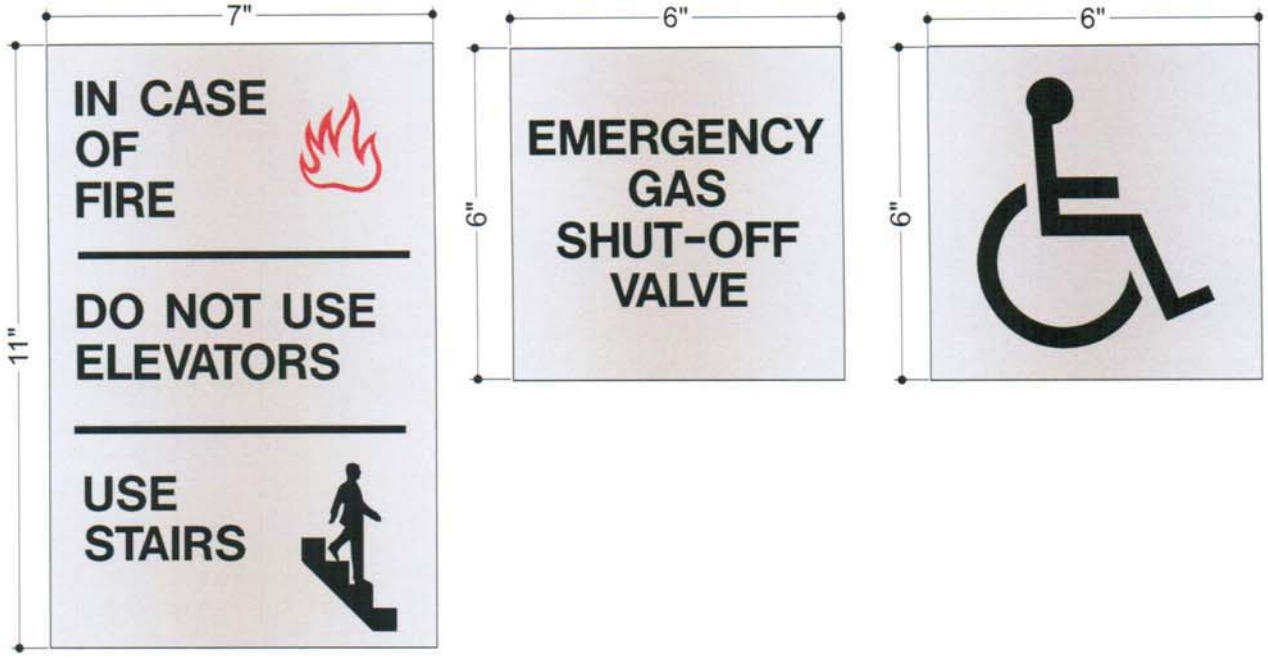
Exit Path Signage

Size:	As shown with 1" high text
Materials:	1/8" Thick etched photopolymer
Graphics:	Raised (min 1/32") text with corresponding grade 2 braille.
Mounting:	Sign to be mounted 60" from the finished floor to the vertical center of the sign, sign to be no closer than 4" and no farther than 12" away from the latch side of the door. Sign Mounted with 3m High Bond Tape and silicon glue.

Colors

Plate Background Color:
Brushed Aluminum Anodized

Text color:
Black



Elevator Evacuation, Gas Shut-off and Accessible Signage

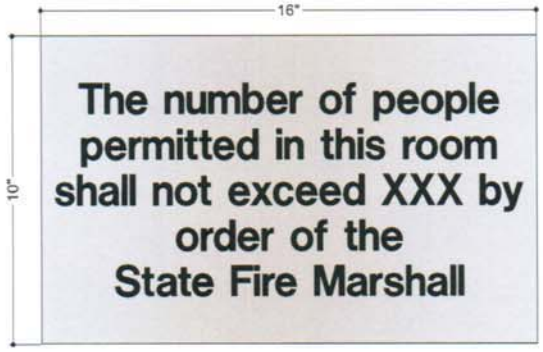
Size:	As shown with 5/8" high text
Materials:	1/8" Thick etched photopolymer
Graphics:	Raised (min 1/32") text.
Mounting:	Sign to be mounted 60" from the finished floor to the vertical center of the sign, at desired locations. Sign Mounted with 3m High Bond Tape and silicon glue.

Colors

Plate Background Color:
Brushed Aluminum Anodized

Text and Graphics color:
Black

Fire Graphics:
Red



Assistive Listening, Maximum Occupancy and Fire Alram Signage

Size:	As shown with 5/8" high text
Materials:	1/8" Thick etched photopolymer
Graphics:	Raised (min 1/32") text.
Mounting:	Sign to be mounted 60" from the finished floor to the vertical center of the sign, at desired locations. Sign Mounted with 3m High Bond Tape and silicon glue.

Colors

Plate Background Color:
Brushed Aluminum Anodized and Red as shown.

Text color:
Black and White as shown

Exit Path Signage

Size:	As shown
Materials:	.06 Reflectorized Aluminum
Graphics:	Red Screen Printed Graphics
Mounting:	Sign to be permanently posted and immediately adjacent to and visible from approaching vehicular path. Mounted with sign footing per detail A17/A10.71 2" Galvanized Steel Post 18" Deep x 12" Diameter Concrete Footing. 3" Clearnance at the bottom of the post. Bottom of the sign to be a min of 80" above the finished grade.

WALLACE LABORATORIES
365 Coral Circle
El Segundo, CA 90245
phone (310) 615-0116 fax (310) 640-6863
November 25, 2005

email rriffle@Cerritos.edu
Mr. Robert Riffle,
Director of Physical Plant
Cerritos College
11110 Alondra Blvd.
Norwalk, CA 90650-6298

EDAW
Jim Curtis
2737 Campus Drive
Irvine, CA 92612

tBP
Carol Minning
2300 Newport Boulevard
Newport Beach, CA 92663

RE: Cerritos College
Campus sampled November 22, 2005

Dear Mr. Riffle, Mr. Curtis and Ms. Minning,

A sample of the recycled irrigation water was taken and tested for water quality and its suitability. The soil quality for landscape purposes was evaluated at twelve campus locations. Typically a plant tissue sample was taken for more comprehensive understanding of the interactions of soil, soil compaction, soil moisture, rooting volume, etc. Soil testing indicates the soil chemistry at the time of sampling. The soil interpretation is normally for non-limiting conditions such as friable, well aerated, well drained soil. The rooting is generally restricted to suitable, well aerated soils. Tissue analysis also indicates the past conditions and can be used as tool for forensic evaluations.

The sampling sites are as listed below. The attached PDF site plan listed the locations Except for location 4, a picture was taken of the plants at the sampling location.

Location 1, Alondra Boulevard, zone 3
Location 2, Health Science by Community Education
Location 3, south of Falcon Way
Location 4, parking lot, zone 2
Location 5, north of Santa Barbara building
Location 6, west of Learning Resource Center
Location 7, north of Social Science
Location 8, east of administration
Location 9, quad

Location 10, east of Fine Arts
Location 11, west of Physical Education
Location 12, north of tennis courts, zone 3

Water Quality

The irrigation water quality is poor. The salinity is fairly high at 1.31 millimho/cm. Ideally the salinity would be about 0.5 millimho/cm. Sixty percent of the salts are sodium salts. The adjusted SAR (sodium adsorption ratio) is high at 9.2. For agricultural crops, the goal is 6 or less. For ornamental plants, the adjusted SAR should be less than about 3. The SAR is used as a tool to predict growth and soil physical problems related to sodium. Excess sodium causes soils to seal and to crust preventing soil aeration and reducing water infiltration. SAR can be reduced with the addition of calcium containing amendments.

The pH is alkaline at 7.38. As carbonic acid hydrolyzes and carbon dioxide volatilizes the pH increases. Bicarbonate is high at 183 parts per million. Chloride is high at 205 parts per million. Boron is 0.42 part per million. This is near the maximum concentration for sensitive plants.

Plant uptake of sodium, chloride and boron occurs by root absorption and foliar absorption. Foliar absorption can be more intense than root absorption.

Soil Quality/Tissue Quality

Location 1, Alondra Boulevard north side of parking lot, zone 3

The leaf tissues have low nitrogen and fairly high boron.

The soil in the first foot has insufficient soil moisture at about 32% of field capacity. The pH is alkaline at 7.75. Salinity is moderate at 0.75 millimho/cm. Zinc is excessive at 34 parts per million. Nitrogen is low. Plant available lead is high. Soil compaction is excessive. Penetration resistance is 203 psi.

The soil in the second foot has higher alkalinity with a pH of 7.89. Soil moisture is insufficient at about 45% of field capacity. Salinity is low at 0.52 millimho/cm. Nitrogen is low.

Location 2, sod and failed planter Health Science by Community Education, zone 4

The turf has high fertility except for low nitrogen. The pH is alkaline at 7.66. Salinity is moderate at 1.30 millimho/cm. Sodium is high.

The soil in the first foot of the planter has excessive nitrogen. The salinity is moderate at 1.80 millimho/cm. The fertility is high. The pH is slightly alkaline at 7.22. Sodium is fairly high. The soil is clay loam.

The soil between 1 and 2 feet is a sandy loam. The alkalinity is excessive. The pH is 8.43. Salinity is moderate at 1.24 millimho/cm. Phosphorus, zinc and manganese are low. Sodium is fairly high.

The rate of water percolation was rapid at 5.0 inches per hour at 6 inches and was 6.2 inches per hour at 2 feet.

Location 3, planter with bare soil, south of Falcon Way, zone 4

The soil in the first foot has moderately high alkalinity. The pH is 7.77. Salinity is moderate at 1.29 millimho/cm. The fertility is moderate except for low nitrogen. The soil is a sandy loam. Limestone is present. Soil moisture is insufficient at about 32% of field capacity. Limestone is present. The soil is a sandy loam.

There is a hard pan about one foot deep. It appears that soil was placed about one foot deep over a sharp soil interface. The pH between 1 and 2 feet is high at 8.41. Salinity is low at 0.46 millimho/cm. The fertility is moderately high except for low nitrogen. Soil moisture is insufficient at about 27% of field capacity. Limestone is present. The soil is a sandy loam.

Location 4, parking lot, zone 4

The soil in the first foot has moderately high fertility except that nitrogen is low. The pH is alkaline at 7.56. Salinity is low at 0.29 millimho/cm. The soil moisture is low at about 19% of field capacity.

The soil between 1 and 2 feet has a fairly high pH at 8.04. Salinity is low at 0.29 millimho/cm. The soil fertility is moderate. Limestone is present. The soil moisture is low at about 38% of field capacity.

Location 5, north of Santa Barbara building under Carob tree, zone 1

The tree tissues contain high boron and low potassium.

The soil in the first 6 inches of the turf under the carob tree has moderate moisture at about 86% of field capacity. The pH is alkaline at 7.67. Salinity is moderate at 1.39 millimho/cm. Zinc is high at 30 parts per million which is near the critical limit for woody plants. Excessive zinc causes stunting and dieback. Woody plants are the most sensitive. Grasses are the most tolerant. Nitrogen is low and phosphorus is modest. The soil is a loam.

The soil between 1 and 2 feet has low phosphorus and low nitrogen. The pH is high at 8.09. Salinity is moderate at 1.04 millimho/cm. Soil moisture is good at about 80% of field capacity.

Location 6, ivy and camphors west of Learning Resource Center, zone 1

The soil is bare in about half of the planter. The bare soil has crusted and is compacted. The planter elevation is higher than the adjoining sidewalk and the soil erodes onto the sidewalk in the rainy season. The roof downspouts terminate in the planter which will saturate the planter. The soil in the first foot has excessive salinity at 5.52 millimho/cm. Chloride and sodium are excessive. The pH is high at 8.02 millimho/cm. Limestone is present. Nitrogen and potassium are low. Phosphorus is modest. Soil moisture is insufficient at about 30% of field capacity.

The soil between 1 and 2 feet has a high pH value at 8.13. Salinity is slightly high at 2.48 millimho/cm. Soil moisture is low at about 61% of field capacity.

The ivy leaves has high zinc, low potassium, high sodium and high chloride.

Location 7, flowering pear north of Social Science in water logged area, zone 1

The flower pear has low manganese, low nitrogen and high sodium. Some of the leaf tips are scorched.

The soil moisture is at field capacity in the top 6 inches. The soil is black and anaerobic. Iron and manganese are excessive. The pH is alkaline at 7.75. Limestone is present. Flowering pears do not tolerate the presence of limestone. It induces iron deficiency. Nitrogen is low. Phosphorus is high. Salinity is moderate at 0.84 millimho/cm. Rooting depth is shallow. The soil is a loam.

The soil between 1 and 2 feet has moderate soil moisture at about 77% of field capacity. The pH is high at 8.26. The salinity is slightly high at 2.64 millimho/cm. Chloride is high at 359 parts per million in the saturation extract. Limestone is present. Nitrogen, phosphorus, potassium and zinc are low. The soil is a sandy loam.

The soil between 2 and 3 feet has fairly low soil moisture at about 61% of field capacity. The fertility is moderate with low nitrogen and low zinc. The pH is high at 8.13. Salinity is moderately high at 2.71 millimho/cm. Chloride is high at 463 parts per million in the saturation extract. The soil is a sandy loam.

Location 8, east of administration by flowering pear, zone 1/2

The leaves have low manganese and low nitrogen.

Four soil samples were taken to evaluate this area, one sample for each foot below grade. The soil moisture decreases with depth until the forth foot. The percent of field capacity are about 80%, 64%, 53% and 108% for the first, second, third and fourth foot, respectively.

The soil textures change with each foot from a loam, to a sandy clay loam to a loamy sand and to then to a clay loam.

The four samples are alkaline. The pH values range from 8.01 to 8.29.

Salinity is moderate. The highest is 2.14 millimho/cm. In the second foot. The lowest is 0.96 millimho/cm in the fourth foot.

Phosphorus and nitrogen are low.

Location 9, quad by poorly foliated magnolia, zone 2

The leaf growth of the magnolia is along the branches. The tree appears to have defoliated and then to have recovered with new budding of leaves along the branches.

Tree roots were not located in the turf. The soil was evaluated at 0-1 foot, 1-2 feet and 2 – 4 feet. The highest salinity is 3.61 millimho/cm at 1-2 feet. Chloride is high at 730 parts per million in the saturation extract. The lowest salinity is 1.63 millimho/cm between 2 and 4 feet. The salinity in the first foot is 2.93 millimho/cm. Chloride is high at 2.93 millimho/cm.

The soils are alkaline. The pH values range from 7.76 to 8.01. Limestone is present. Magnolia is not tolerant of limestone. Nitrogen and phosphorus are low in the three samples. Potassium is low between 1 and 2 feet. Sodium is high in the first foot and second foot.

Location 10, east of Fine Arts by king palms and Agapanthus, zone 2

The Agapanthus leaves have scorched tips. Boron is high at 151 parts per million. Chloride is high at 1.2%. Sodium is high.

The soil surface is bare except for a little mulch. The soil in the first foot has high alkalinity. The pH is 8.17. Limestone is present. Salinity is low at 0.72 millimho/cm. The fertility is moderate. The soil moisture is about low at about 59% of field capacity.

The planter has a sharp soil interface at about 1 foot. The soil between 1 and 2 feet has high alkalinity. The pH is 8.33. Limestone is present. Salinity is low at 0.61 cm. The soil moisture is about 73% of field capacity.

The rate of water percolation was 1.5 inches per hour at 10 inches below grade.

Location 11, west of Physical Education in ivy planter, zone 2

The ivy leaves have low potassium, low phosphorus, moderately high boron, high sodium and fairly high chloride.

The soil in the first foot contains sufficient moisture at about 81% of field capacity. The pH is high at 8.27. Salinity is moderate at 0.90 millimho/cm. Phosphorus and potassium are low. Sodium is high.

The soil between 1 and 2 feet has high alkalinity. The pH is 8.11. Soil moisture is low at about 64% of field capacity. Phosphorus, potassium, manganese and zinc are low. Nitrogen is sufficient. Salinity is moderate at 1.22 millimho/cm.

Location 12, hedge north of tennis courts, zone 3

The soil surface is compacted, dense and bare. The penetration resistance is 219 psi at 6 inches and is 471 psi at 1 foot. The rate of water percolation is 1.4 inches per hour at 6 inches and is 2.8 inches per hour at 12 inches.

Soils lose soil organic matter if they soils are kept bare. The microorganisms decompose the soil organic matter. If the soil is kept bare, the soil organic matter is not replenished. Since the organic matter keeps the soils friable and loose, the lost of the soil organic matter is the cause of soil compaction and crusting. In addition, high alkalinity causes soil crusting and compaction. The soil moisture is insufficient at about 20% of field capacity in the first foot and is 34% of field capacity in the second foot.

The leaves have excessive boron at 241 parts per million. Potassium is low.

The soil in the first foot has excessive alkalinity. The pH is 8.71. Salinity is moderate at 1.45 millimho/cm. Boron is excessive at 1.4 parts per million. Limestone is present. Sodium is high.

The soil in the second foot has high alkalinity. The pH is 8.30. Salinity is moderate at 0.93 millimho/cm. Nitrogen, phosphorus and potassium are low. Sodium is slightly high.

Evaluations

Irrigation with poor water quality requires that the soils be porous and that the soil have adequate deep drainage. The soluble salts must be removed from the rooting zone otherwise they will build up. The leaching of the soils is more critical with high salinity. The water contains high sodium, bicarbonate and chloride. The bicarbonates cause high alkalinity which is apparent in many areas. Boron is excessive at some locations. The leaching of boron is about 3 times slower than the leaching of sodium chloride.

The campus turf areas contain many swales to remove surface water. It appears that the campus has had insufficient drainage for years. The deeper soils appear to be less permeable than the surface soils. Soil moisture normally increases with depth but on average, the soil moisture decreases with depth on the campus. Some areas have dense subsoils. Planter soil may have been placed over compacted subsoil.

High alkalinity, high sodium, high chloride and high boron are limiting rooting and plant vigor.

Most of the surface soils have high fertility. The needed nutrient is nitrogen. Zinc should not be applied. Products which contain chloride are not desirable.

Recommendations

In existing bare areas, cultivate the soil and reduce the soil surface crusting. About ½ inch of a humus-type of soil amendment can be applied to the soil surface and scratched into

the soil. In addition, apply agricultural gypsum at 10 pounds per 1,000 square feet. Gypsum lowers the alkalinity and reduces the sodium.

Leach existing areas with heavy irrigation for one to two days. Afterwards, allow the soil to partially dry. Irrigate deeply for effective leaching. Shallow, frequent irrigation will not remove salinity.

In the rainy season, anticipate rain and let the soils partially dry. Water will runoff of saturated soil and not leach them but water will infiltrate into drier soils.

Apply gypsum at about 10 pounds per 1,000 square feet once a quarter. Monitor the soil and future needs of gypsum. Leaching is essential after applying gypsum.

Apply ammonium sulfate (21-0-0) at 5 pounds per 1,000 square feet about once per quarter. This form of nitrogen will help to acidy the soil. If the soil has low aeration, apply ammonium nitrate (34-0-0) at 3 pounds per 1,000 square feet. The nitrate helps to aerify the soil. Ammonium nitrate (34-0-0) is pH neutral if it is not over applied.

If ammonium nitrate (34-0-0) is difficult to locate, apply 4 pounds of Yara's Viking Ship calcium ammonium nitrate (27-0-0) per 1,000 square feet. Or, apply ammonium sulfate (21-0-0) at 3 pounds per 1,000 square feet and calcium nitrate (15.5-0-0) at 3 pounds per 1,000 square feet. This would be the equivalent of applying 3 pounds of ammonium nitrate and 3 pounds of gypsum.

Correct iron chlorosis with Becker Underwood Sprint 138 Fe or other commercial FeEDDHA. Iron chlorosis is not frequent in poorly drained soils. Iron deficient plants are more sensitive to excess sodium and chloride.

New work

CLEANUP IN NEW CONSTRUCTION AREAS Remove construction material that are potential contaminates such as discarded concrete, concrete washings, stucco, welding flux, paints, leaked fuel, etc. Highly contaminated areas need to be over excavated and removed.

TILLAGE Cross-rip the soil on 18-inch centers to a minimum depth of 24 inches in engineered, over excavated/recompacted soil or filled areas. The moisture content should not be so great that excessive compaction will occur, nor so dry that clods will not break readily. Follow with rototillage to reduce soil clods to a maximum diameter of 1 1/2 inches in the top 6 inches. Remove debris and clods larger than 1 1/2 inches in diameter from the top 6 inches. After loosening, heavy equipment should not be allowed to travel over the soil. Optimum moisture content is partially damp. Provide for drainage of the amended soil into the subsoil.

EROSION PROTECTION Soil needs to be protected from erosion and slope failures. However, if there is time for deep root growth prior to heavy rain, the vegetation can help stabilize the soil. If not, the slopes should not be disturbed.

APPLICATION OF AMENDMENTS AND FERTILIZERS.

Uniformly broadcast the following materials.

The rates are per 1,000 square feet:

Ammonium sulfate (21-0-0) – 5 pounds
Potassium sulfate (0-0-50) – 8 pounds
Triple superphosphate (0-45-0) – 4 pounds
Gypsum – 50 pounds
Organic amendment – 3 cubic yards

Homogeneously incorporate the above materials into the soil to a depth of six inches.

PRELEACHING If the soil salinity is greater than 3 millimho/cm measured in the saturation extract, leach the soil prior to planting. Reduce the pH to less than 8 and lower the concentration of chloride to less than 150 parts per million in the saturation extract prior to planting.

Preleaching will be required when gypsum is used to reduce high concentrations of sodium. If preleaching is not feasible, lower amounts of gypsum can be used for the soil preparation. Additional gypsum will be needed during maintenance. Additional soil tests will be desirable to show how well the sodium, magnesium and alkalinity are being leached. Lower boron to less than 1 part per million.

TRANSPLANTING Prepare planting pits normally twice as wide as the rootballs. The walls and bottom of the planting pits should not have compacted soil except under the rootball. If necessary, loosen glazed soil by scarifying the soil surface.

SUBTERRANEAN DRAINAGE – Install subdrains to remove ground water unless adequate deep water movement has been verified. Augered holes may help to establish drainage if the soil below about 5 feet is permeable.

AUGERED HOLE In planters and lawns, auger holes 15 feet on center one foot in diameter and 6 feet deep. Fill the augered holes with amended soil. Augered holes should be used for each boxed tree. If well drained soil is not present within 5 feet of finish grade, subterranean drains will be required.

BACKFILL MIX Blend the following materials into clean excavated soil or leached soil. Remove debris, rocks and foreign material. Soil clods should not exceed 1 ½ inches in diameter. Excessive gravel should not be present. Rates are per cubic yard:

Ammonium sulfate (21-0-0) – 1/4 pound
Potassium sulfate (0-0-50) – 1/3 pound
Triple superphosphate (0-45-0) – 1/4 pound
Gypsum – 2 pounds
Organic amendment – 15% by volume

Backfill the transplant with the prepared soil and augered hole where used. The root flare needs to be slightly above grade. If a basin is used, it should be used temporarily. Standing water at the base of the trunk is undesirable.

ORGANIC AMENDMENT

1. Humus material shall have an ash content of no less than 6% and no more than 20%.
2. The pH of the material shall be between 6 and 7.5.
3. The salt content shall be less than 10 millimho/cm @ 25° C. (ECe less than 10) on a saturated paste extract.
4. Boron content of the saturated extract shall be less than 1.0 parts per million.
5. Silicon content (acid-insoluble ash) shall be less than 50%.
6. Calcium carbonate shall not be present if to be applied on alkaline soils.
7. Types of acceptable products are composts, manures, mushroom composts, straw, alfalfa, peat mosses etc. low in salts, low in heavy metals, free from weed seeds, free of pathogens and other deleterious materials.
8. Composted wood products are conditionally acceptable [stable humus must be present]. Wood based products are not acceptable which are based on red wood or cedar.
9. Sludge-based materials are not acceptable.
10. Carbon:nitrogen ratio is less than 25:1.
11. The compost shall be aerobic without malodorous presence of decomposition products.
12. The maximum particle size shall be 0.5 inch, 80% or more shall pass a No. 4 screen.

Maximum total permissible pollutant concentrations in amendment in parts per million on a dry weight basis:

arsenic	20	copper	150	selenium	30
cadmium	15	lead	100	silver	10
chromium	100	mercury	10	vanadium	50
cobalt	50	molybdenum	60	zinc	200
		nickel	100		

Higher amounts of salinity or boron may be present if the soils are to be preleached to reduce the excess or if the plant species will tolerate the salinity and/or boron.

Additional work

Deeper soil profiles can be evaluated during construction by potholing with a backhoe. Evaluate the quality of soil tillage and soil amending prior to planting for acceptance. Periodically evaluate the campus for alkalinity, sodium, chloride, boron etc. Determine whether the amount of leaching is sufficient or not.

Soils disturbed due to construction, imported soil for foundation work, storage areas, haul roads, etc. will need more complete and follow up evaluation.

Sincerely,

Garn A. Wallace, Ph. D.
Executive Director
GAW:n

Cerritos College

Tree List Matrix

Scientific Name	Common Name	Street Perimeter	Parking Lot 10 East Edge	Parking Lots	Main North-South Promenade	Campus West Edge	North-South Promenade 'A'	North-South Promenade 'B'	Campus North Edge	Sports Complex North Edge	East-West Promenade #1	East-West Promenade #2	Old Falcon Way	New Falcon Way	Quads	Building Courtyards	Building Perimeters	Sports Complex
Alnus rhombifolia	White Alder															X		
Brachychiton populneus	Bottle Tree									X								
Citrus species	Citrus ssp.													X				
Eucalyptus species	Eucalyptus ssp.						X		X					X				X
Jacaranda mimosifolia	Jacaranda (Existing)													X				
Jacaranda mimosifolia	Jacaranda					X												
Koelreuteria bipinnata	Chinese Flame Tree											X						
Lagerstromia indica 'Tuscarora'	Crape Myrtle													X	X	X		
Laurus nobilis	Sweet Bay													X	X	X		
Phoenix dactylifera 'Medjool'	Date Palm				X													
Pistacia chinensis	Chinese Pistache														X	X		
Pittosporum rhombifolium	Queensland Pittosporum	X																
Platanus acerifolia 'Bloodgood'	London Plane Tree						X											
Platanus racemosa	California Sycamore													X				
Pyrus calleryana 'Aristocrat'	Aristocrat Pear													X	X	X		
Pyrus kawakamii	Evergreen Pear													X	X	X		
Quercus agrifolia	Coast Live Oak (Existing)													X	X	X		
Tipuana tipu	Tipu Tree												X					
Tristania conferta	Brisbane Box													X	X	X		
Ulmus parvifolia	Chinese Elm							X		X								
Umbellularia californica	California Bay													X	X			
Washingtonia robusta	Mexican Fan Palm			X														
Xylosma congestum	Xylosma (Existing)		X															
Existing Trees	Existing													X	X	X	X	

Cerritos College

Shrub List Matrix

Scientific Name	Common Name	Street Perimeter	Parking Lot 10 East Edge	Parking Lots	Main North-South Promenade	Campus West Edge	North-South Promenade 'A'	North-South Promenade 'B'	Campus North Edge	Sports Complex North Edge	East-West Promenade #1	East-West Promenade #2	Old Falcon Way	New Falcon Way	Quads	Building Courtyards	Building Perimeters	Sports Complex
Ceanothus ssp.	Wild Lilac													X	X	X		
Carrissa grandiflora	Natal Plum													X	X	X		
Cistus ssp.	Rockrose													X	X	X		
Cotoneaster horizontalis	Cotoneaster													X	X	X		
Escallonia fradesii	Escallonia													X	X	X		
Eleagnus pungens	Silverberry															X		
Echium candicans	Pride of Maderia													X	X	X		
Feijoa sellowiana	Pineapple Guava													X	X			
Leptospermum laevigatum	Austrailian Tea Tree														X			
Ligustrum japonicum	Japanese Privet													X	X	X		
Lantana montevidensis	Lantana													X	X			
Morea bicolor	Fortnight Lily													X	X	X		
Myrtus communis 'Compacta'	Dwarf Myrtle													X	X			
Phormium tenax	New Zealand Flax													X	X	X		
Pittosporum tobira	Mock Orange															X		
Pittosporum tobira 'Varigata'	Variegated Mock Orange													X	X	X		
Pittosporum t. 'Wheeler's Dwarf'	Dwarf Mock Orange													X	X			
Prunus caroliniana	Carolina Laurel Cherry															X		
Rhaphiolepis indica 'Ballerina'	Pink India Hawthorne	X												X	X	X		
Rhapiolepis indica 'Clara'	India Hawthorne													X	X	X		
Rhaphiolepis 'Majestic Beauty'	Majestic Beauty													X	X	X		
Trachelospermum jasminoides	Star Jasmine													X	X	X		
Xylosma congestum	Xylosma (Existing)		X															

Cerritos College

Ground Cover & Vine List Matrix

Scientific Name	Common Name	Street Perimeter	Parking Lot 10 East Edge	Parking Lots	Main North-South Promenade	Campus West Edge	North-South Promenade 'A'	North-South Promenade 'B'	Campus North Edge	Sports Complex North Edge	East-West Promenade #1	East-West Promenade #2	Old Falcon Way	New Falcon Way	Quads	Building Courtyards	Building Perimeters	Sports Complex
Ground Cover																		
Agapanthus africanus	Lily of the Nile														X	X		
Baccharis pilularis	Dwarf Coyote Bush													X	X	X		
Festuca ovina glauca	Blue Fescue														X	X		
Hedera helix	English Ivy														X	X		
Limonium perizii	Sea Lavender														X			
Liriope muscari	Lily Turf														X	X		
Lonicera japonica	Honeysuckle																	
Marathon Tall Fescue	Turf				X	X	X	X	X	X	X	X	X	X	X		X	X
Myoporum 'Pacificum'	Myoporum																X	
Rosmarinus officinalis	Rosemary													X	X	X		
Trachelospermum jasminoides	Star Jasmine													X	X	X		
Vinca major	Periwinkle													X	X	X		
Vinca minor	Dwarf Periwinkle													X	X	X		
Vines																		
Clytostoma callistagiodes	Violet Trumpet Vine													X	X	X		
Distictus buccinatoria	Blood Red Trumpet Vine													X	X	X		
Parthenocissus tricuspidata	Boston Ivy													X	X	X		
Rosa banksiae	Lady Bank's Rose													X	X	X		
Wisteria sinensis	Chinese Wisteria													X	X	X		

Landscape Irrigation Equipment

The equipment listed herein has been approved by the Campus for use as Standards. The following preferred equipment will be the basis of design. The approval of these items will provide for consistent design and ease of maintenance throughout the campus.

The following equipment is manufactured by Rainbird:

- PA-85 plastic shrub adapters
- 1800 Series pop-up heads for lawn areas
- 3500 or 5000 Series rotor heads for small lawn areas
- Flacon 6504 Series rotor heads for large lawn areas
- EFB-CP Valves for up to 2″ lines.
- 300BPES Valves for over 2″ diameter lines

Site Furnishings

- Benches

Standard Option No. 1:
Cerritos College Concrete Bench

- Precast reinforced concrete
- "CERRITOS COLLEGE" cast lettering
- Closed end supports eliminates overhangs and projections into Path of Travel
- Durable / Low maintenance

Standard Option No. 2:
Perforated Metal Bench
Tolar Manufacturing

- 7′ long, No Ad
- No Back
- Anti-Vagrant Bars
- Durable / Low maintenance

Standard Option No. 3:
Precast reinforced concrete
Wausau Tile – TF5029 University Bench

- 6′ long
- Durable / Low maintenance

Site Furnishings

- Trash Receptacles

Current Standard:
Cerritos College Concrete Trash Receptacle

- Precast reinforced concrete
- Cerritos College insigne
- Durable / low maintenance

Option 1:
Recycling Receptacle

Site Furnishings

- Bicycle Racks

Current Standard:
Traditional High Volume Bike Rack

- Galvanized finish
- Portable
- Connect multiple racks together
- (4) to (18) bikes per rack

Option 1:
Rings (design by Brian Kane, ISDA shown)

- 1.5" o.d., .120" wall stainless steel or powder coated steel tubing
- Embedded
- Simple design

Alternative No. 1:
Sustainable Design Bike Shelter
(Example by Duo-Gard shown)

- Multiple custom designs available
- LEED Credit

Alternative No. 2:
Custom Sculptural Design

Site Furnishings

• Pedestrian Transit Shelters

Current Standard:

There are two styles of transit shelters existing on campus:

1. Arched roof canopy with open sides located at the bus stop along the south side of New Falcon Way.
    - Use at bus stops

2. Larger enclosure with a standing seam hipped metal roof and transparent polycarbonate sheets (Lexan) enclosing (3) sides.
    - Use at passenger drop-offs
    - Near parking lot

Shelters shall be accompanied by the following items:

- Accessible seating
- Area lighting
- Trash receptacle

Arched Roof Canopy
(example by Duo-Gard)

Enclosed Transit Shelter (example by Tolar)

Exterior Luminaires

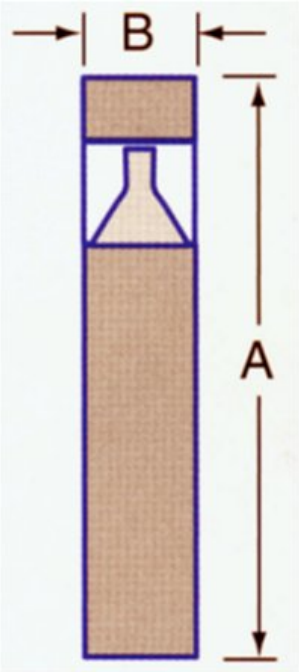
• Parking Lot Lighting

Gardco - "Gullwing" G18 Area Luminaire

- Single pole mount
- Type IV, horizontal lamp
- 120 volts
- Natural aluminum finish
- Photocontrol and receptacle

Exterior Luminaires

- Area Lighting – Accent Lighting



Bieber Lighting Consultants - "Virgo Series" Bollard Luminaire

- 8'-0" high bollard – round w/ flat top
- 100W Metal Halide Lamp w/ Paracline reflector
- 208 volts
- Natural aluminum finish (Silver)
- Multi-tap transformer
- Photo cell

Cerritos College Media Services
Media Support Requirements
For
New Construction

Drawings

1. A/V collector box should contain multiple conduit runs. Size of conduits generally should be 1 ¼" to 2".

2. Note that network cable for video will be yellow nearest the main a/v collector box to the instructor desk/equipment rack for media.

3. Where videoconferencing is noted, the network port will be a separate port. This should be noted on IT drawings for reference.

4. A network port for A/V should be noted. This is a separate port and should be noted on IT drawings for reference.

5. The equipment rack will be located in the instructor desks/podiums for classrooms or in adjacent cabinets or stand-alone furniture.

6. Power and data will be at instructor desks/podiums or in adjacent cabinets or stand-alone furniture (where the equipment racks will be located).

7. A/V floor boxes will be Wiremold Evolution model EFB8 series.

8. At all display devices, power should be identified and noted.

9. After finalizing all a/v installations, provide two full size sets of drawings that show control, audio & video flow.

Check this webpage for updates to this document:
http://web.cerritos.edu/it/sitepages/Network-Cabling-Standards.htm

Cerritos College Information Technology
Network Infrastructure Support Requirements
For
New Construction

These requirements shall be incorporated into the specifications and architectural drawings of new building construction prior to bid; avoid change-orders later. These details are Telecommunications Industry Association (TIA) recommendations, code requirements, established standards and experience learned from previous construction projects. They are meant to facilitate installation of the network cabling system at time of construction, to allow for growth and to ease moves, additions, and changes in the future. These requirements are the ideal communications infrastructure support system; it is understood that all items may not be possible in all construction.

Drawings

1. Determine if CMR (riser) cable is acceptable, or if CMP (plenum) cable will be required. Data network cable is blue, voice cable (for analog fax and elevator phones) is gray, and video network cable is yellow. Specify that other low-voltage communication cables (EMS, security, fire alarm, etc.) be other colors for easy identification.
2. On electrical drawings (low voltage drawings), identify location of the telecommunications Equipment Room (aka: ER; not the Data Room, IDF or BDF). Use Standard Symbols Legend for electrical to represent data wall, ceiling and floor boxes. Amend the Legend and General Notes as necessary. Include height notation for other than 18" AFF.
3. On technology drawings for data, fax and phone (T or TC drawings, preferably from I.T. consultant), identify location of the telecommunications Equipment Room. Also identify utility rooms, custodian closets, etc. Use Standard Symbols Legend for data to represent all wired connections. Amend the Legend and General Notes as necessary. Differentiate between data, A/V, and empty "Conduit Only" symbols. Show room numbers and outlines of all fixed wall and base cabinets, and any fixed furniture where data outlets will be installed. Show locations of electrical outlets (grayed, for reference only). Adhere to AIA CAD Layer Guidelines.
4. Coordinate data drawings with A/V and furniture drawings. Data outlet is required within 6 inches of each primary MIP (AV rack location).
5. After finalizing all data locations, provide two final drawing sets (no clouds!) with grayed fixed-furniture outlines showing locations and number of **all** data / voice outlets, **regardless** of placement (in walls, ceiling, raceway, furniture, etc.) or use (podiums, wireless, A/V equipment racks, EMS, security, etc.).
6. Provide electronic CAD drawing set showing all data & fax outlets within the building.

Inter-building Conduit

7. Install three underground 2" PVC conduits and one 4" PVC conduit from the communications manhole to the Equipment Room for data, telephone & future use.

This document is updated as needed to address issues that arise and experiences learned in previous construction.

8. Use only large-radius (3 ft. minimum) elbows, as needed, in all underground communications conduits.
9. If LBs are required, use only "Smart LB" products from Smart Pathways LLC.
10. Preferred conduit entrance location is parallel to the wall at the rear-left corner of Equipment Room as viewed from doorway (reference: ANSI/TIA-569).
11. Place ½" 1250lb conduit-measuring Neptco Muletape® in the 2" conduits. Place Muletape, ¼" polypropylene or nylon pull ropes in remaining conduits.
12. Install expandable blank duct plugs with internal rope tie attachment (Vikimatic, TE Connectivity, or equal) on all unused 2" and 4" conduits in the Equipment Room and in the underground utility vault.

Network Equipment Rooms (ER)

13. Locate the communications Equipment Room with direct access to a main corridor and as close as possible to the **center of the building** to minimize cable lengths, which cannot exceed 295 ft. or testing will **FAIL**. It is preferred that the Equipment Room not be located adjacent to the electrical room, due to potential RF interference. Provide a minimum of one Equipment Room to service each floor, stacking the rooms one on top of the other. Keep clear of water sources and exposed conduits (reference: ANSI/TIA-568, 569).
14. In order to accommodate a typical four communications rack installation (10ft. 11in. wide) in an Equipment Room with 3ft. of clearance on all sides, the room should not be smaller than 7 feet deep x 17 feet wide. Adjust room size for larger buildings with more than 672 network connections, requiring more communications racks.
15. Make all walls full height, 10 ft. minimum, and sealed to keep conditioned air in this room.
16. Starting at 6 ft. from the rear-left corner of the Equipment Room (as viewed from doorway), install one dedicated 120V 20A electrical circuit with NEMA 5-20R duplex receptacles and one dedicated 120V 30A electrical circuit with NEMA L5-30R receptacles every 5 ft. Install outlets recessed in back wall – **NOT IN FLOOR**. Tie into backup generator power circuits, if available. Install at least one 120V convenience duplex outlet on other walls. Install all electrical outlets flush in walls.
17. Install ¾" A-C **fire-rated** plywood backboard over the drywall in the Equipment Room to fully cover all walls (front, back, 2 sides), starting about 21" above finished floor (to clear power outlets). Plywood shall be painted with white paint (2 coats minimum, or per manufacturer's directions), with fire rating seal unpainted and visible at the top, or rating verified by the Inspector Of Record. Allow sufficient open space on the front wall to attach copy of as-built communications (TC) drawing, ANSI E size (Reference: ANSI/TIA-569).
18. Install a Telecommunications Main Grounding Busbar (TMGB) in the Equipment Room, with minimum dimensions of 0.25" (6mm) thick x 4" (100mm) wide x 12" (300mm) long, electro-tin plated copper with pre-drilled holes meeting standard bolt-hole size and spacing per ANSI J-STD-607A (Panduit, Harger, Erico or equivalent). Place at 8 ½ ft. above finished floor, on left side of rear wall (as viewed from doorway), behind the first communications rack. Bond to main building ground (Reference: ANSI/TIA J-STD-607). Include this in electrical section (or CSI Section 270526) of the building specifications.

19. For second or more Equipment Rooms, install a Telecommunications Grounding Busbar (TGB) in each additional Equipment Room with the same requirements as the TMGB, bonded to the TMGB (Reference: ANSI/TIA J-STD-607).
20. Provide finished floor in Equipment Room (VCT is preferred). Flooring must be installed prior to installation of equipment racks.
21. Do not install a false ceiling (Reference: ANSI/TIA-569). Avoid any / all plumbing above communications racks.
22. Install a 24/7 wall-hung non-humidifying split-ductless air conditioner system for the Equipment Room (Mitsubishi Electric "Mr. Slim"), with wall-mounted wired controller and a provision for condensation drain line, preferably below the unit to avoid use of a pump. Place on same wall as the door or on side wall at 8ft +. (Reference: ANSI/TIA-569). Place servicing power switch high, next to unit. Change factory default settings for temperature display in Fahrenheit, and to auto-restart after power failure. Tie into backup generator power circuits if available.
23. Place two 2-light fixtures 2 ft. from back wall to provide lighting to the rear of the communications rack. Place two or three 2-light fixtures about 7 ft. from back wall to provide lighting to the front of the communications rack.
24. Provide 36" outward opening solid door. Install D-Storeroom function door lock, and door closer with hold-open function.
25. For room signage, use the room number only.
26. See front view of a network rack layout here.
27. See top view of an Equipment Room layout here.

Cable Distribution Infrastructure

28. Install an UL-approved 18" wide, 4" deep wire-type cable tray system (Snake Tray® Mega Snake, Cablofil® CF 105, Cooper FlexTray, or equivalent). Place above the ceiling in hallways and other easily accessible locations **in shortest path toward ER**; more cable tray is preferred over conduit. Place 8" (min.) above the ceiling grid, with 12" (min.) of headroom to allow access. Branches and end runs from the main cable tray may be smaller-width tray. Install more cable tray to minimize conduit lengths. Plan placement of cable tray so as to not run into wall studs or conduit where tray penetrates through walls. Route conduits to the sides of the cable tray. Bond all sections to electrically grounded structural building steel or to the Main Grounding Busbar (CTI Technical Bulletin 15, CEC Article 392.7).
29. Install 4 each 4" conduit sleeves to penetrate firewalls, including the walls into the ER. Place conduit sleeves side-by-side and center over the raceway. Bond to the cable tray (reference: ANSI/TIA-569, CEC Article 645-15).
30. Install one 1" EMT conduit in a continuous length (**no daisy-chaining**) up to 100 ft. in length from the cable tray to each / every wall or ceiling station outlet box for up to 4 data cables. Place pull string in all conduits.

31. Install one 1 ¼" EMT conduit in a continuous length (**no daisy-chaining**) up to 100 ft. in length from the cable tray for that floor to each / every floor location for up to 8 cables. Increase to MINIMUM 2" EMT for use with a cable trough. Place pull string in all conduits.
32. Avoid placing conduit underground if possible. Route conduits in shortest, most direct path to closest cable tray, in walls closest to the center of the building, towards the ER, with no more than 3 90° bends, 270° total. (reference: ANSI/TIA-569, CEC Articles 344.26, 354.26, 358.26).
33. Do ***not*** use flex conduit in any conduit run, except for extending to modular furniture.
34. **Keep cable pathway distance from Equipment Room, through cable tray and conduit, to station outlet box *under* 250 ft. *Cable path must not exceed this distance.***
35. Install plastic bushings (Arlington Industries EMTxxx or equivalent) at open ends of *all* metallic conduits (reference: CEC Article 300-4, 300-16 (B)).
36. *IF* pull boxes are required, provide 8" x 8" minimum size.
37. If in-floor cable raceway system is required, specify a manufacturer (Walker Duct, Trench Duct, other).

Station Outlets

38. Install Randl Industries T-55017 5-Square x 2 7/8" deep Telecommunications Outlet Box at data station outlet locations, up to four outlets per box. On walls, place at 18" above finished floor unless noted otherwise, adjacent to power outlet. In offices, install one on each wall as per typical office furniture layout.
39. Install one Randl Industries T-55017 5-Square x 2 7/8" deep Telecommunications Outlet Box, flush in wall, for a wall phone outlet at 52" in the Equipment Room next to door (Maximum ADA allowable height for side reach). Do not place light switch or other devices closer than 6" to either side of this box and nothing 16" below (telephone is 10" wide).
40. Install Randl Industries T-55017 5-Square x 2 7/8" deep Telecommunications Outlet Box with D-51G000 flat extension ring, 8"-12" above ceiling level for wireless access points (WAP). Place above projector locations.
41. Install one 1" EMT conduit from the cable tray to the A/V pull box by the teacher station to allow use of a data Surface Mount Box (SMB).
42. Install one Randl Industries T-55017 5-Square x 2 7/8" deep Telecommunications Outlet Box, flush in wall, for building security next to security / access control panel location. Alternately, install one 1" EMT conduit from the cable tray to the control panel to allow use of a Surface Mount Box.
43. Install one Randl Industries T-55017 5-Square x 2 7/8" deep Telecommunications Outlet Box, flush in wall, for Energy Management System (EMS). Alternately, install one 1" EMT conduit from the cable tray to the EMS cabinet to allow use of a Surface Mount Box.
44. Install matching Randl Industries 5-Square single-gang extension rings (depth as needed) on each wall-mounted 5-Square Telecommunications Outlet Box. Orient vertically for all wall faceplate outlets; faceplates have downward-angled entry for patch cords.

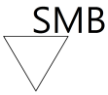
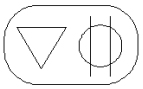
45. Install Randl Industries 5BSB-16 (16” stud spacing) 5-Square Support Brackets as needed.
46. If raceway outlets are required, use Wiremold® 5400TBWH white finish two-compartment surface raceway with 5400CWH covers, 5450WH device brackets, CM-EPLA-WH end plates, 5507DWH duplex faceplates (for electrical duplex), 5507BWH blank covers, and all additional required fittings. Install one 1 ½” conduit as raceway feed for up to 10 cables within 12 ft. of surface raceway. Data conduits are to feed the top raceway compartment. Starting 3ft. from the end, place device brackets every 6ft.
47. If floor outlets are required, use 3 7/16” deep Wiremold® RFB4-series floor boxes with duplex brackets for power, dual 2A-size CM Open System communications bracket for data, and FPCTCBZ bronze finish (for carpet) or FPCTCNK nickel finish (for VCT) flanged cutout cover assembly with matching floor material placed into trim recess. Install one 1 ¼” conduit to each floor box for up to 8 data cables. Route to closest wall, and then extend to the cable tray.
48. If floor A/V connections are required, use Wiremold® Evolution EFB8-series A/V floor boxes. Include Wiremold EFB8S-DIV divider, and EFB610CTCBZ bronze finish (for carpet) or EFB610CTCNK nickel finish (for VCT) cover assembly with matching floor material placed into trim recess. Install one 1 ¼” conduit to each floor box for data cables. Route to closest wall, and then extend to the cable tray. Install one 1 ¼” conduit for A/V cables. See A/V drawings for A/V conduit routing.
49. Use one Pass & Seymour 1595NTLTRWCC4 (15A) or 2095NTLTRW (20A) GFCI duplex receptacle with LED nightlight in Evolution EFB8 floor boxes for A/V connections.
50. If floor-type pedestals are required for combined power and data, provide separate isolated entry paths that allows back-to-back data and electrical (most don’t!). Low voltage barriers are required to separate power & low voltage data.

51. Recommend installation of one electrical duplex (NEMA 5-15) for every wall & floor data outlet (for computer & monitor, to avoid power strips). Place on same wall stud adjacent to station outlet box for wall locations, and in lower position of wall raceway faceplates.

This and other network installation documents and drawings available at:

http://web.cerritos.edu/it/sitepages/Network-Cabling-Standards.htm

Data Outlet Drawing Symbols
Used by Cerritos College

	COMMUNICATIONS LEGEND FOR LOW-VOLTAGE ELECTRICAL DRAWINGS
SYMBOL	MEANING
	DATA OUTLET BOX, FLUSH IN WALL, +18" A.F.F. (U.N.O.). USE A RANDL 5-SQUARE TELECOM BOX (T-55017) WITH VERTICALLY ORIENTED SINGLE-GANG PLASTER RING AND 1" EMT FROM EACH BOX TO THE SIDE OF THE CABLE TRAY.
	DATA OUTLET BOX FOR WALL-MOUNTED IP TELEPHONE, FLUSH IN WALL, +48" A.F.F. (U.N.O.). USE A RANDL 5-SQUARE TELECOM BOX (T-55017) WITH VERTICALLY ORIENTED SINGLE-GANG PLASTER RING AND 1" EMT FROM EACH BOX TO THE SIDE OF THE CABLE TRAY.
	DATA OUTLET BOX FOR WALL-MOUNTED IP EMERGENCY TELEPHONE, FLUSH IN WALL, +48" A.F.F. (U.N.O.). USE A RANDL 5-SQUARE TELECOM BOX (T-55017) WITH VERTICALLY ORIENTED SINGLE-GANG PLASTER RING AND 1" EMT FROM EACH BOX TO THE SIDE OF THE CABLE TRAY.
	DATA OUTLET IN SURFACE MOUNTED OR IN-WALL BOX. INSTALL 1" EMT FROM THE EMS / SECURITY CABINET OR A/V WALL BOX TO THE SIDE OF THE CABLE TRAY FOR A DATA OUTLET WITHIN THE WALL BOX OR CABINET. NO ADDITIONAL BOX IS REQUIRED.
	ABOVE-CEILING DATA OUTLET BOX. USE A RANDL 5-SQUARE TELECOM BOX (T-55017) WITH SINGLE-GANG FLAT RING (D-51G000) AND 1" EMT FROM EACH BOX TO THE SIDE OF THE CABLE TRAY. SET 8"-12" ABOVE SUSPENDED CEILING, BUT NOT MORE THAN 12FT. A.F.F. FACE RING TOWARD THE FLOOR FOR WIRELESS ACCESS POINTS.
	FLOOR BOX WITH DATA AND POWER OUTLETS. USE A 3 7/16" DEEP WIREMOLD RFB4-SERIES FLOOR BOX WITH 1 ¼" PVC CONDUIT FROM EACH BOX ROUTED TO THE CLOSEST WALL. TRANSITION TO EMT AND EXTEND TO THE SIDE OF THE CABLE TRAY. INCLUDE WIREMOLD INTERNAL DUPLEX BRACKETS FOR POWER AND 2AB-TYPE TWO 2A-SIZE COMMUNICATION BRACKETS FOR DATA, AND FPCTCBZ BRONZE FINISH (FOR CARPET) OR FPCTCNK NICKEL FINISH (FOR VCT) FLANGED COVER ASSEMBLY WITH MATCHING FLOOR MATERIAL SET INTO LID INSERT. SECURE MUDCAP TO PREVENT ENTRY OF CONCRETE DURING POUR.
	FLOOR BOX WITH DATA, QUAD POWER AND A/V OUTLETS. USE A WIREMOLD EVOLUTION EFB8 FLOOR BOX WITH 1 ¼" PVC CONDUITS FROM EACH BOX, CLOSEST TO TUNNEL. ROUTE TO THE CLOSEST WALL, TRANSITION TO EMT AND EXTEND TO THE SIDE OF THE CABLE TRAY. INSTALL 1 ¼" PVC CONDUIT / EMT PER A/V DRAWINGS. PLACE DATA AND POWER CONDUITS ON THE SAME SIDE OF BOX USING A WIREMOLD EFB8S-DIV DIVIDER FOR SEPARATION, WITH POWER FURTHEST AWAY FROM TUNNEL. PLACE A/V CONDUIT ON OPPOSITE SIDE OF BOX. INCLUDE EFB610CTCBZ BRONZE FINISH (FOR CARPET) OR EFB610CTCNK NICKEL FINISH (FOR VCT) SURFACE COVER WITH MATCHING FLOOR MATERIAL SET INTO LID INSERT. INSTALL ONE GFCI DUPLEX OUTLET WITH LED NIGHTLIGHT. SECURE MUDCAP TO PREVENT ENTRY OF CONCRETE DURING POUR.
	CONNECTION POINT / PULL BOX TO ELEVATOR PHONE, +48" A.F.F. USE 4S BOX WITH 2-GANG PLASTER RING, BLANK COVER, AND 1" EMT FROM EACH BOX TO THE SIDE OF THE CABLE TRAY AND TO THE ELEVATOR EQUIPMENT TIE-IN.
	WIRE-TYPE CABLE TRAY (CABLOFIL CF 105, COOPER FLEXTRAY, SNAKE TRAY MEGA SNAKE OR EQUIVALENT). BOND ALL SECTIONS TOGETHER AND TO ELECTRICALLY GROUNDED STRUCTURAL STEEL OR THE TELECOMMUNICATIONS GROUND BUSBAR. REFER TO STRUCTURAL DRAWINGS FOR CABLE TRAY SUPPORT DETAILS.

Legend is available in electronic format

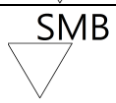
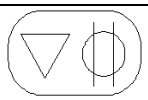
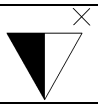
(Note: include EL symbol & description in Division 14 for elevator analog phone)

Add these to the **Low Voltage General Notes**

1. ALL SYMBOLS AND DESIGNATORS SHOWN ARE NOT NECESSARILY USED IN THIS PACKAGE.
2. DIMENSIONS ARE INDICATED ON TECHNOLOGY DRAWINGS WHERE CRITICAL TO THE INSTALLATION AND PERFORMANCE OF THE EQUIPMENT. WHERE REQUIREMENTS CONFLICT WITH SPECIFICATIONS AND DESIGNS SHOWN ELSEWHERE, THE EC SHALL IMMEDIATELY BRING SUCH CONFLICTS TO THE ATTENTION OF THE ARCHITECT AND THE TECHNOLOGY CONSULTANT.
3. PROVIDE AND INSTALL A UL-APPROVED 18" X 4" WIRE-TYPE CABLE TRAY SYSTEM. PLACE ABOVE CEILING IN HALLWAYS AND OTHER EASILY ACCESSIBLE LOCATIONS IN SHORTEST PATH TOWARD NETWORK EQUIPMENT ROOM, 8" MINIMUM ABOVE CEILING GRID WITH HEADROOM FOR ACCESS.
4. ROUTE CONDUITS IN SHORTEST, MOST DIRECT PATH TO THE SIDE OF THE CLOSEST CABLE TRAY, IN WALLS CLOSEST TO THE CENTER OF BUILDING TOWARDS THE EQUIPMENT ROOM, WITH NO MORE THAN THREE 90° BENDS, 270° TOTAL. AVOID PLACING CONDUIT UNDERGROUND IF POSSIBLE, OR KEEP TO A MINIMUM.
5. IF PULL BOXES (J-BOXES) ARE REQUIRED, PROVIDE 8" X 8" MINIMUM SIZE ON 1" CONDUIT, AND LARGER SIZE WITH LARGER CONDUIT.
6. CABLE PATHWAY DISTANCE FROM NETWORK EQUIPMENT ROOM THROUGH CABLE TRAY AND CONDUIT TO OUTLET BOX SHALL NOT EXCEED 250 FT.
7. INSTALL CONDUIT IN A CONTINUOUS LENGTH (NO DAISY-CHAINING) UP TO 100 FT. IN LENGTH FROM EACH / EVERY OUTLET BOX TO THE CABLE TRAY FOR THAT FLOOR. USE MORE CABLE TRAY TO MINIMIZE CONDUIT LENGTHS.
8. PROVIDE AND INSTALL 2" CONDUIT FOR USE WITH IN-FLOOR CABLE DUCT (TROUGH), WITH 90° SWEEP INTO FLOOR DUCT.
9. NO FLEX CONDUIT TO BE USED EXCEPT FOR APPROVED LOCATIONS ONLY, REGARDLESS OF CEC REGULATIONS.
10. PROVIDE AND INSTALL PLASTIC BUSHINGS AT OPEN ENDS OF METALLIC CONDUITS (ARLINGTON INDUSTRIES EMTXXX OR OTHER).
11. PROVIDE AND INSTALL PULL STRING OR NYLON CORD IN ALL CONDUITS.
12. PROVIDE AND INSTALL CONDUIT, J-BOXES, CABLE TRAYS, PANELS, FLOOR BOXES, AND ENCLOSURES. BOND CABLE TRAY TO THE TMGB. ALL GROUNDING AND BONDING REQUIRED BY CEC TITLE 24.
13. ALL BOXES AND CONDUIT IN WALLS AND CEILINGS SHALL BE FLUSH MOUNTED OR CONCEALED UNLESS NOTED OTHERWISE.
14. MOUNTING HEIGHTS NOTED ARE TO THE BOTTOM OF DEVICE UNLESS NOTED OTHERWISE.
15. IF SURFACE RACEWAY (WIREMOLD) IS NOTED ON THE DRAWING, THESE SYMBOLS DENOTE THE POSITION OF OUTLET(S) ON THE RACEWAY. SIZE THE CONDUIT / FEED TO THE RACEWAY APPROPRIATELY TO ACCOMMODATE THE NUMBER OF CABLES TO BE INSTALLED, BUT NO SMALLER THAN 1 ½". PROVIDE 1 CONDUIT FOR EVERY 10 DATA CABLES.
16. PROVIDE AND INSTALL FOUR SIDE-BY-SIDE 4" CONDUIT SLEEVES TO PENETRATE THE EQUIPMENT ROOM AND FIRE-RATED WALLS. CENTER OVER CABLE TRAY SECTIONS. BOND CONDUIT SLEEVES TO CABLE TRAY. INSTALL FIRE-BLOCKING AROUND SLEEVES.
17. PROVIDE AND INSTALL ONE ELECTRICAL DUPLEX FOR EACH DATA OUTLET.
18. PROVIDE AND INSTALL ONE PASS & SEYMOUR 1595NTLTRWCC4 (15A) OR 2095NTLTRW (20A) OR EQUAL GFCI DUPLEX RECEPTACLE WITH LED NIGHTLIGHT IN EVOLUTION EFB8 FLOOR BOXES.
19. PROVIDE AND INSTALL ONE 1/4" X 4" X 12" TELECOMMUNICATIONS GROUNDING BUSBAR (TMGB), ELECTRO-TIN PLATED COPPER WITH PRE-DRILLED HOLES PER ANSI J-STD-607-A IN EACH EQUIPMENT ROOM. PLACE AT 8' 6" A.F.F., BOND TOGETHER AND TO MAIN BUILDING GROUND IN ACCORDANCE WITH THE CEC AND TIA J-STD-607.
20. PROVIDE AND INSTALL ½" 1250 LB. CONDUIT-MEASURING MULETAPE IN EACH OF THE CONDUITS FROM THE COMMUNICATIONS VAULT TO THE EQUIPMENT ROOM.
21. PROVIDE AND INSTALL EXPANDABLE BLANK DUCT PLUGS WITH INTERNAL ROPE ATTACHMENT (VIKIMATIC, TE CONNECTIVITY, OR EQUIVALENT) ON UNUSED 2" AND 4" CONDUIT IN THE EQUIPMENT ROOM AND IN THE COMMUNICATIONS VAULT.
22. IF LB CONDUIT BODIES ARE USED ON 2" - 4" CONDUIT, USE ONLY "SMART LB" PRODUCTS FROM SMART PATHWAYS.
23. OMISSIONS FROM THE DRAWINGS OR SPECIFICATIONS OR THE MISDESCRIPTION OF DETAILS OF WORK WHICH ARE MANIFESTLY NECESSARY TO CARRY OUT THE INTENT OF THE DRAWINGS AND SPECIFICATIONS, OR WHICH ARE CUSTOMARILY PERFORMED, SHALL NOT RELIEVE THE CONTRACTOR FROM PERFORMING SUCH OMITTED OR MISDESCRIBED DETAILS OF THE WORK BUT SHALL BE PERFORMED AS IF FULLY AND CORRECTLY SET FORTH AND DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS.

Low Voltage General Notes are available in electronic format

Data Outlet Drawing Symbols
Used by Cerritos College

	LEGEND FOR COMMUNICATIONS DRAWINGS
SYMBOL	MEANING
	SINGLE DATA OUTLET, WITH ONE DATA JACK IN FACEPLATE. PROVIDE ALL CABLE AND CONNECTIVITY HARDWARE.
	X DATA OUTLETS IN SAME FACEPLATE, WITH 'X' AS THE NUMBER OF DATA JACKS. PROVIDE ALL CABLE AND CONNECTIVITY HARDWARE.
	SINGLE DATA OUTLET WITH ONE DATA JACK IN TELEPHONE-STUDDED FACEPLATE FOR WALL-MOUNTED IP TELEPHONE. PROVIDE ALL CABLE AND CONNECTIVITY HARDWARE.
	EMERGENCY PHONE DATA OUTLET. PROVIDE ALL CABLE AND CONNECTIVITY HARDWARE. TERMINATE CABLE WITH A RJ-45 PLUG, CONNECT TO PROVIDED CALL BOX AND MOUNT CALL BOX SECURELY TO WALL.
	DATA OUTLET IN SURFACE MOUNT BOX. INSTALL WITHIN CABINET. PROVIDE ALL CABLE AND CONNECTIVITY HARDWARE.
	ABOVE-CEILING DATA OUTLET FOR WIRELESS ACCESS POINT (WAP). PROVIDE ALL CABLE AND CONNECTIVITY HARDWARE.
	FLOOR-BOX MOUNTED DATA OUTLET WITH POWER OUTLET WITHIN A WIREMOLD RFB-4 FLOOR BOX. PROVIDE ALL CABLE AND CONNECTIVITY HARDWARE.
	FLOOR MOUNTED DATA OUTLET WITH QUAD POWER AND A/V CONNECTIONS WITHIN A WIREMOLD EVOLUTION EFB8 FLOOR BOX. PROVIDE ALL CABLE AND CONNECTIVITY HARDWARE.
	FAX ONLY OUTLET (ANALOG), WITH ONE RJ-11 CONNECTION IN FACEPLATE. PROVIDE GRAY-JACKETED CAT 5E CABLE AND ALL CONNECTIVITY HARDWARE.
	ELEVATOR OUTLET / CONNECTION TO ANALOG ELEVATOR PHONE. PROVIDE GRAY-JACKETED CAT 5E CABLE AND ALL CONNECTIVITY HARDWARE. LEAVE STATION END UN-TERMINATED FOR CONNECTION TO ELEVATOR EQUIPMENT.
	COMBINED FAX AND DATA OUTLETS IN SAME FACEPLATE. PROVIDE ALL CABLE AND CONNECTIVITY HARDWARE.
	COMBINED FAX DATA WALL OUTLETS, WITH 'X' DATA OUTLETS IN SAME FACEPLATE. PROVIDE ALL CABLE AND CONNECTIVITY HARDWARE.

Legend is available in electronic format

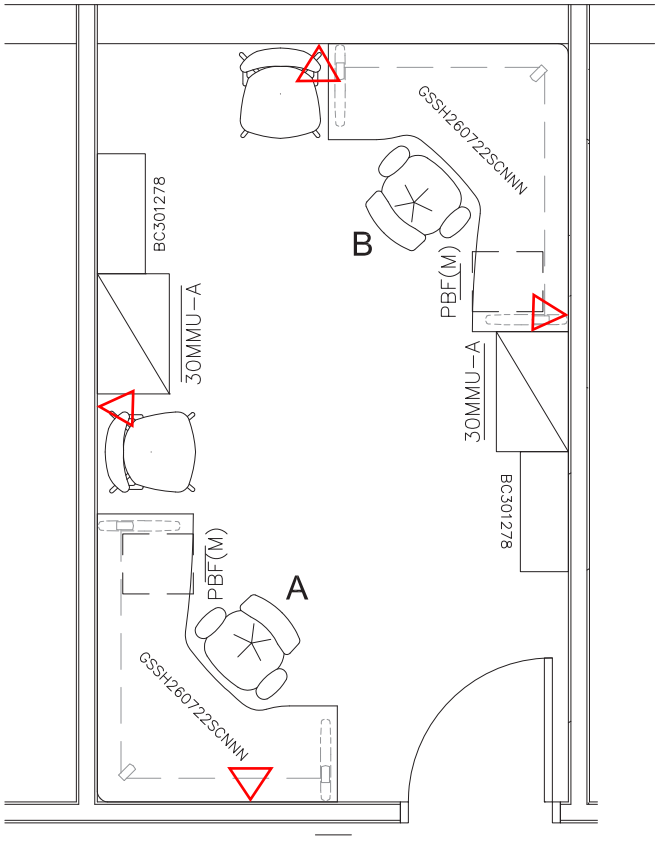
Add these to **Communications General Notes**

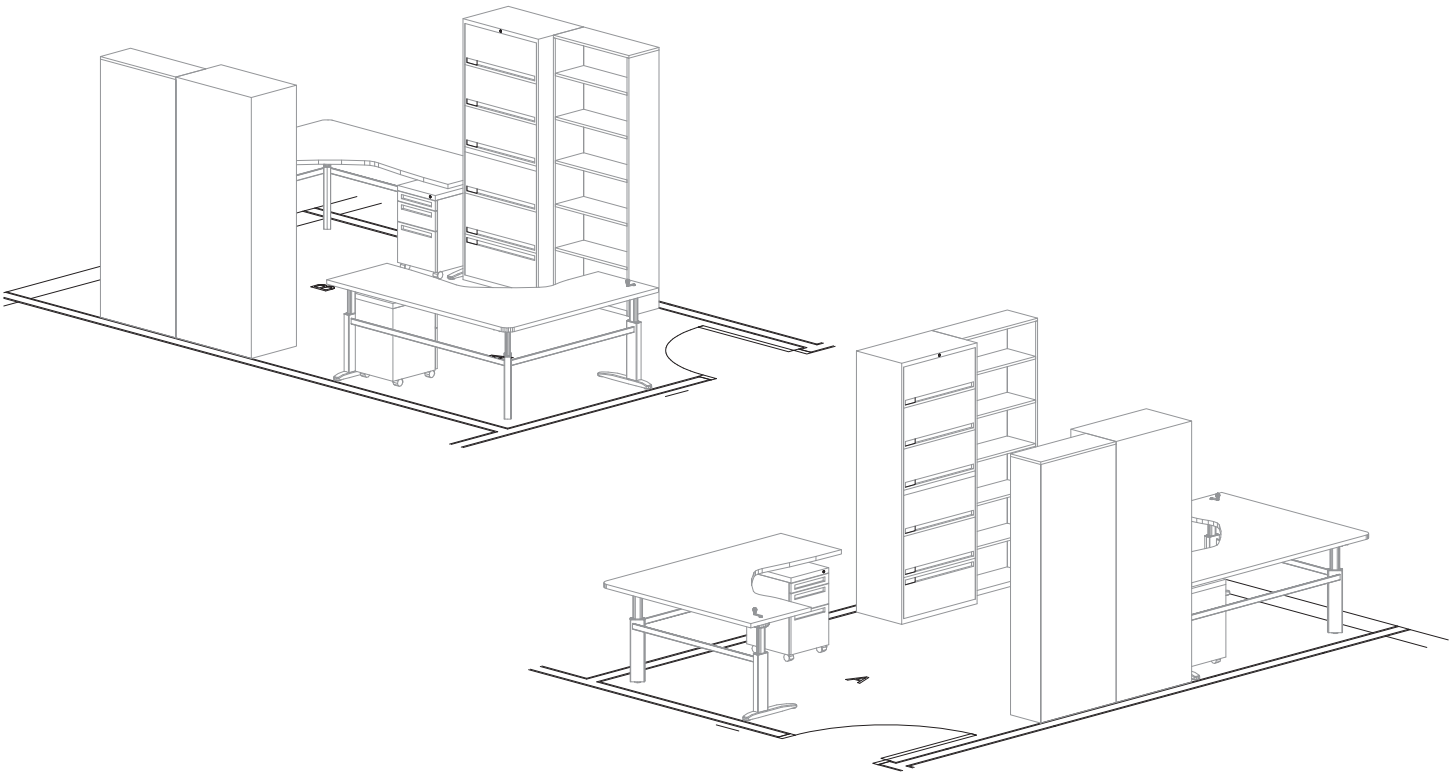
1. ALL SYMBOLS AND DESIGNATORS SHOWN ARE NOT NECESSARILY USED IN THIS PACKAGE.
2. ALL CABLE RUN IN ACCESSIBLE CEILING SPACE SHALL BE WITHIN CABLE TRAY OR CONDUIT.
3. INSTALLATION SHALL COMPLY WITH LATEST ANSI TIA-568, 569 AND 606, ALL APPLICABLE CODES, MANUFACTURER'S GUIDELINES AND CERRITOS COLLEGE CAMPUS STANDARDS.
4. CABLE LENGTH FROM PATCH PANEL THROUGH CABLE TRAY AND CONDUIT TO STATION JACK SHALL NOT EXCEED 295 FT. MEASURE ANY QUESTIONABLE RUNS AND BRING TO THE ATTENTION OF THE DISTRICT REPRESENTATIVE.
5. INSTALL PULL STRING OR NYLON CORD WITH CABLE.
6. INSTALL BLANK PLUGS IN ALL UNUSED FACEPLATE OPENINGS.
7. ALL WORK SHALL BE COMPLETED IN A NEAT AND PROFESSIONAL MANNER.
8. IF SURFACE RACEWAY (WIREMOLD) IS NOTED ON THE DRAWING, LEGEND SYMBOLS DENOTE THE POSITION OF OUTLET(S) IN THE RACEWAY.
9. THE CONTRACTOR SHALL MAINTAIN AS-BUILT DRAWINGS TO REFLECT CHANGES MADE DURING CONSTRUCTION AND DEVIATIONS FROM THE DRAWING. THIS INCLUDES ANY ADDITION, DELETION OR RELOCATION OF OUTLETS SHOWN ON THE WORKING DRAWINGS.
10. OMISSIONS FROM THE DRAWINGS OR SPECIFICATIONS OR THE MISDESCRIPTION OF DETAILS OF WORK WHICH ARE MANIFESTLY NECESSARY TO CARRY OUT THE INTENT OF THE DRAWINGS AND SPECIFICATIONS, OR WHICH ARE CUSTOMARILY PERFORMED, SHALL NOT RELIEVE THE CONTRACTOR FROM PERFORMING SUCH OMITTED OR MISDESCRIBED DETAILS OF THE WORK BUT SHALL BE PERFORMED AS IF FULLY AND CORRECTLY SET FORTH AND DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS.

General Notes are available in electronic format

Notes to communications consultant:

Two data outlets are required for teleconferencing equipment.





PROJECT NAME: **CERRITOS COLLEGE**

FACULTY OFFICE TYPICAL "A"

PROJECT ADDRESS:

DOVETAIL DCI

The Right Choices for The Right Reasons

237 Crescent Road, Suite 4
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T: 415.485.1196
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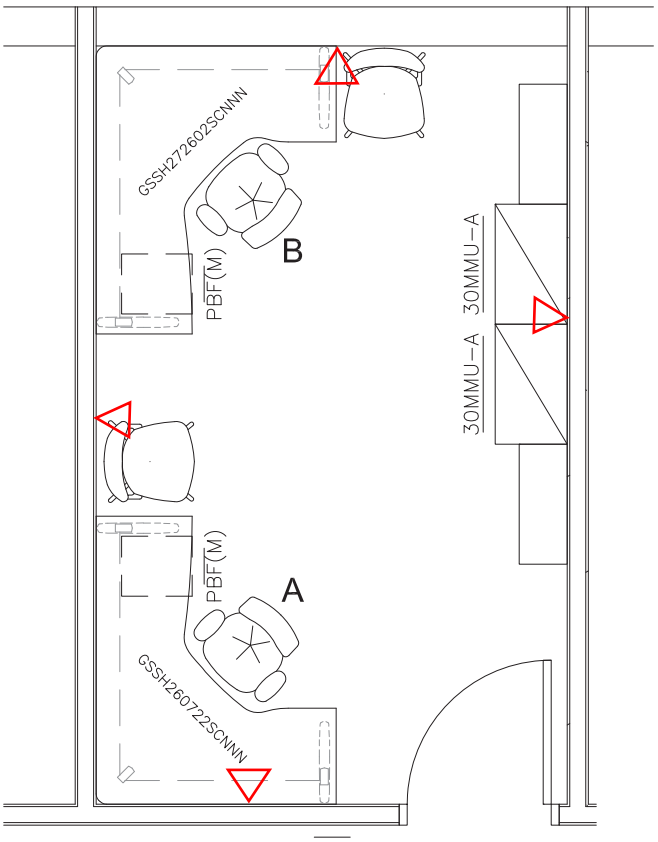
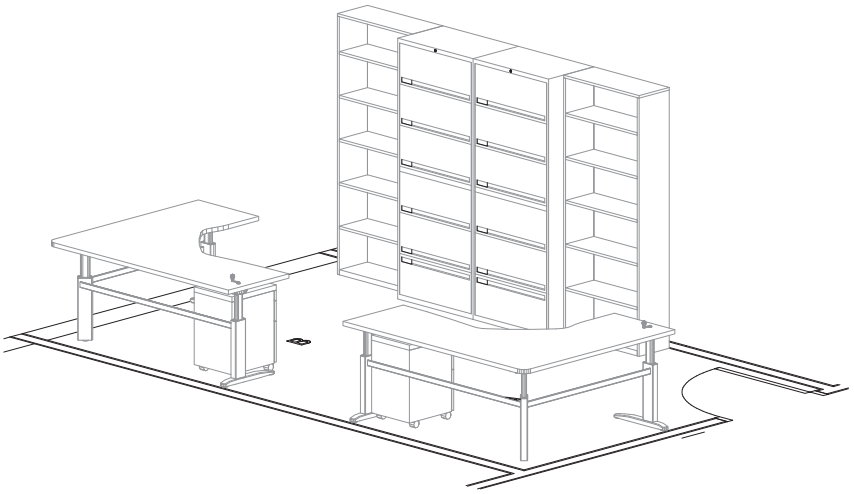
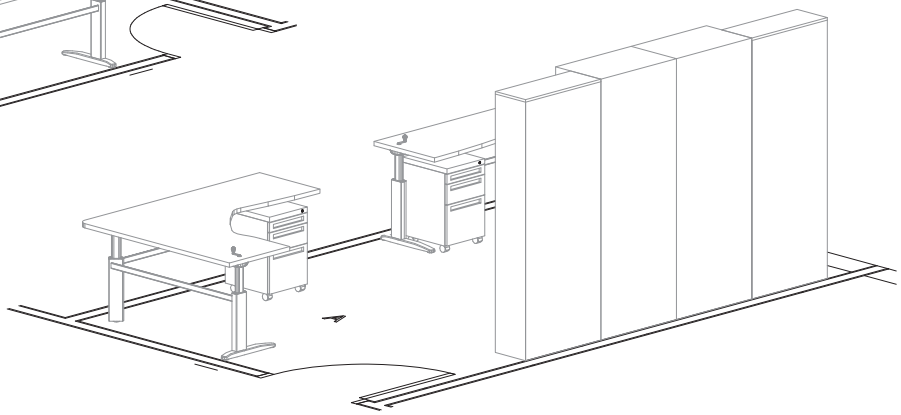
www.dovetaildci.com

DATE:	02.04.11
SCALE:	1/4"=1'-0"
DRAWN:	T.DOAN
FILE:	
PROJ. #:	
SHEET #:	TYP-A







PROJECT NAME: **CERRITOS COLLEGE**

FACULTY OFFICE TYPICAL "B"

PROJECT ADDRESS:

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SCALE:	1/4"=1'-0"
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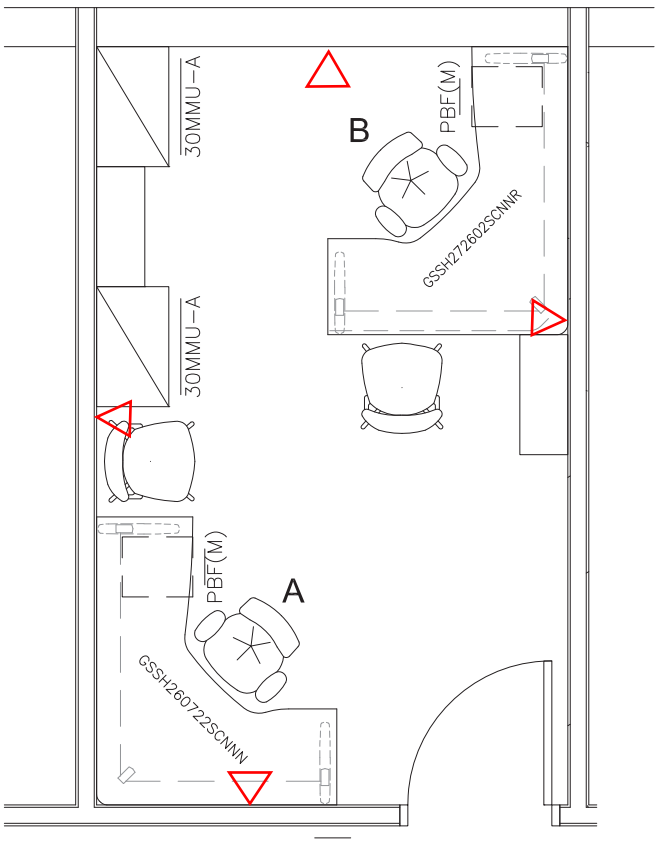
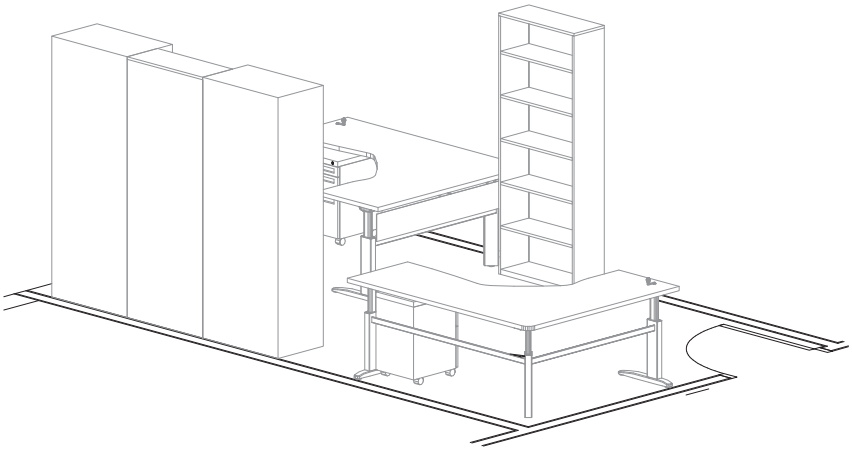
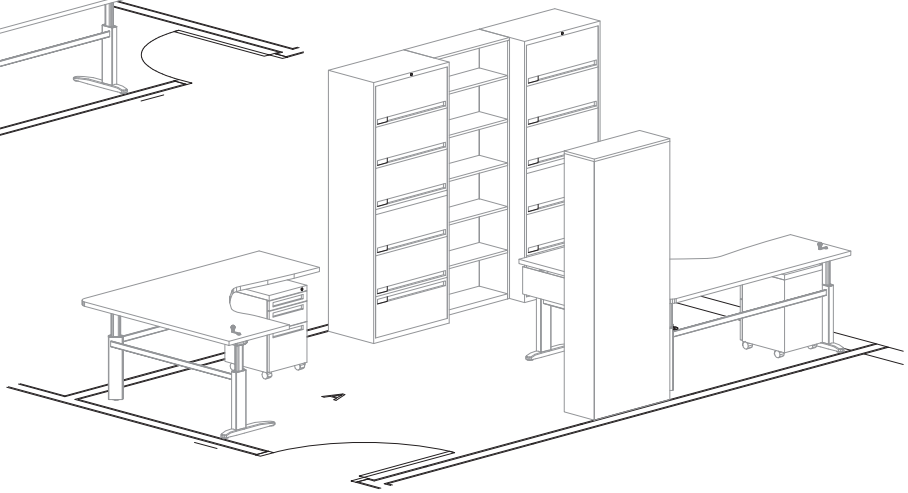
FILE:	
PROJ. #:	
SHEET #:	TYP-B







PROJECT NAME: **CERRITOS COLLEGE**

FACULTY OFFICE TYPICAL "C"

PROJECT ADDRESS:

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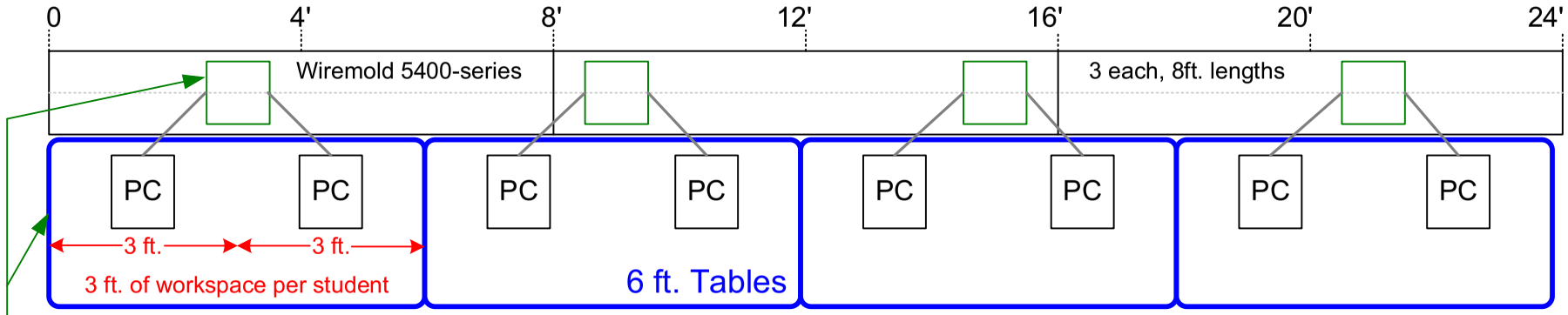
DATE:	02.04.11
SCALE:	1/4"=1'-0"
DRAWN:	T.DOAN
FILE:	
PROJ. #:	
SHEET #:	TYP-C

August 15, 2012

Wiremold Surface Raceway Placement

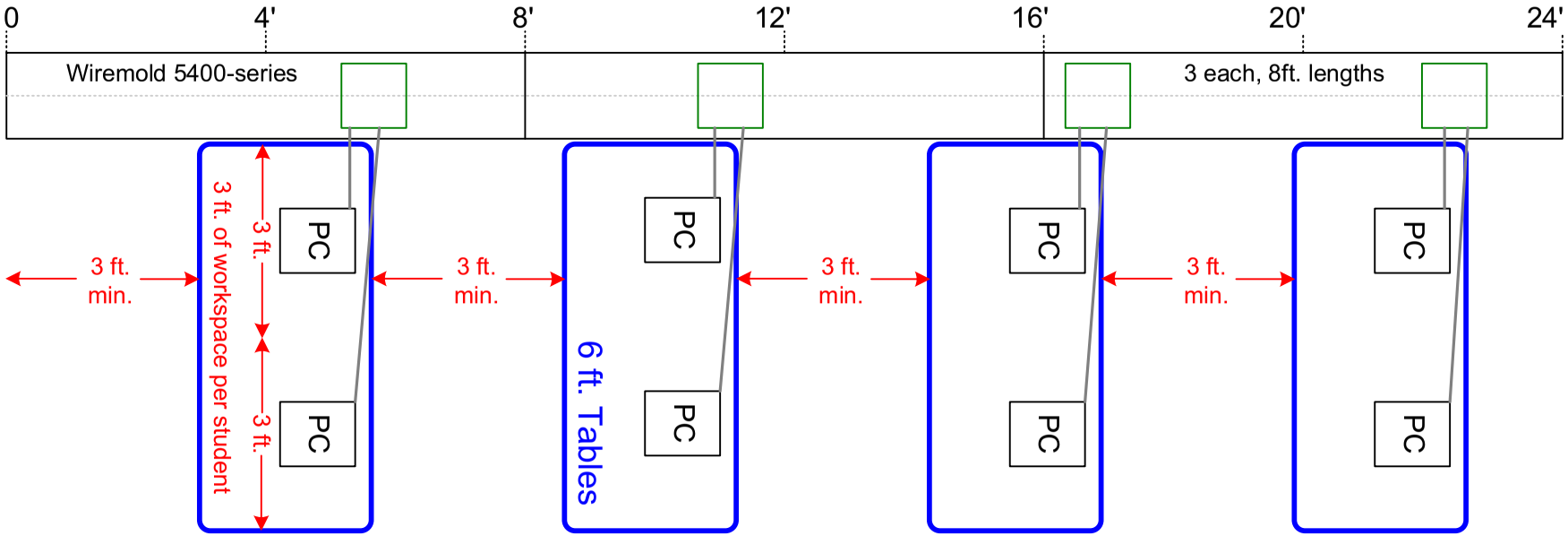


Starting at 3 ft. from table end, place one device bracket every 6 ft. for 2 data outlets.
Provide one 1 ½" EMT conduit for up to 10 cables at 40% fill

Place network outlets into top compartment of raceway

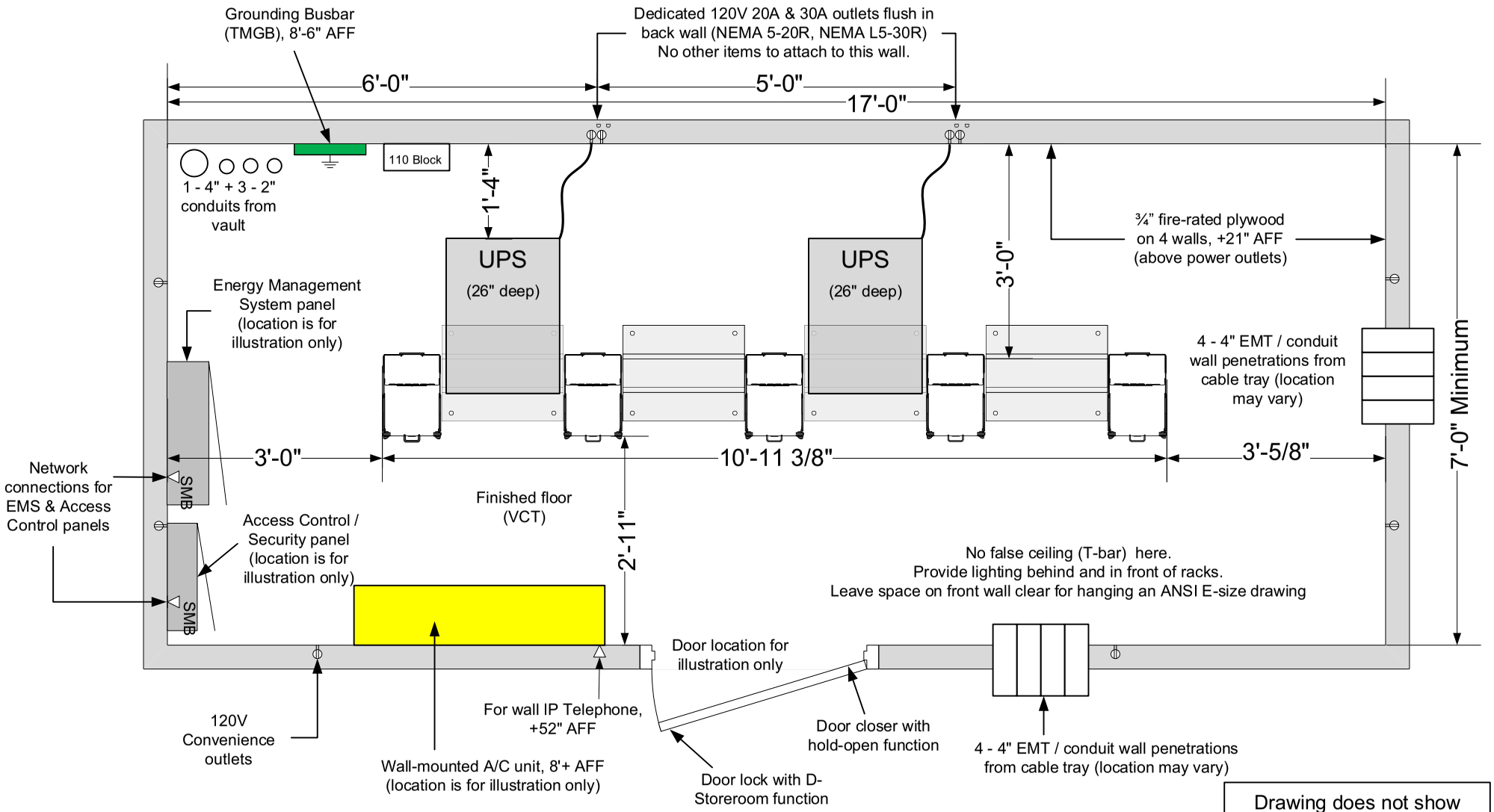
Conduit Capacity
1" EMT = 4 cables
1 ¼" = 8 cables
1 ½" = 10 cables

Wiremold Surface Raceway Placement- Perpendicular Tables



3 ft. minimum clearance between tables is required per 28 CFR Part 36 section 4.3.3. Add more tables per row as needed. Place device brackets accordingly, dependant on table depth. Provide one 1 ½" EMT conduit for up to 10 cables at 40% fill

Typical Network Equipment Room (ER) Layout with 4 Racks – Top View



Drawing does not show cable runway (ladder rack)

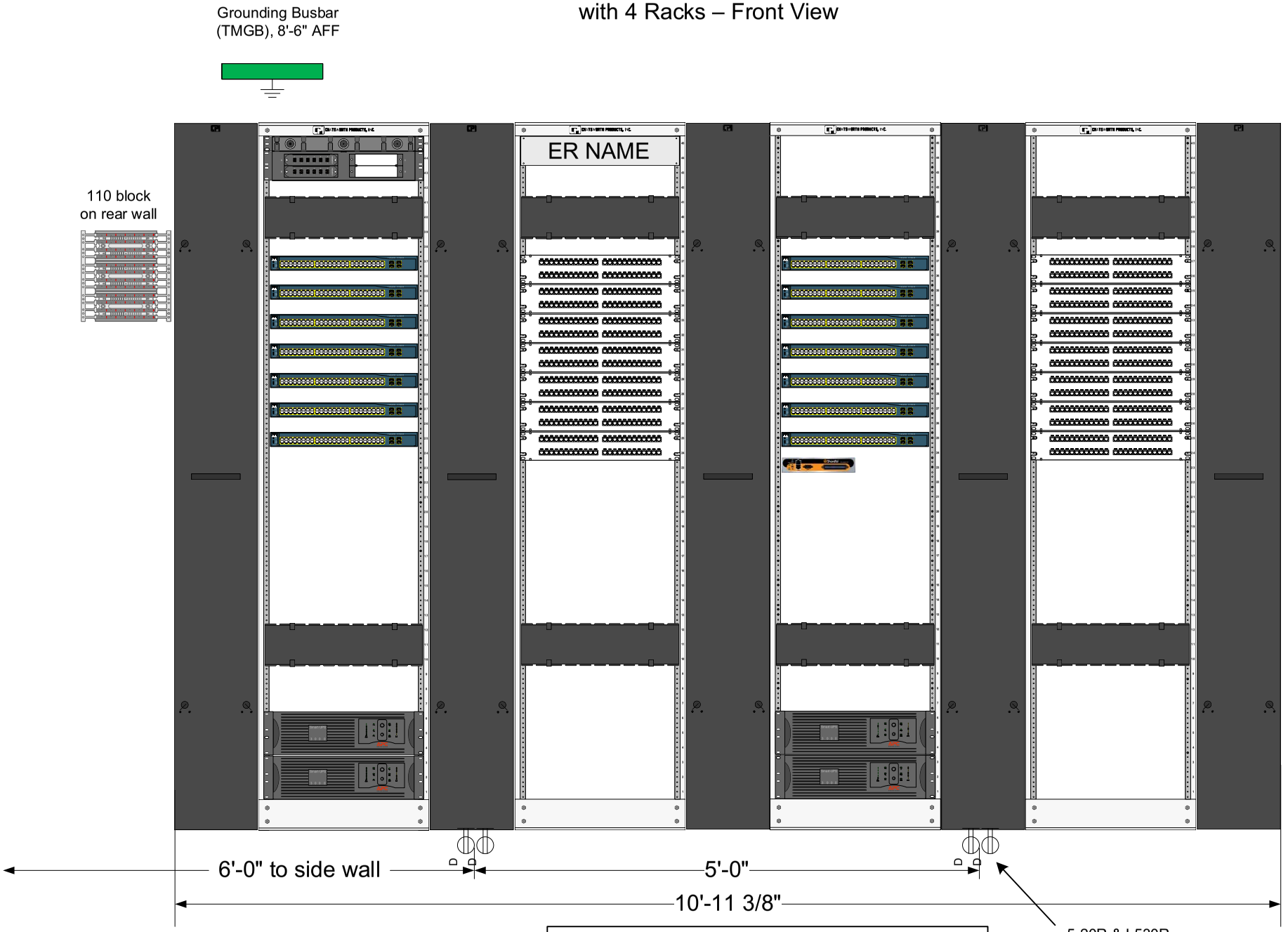
This configuration will accommodate up to 672 network connections.

Each rack is 20.32" wide	x 4 =	81.28"
Vertical cable management is 10" wide	x 5 =	+ 50.00"
		131.28"
	=	10'–11.28"

Front

Scale: ½" = 1'

Typical Network Equipment Room (ER) Layout with 4 Racks – Front View

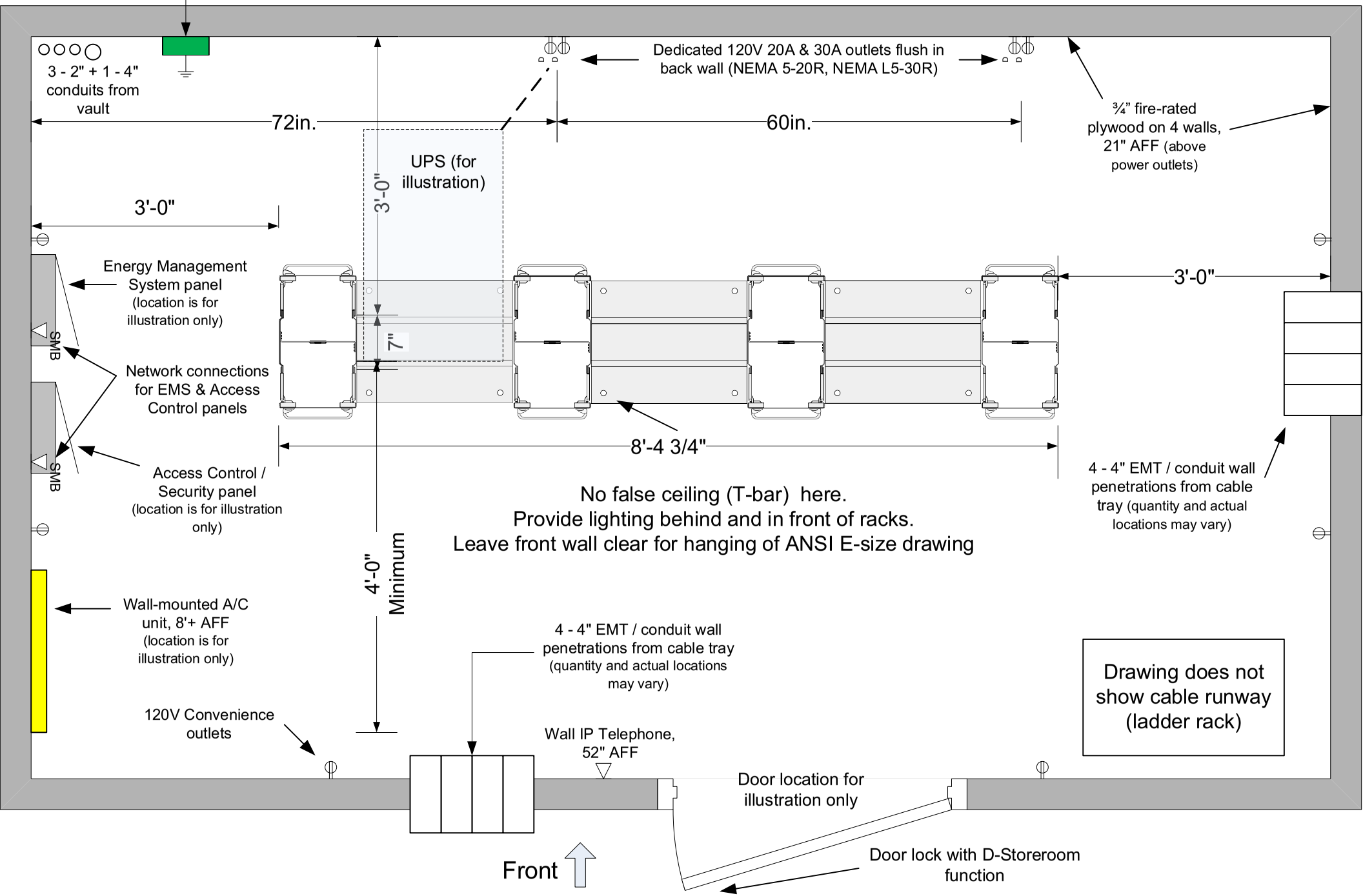


Each rack is 20.32" wide	x 4 =	81.28"
Vertical cable management is 10" wide	x 5 =	+ 50.00"
		131.28"
	=	10'–11.28"

This configuration will accommodate up to 672 network connections.

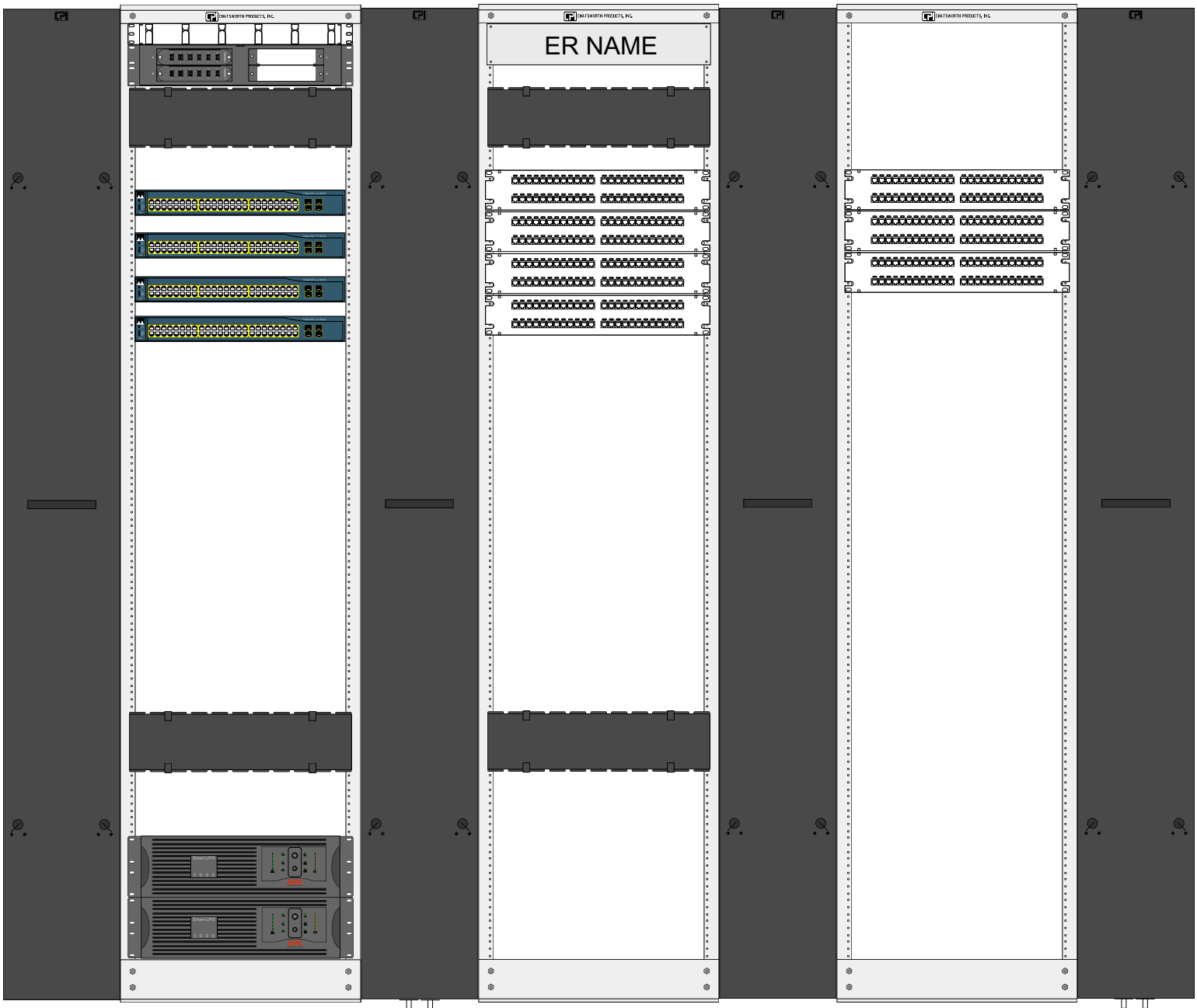
Scale: ¾" = 1'

Typical Network Equipment Room (ER) Layout with 3 Racks (cable runway not shown) Top View



Grounding Busbar
(rear wall, +102" AFF)

Typical 3-Rack Equipment Layout
(Actual rack varies by building needs)



Each rack is 20 ¼" wide
Each vertical cable management is 10" wide

x 3 = 60 ¾"
x 4 = 40"
100 ¾"
= 8' 4 ¾"

Catalog Cuts

for

CERRITOS COLLEGE

Sorted by Manufacturer

Prepared By
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Rodney_Ishizu@irco.com
Created 12/21/2010

107497

Catalog Cut Summary

Mfgr	Description	Item#	Catalog Number	PAGE
IVE	PIVOT SET		7226	7
IVE	PIVOT		7226 INT	8
IVE	PIVOT SET		7253	9
IVE	PIVOT		7226PT INT	10
IVE	GLOBAL CUT		GLOBAL CUT	11
IVE	HINGE		3CB1 4.5 X 4.5	15
IVE	HINGE		3CB1HW 4.5 X 4.5	15
IVE	HINGE		3CB1SH HW 4.5 X 4.5 NRP	16
IVE	CONTINUOUS HINGE		112HD	17
IVE	GLOBAL CUT		GLOBAL CUT	18
IVE	MANUAL FLUSH BOLT		FB358	19
IVE	DUST PROOF STRIKE		DP2	20
VON	PANIC HARDWARE		9847L 996L X 17	21
VON	PANIC HARDWARE		9847L 996L-NL X 17	21
VON	PANIC HARDWARE		CD9847EO	21
VON	PANIC HARDWARE		CD9847NL-OP	21
VON	PANIC HARDWARE		9847EO	21
VON	PANIC HARDWARE		98L 996L X 17	23
VON	PANIC HARDWARE		98L-BE 996L-BE X 17	23
VON	PANIC HARDWARE		CD98NL-OP	23
VON	FIRE EXIT HARDWARE		98L-NL-F 996L X 17	25
VON	GLOBAL CUT		GLOBAL CUT	27
VON	GLOBAL CUT		GLOBAL CUT	28
VON	GLOBAL CUT		GLOBAL CUT	29

Catalog Cut Summary				
Mfgr	Description	Item#	Catalog Number	PAGE
VON	GLOBAL CUT		GLOBAL CUT	30
VON	GLOBAL CUT		GLOBAL CUT	31
VON	GLOBAL CUT		GLOBAL CUT	32
VON	GLOBAL CUT		GLOBAL CUT	33
VON	GLOBAL CUT		GLOBAL CUT	34
VON	PANIC HARDWARE		RX-EL9847EO	21
VON	PANIC HARDWARE		RX-EL9847NL-OP	21
VON	PANIC HARDWARE		RX-EL98NL-OP	23
VON	GLOBAL CUT		GLOBAL CUT	27
VON	GLOBAL CUT		GLOBAL CUT	28
VON	GLOBAL CUT		GLOBAL CUT	29
VON	GLOBAL CUT		GLOBAL CUT	30
VON	GLOBAL CUT		GLOBAL CUT	31
VON	GLOBAL CUT		GLOBAL CUT	32
VON	GLOBAL CUT		GLOBAL CUT	33
VON	GLOBAL CUT		GLOBAL CUT	34
ADA	DEADLATCH		4510 SERIES	No Cut
ADA	HOOKBOLT DEADLOCK		MS1850SN-050	35
ADA	DEADLOCK		MS1851S	37
ADA	3PT DEADLOCK		MS1851S X 4015 X 4016	39
ADA	LEVER		4550-01	41
ADA	LEVER		4569-01	43
BES	CLASSROOM LOCK		45H7R 14R	45
BES	STOREROOM LOCK		45H7D 14R	45

Catalog Cut Summary				
Mfgr	Description	Item#	Catalog Number	PAGE
BES	OFFICE LOCK		45H7A 14R	45
BES	MORTISE CYLINDER		1E74	52
BES	RIM CYLINDER		1E72	52
SCH	CYLINDER TURN		09-904	54
_NO	CYLINDER		VERIFY TYPE & QUANITY OF CYLINDERS REQUIRED	No Cut
ADA	ELECTRIC STRIKE		7100 SERIES	55
ADA	STRIKE		MS4002	57
BES	PRIVACY LOCK		45HL 14R	45
IVE	OFFSET DOOR PULL		8190-8-N B/B MTG	59
IVE	OFFSET DOOR PULL		8190-0-O	59
IVE	PUSH PLATE		8200 4" X 16"	60
IVE	PULL PLATE		8305-8 4" X 16"	61
IVE	GLOBAL CUT		GLOBAL CUT	62
IVE	GLOBAL CUT		GLOBAL CUT	63
IVE	GLOBAL CUT		GLOBAL CUT	64
ROC	DOOR PULL		Y107 BTB TYPE 5 X BASE PLATE	65
NGP	ASTRAGAL		137NA	66
CRL	OH OS CONCEAL CLOSER		20-104M19	No Cut
CRL	SLIDE ARM		20-900 SERIES	No Cut
CRL	OH CH CONCEAL CLOSER		21101GE20 X SIDE LOAD	No Cut
LCN	SURFACE CLOSER		4011	67
LCN	SURFACE CLOSER		4011 DEL	67
LCN	SURFACE CLOSER		4011 DEL H	67
LCN	SURFACE CLOSER		4111 DEL SCUSH	72

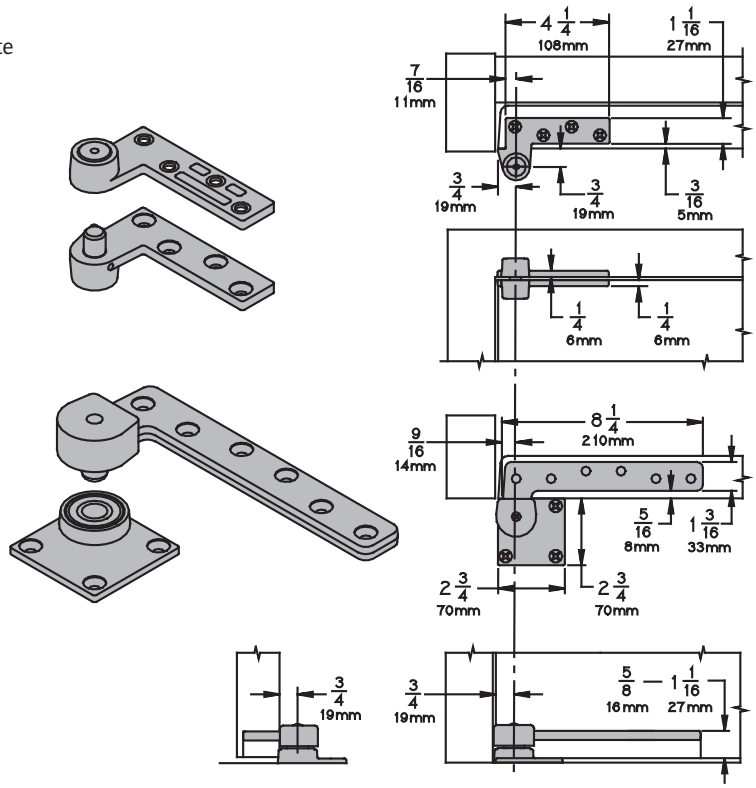
Catalog Cut Summary				
Mfgr	Description	Item#	Catalog Number	PAGE
LCN	SURFACE CLOSER		4111 EDA	72
LCN	SURFACE CLOSER		4111 DEL EDA	72
LCN	SURFACE CLOSER		4111 DEL HEDA	72
GLY	OVERHEAD STOP		900S SERIES X SPEC TEMP	77
IVE	KICK PLATE		8400 10" X 1" LDW	81
IVE	KICK PLATE		8400 10" X 2" LDW	81
IVE	DOME STOP		FS438	82
IVE	SECURITY FLOOR STOP		FS18L	83
IVE	WALL STOP		WS401CVX	84
IVE	DOME STOP		FS436	85
NGP	SEALS		155S H & J	86
NGP	SEALS		155S JAMBS	86
NGP	SEALS		700NA HEAD	87
NGP	DOOR SWEEP		618	88
NGP	THRESHOLD		8136 X 8147 X 8137 WELDED MS/LA	89
NGP	THRESHOLD		8136 X 8146 X 8136 WELDED MS/LA	89
NGP	THRESHOLD		8136 X 8146 WELDED MS/LA	89
IVE	SILENCER		SR64	90
_NO			POWER SUPPLY FOR ELECTRIC STRIKE BY OTHERS	No Cut
VON	POWER SUPPLY		PS873-AO	91
SCE	KEYSWITCH		653-14-NS	94
_NO	THRESHOLD		THRESHOLD BY OTHERS	No Cut
_NO			SLIDING TRACK AND GUIDE BY OTHERS	No Cut
_NO			SIGNS AND GRAPHICS BY OTHERS	No Cut

Catalog Cut Summary				
Mfgr	Description	Item#	Catalog Number	PAGE
_NO			BALANCE OF HARDWARE BY SLIDING DOOR SUPPLIER	No Cut
_NO	AUTO OPERATOR		AUTO OPERATOR & ACTUATORS BY OTHERS	No Cut
_NO			WEATHERSTRIPPING BY STOREFRONT SUPPLIER	No Cut

7226 & 7226F 3/4" Offset

7226 or **7226F** Pivot Sets

- Non-handed 3/4" offset pivot set consisting of a base plate mounted 7226 or 7226F Bottom Pivot, and a head frame mounted 7226 or 7226F Top Pivot.
- Door Thickness minimum 1-3/4" (44mm), bevel 1/8" (3mm) in 2" (51mm).
- Center Line Offset 3/4" (19mm) from face of door and 3/4" from edge of door.
- Maximum Load 600 pounds (272 kg).
- UL Listed
  7226 for 20 minute rated door.
  7226F for 3 hour rated door.
- 7226F meets ANSI/BHMA Grade 1.
- Vertical Adjustment Range of 3/16" (5mm), which includes a positive locking feature.
- Optional Intermediate Pivot
  For 7226 set, use 7226 Intermediate Pivot (handed). For 7226F set, use 7226F Intermediate Pivot (handed). Each Intermediate Pivot carries up to an additional 100 pounds (45.5 kg) load or needed for doors over 7'. See page 42.
- Optional 7226 PT Power Transfer Intermediate Pivot (handed). Provides 4 wire transfer with no weight bearing capabilities. See page 48.



How to Order:

7226 ___ - ___ - ___ - ___

Rating:
- **Blank** Non-fire-rated
- **F** Fire-rated

Pivot Style:
- **Blank** Top and bottom set
- **TOP** Top pivot only
- **BTM** Bottom pivot only
- **INT** Intermediate pivot only
- **PT INT** Power transfer intermediate pivot only

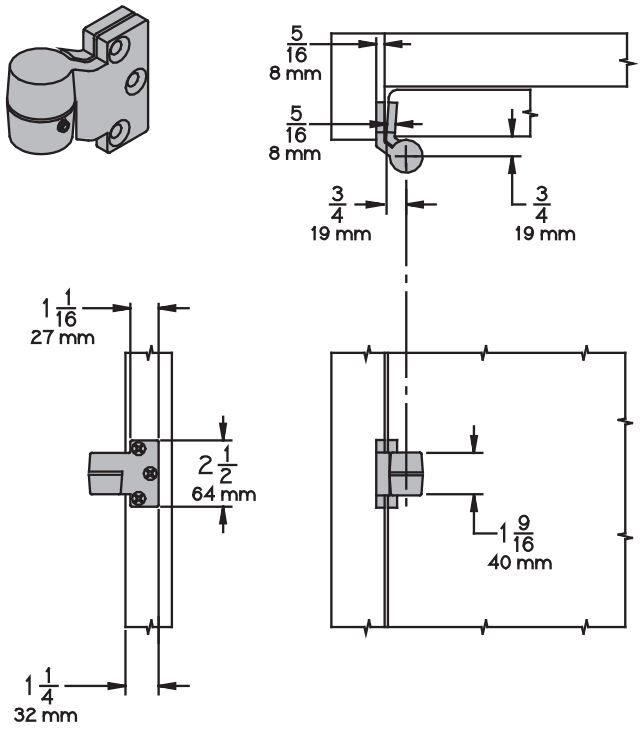
Handing:
- **LH** Left-hand door
- **RH** Right-hand door

Finishes:
- **Non-Fire-Rated** US3, US4, US10, US10B, US26, US26D, SP4, SP10, SP28, SP313, SPBLK
- **Fire-Rated** US3, US10, US32, US32D, SP4, SP10, SP28, SP313, SPBLK

7200 Series Intermediate Pivots

General Information:

- Door Height NFPA 80, Section 3-8.3, requires additional intermediate pivot for some fire-rated doors. We recommend one for every 2'6" (762mm), or fraction thereof, door height over 5'0" (1524mm).
- Door Weight exceeding pivot set limit, add one intermediate pivot for each 100 lbs. (45.5 kg) additional.
- Door Thickness minimum 1-3/4" (44mm), bevel 1/8" (3mm) in 2" (51mm).

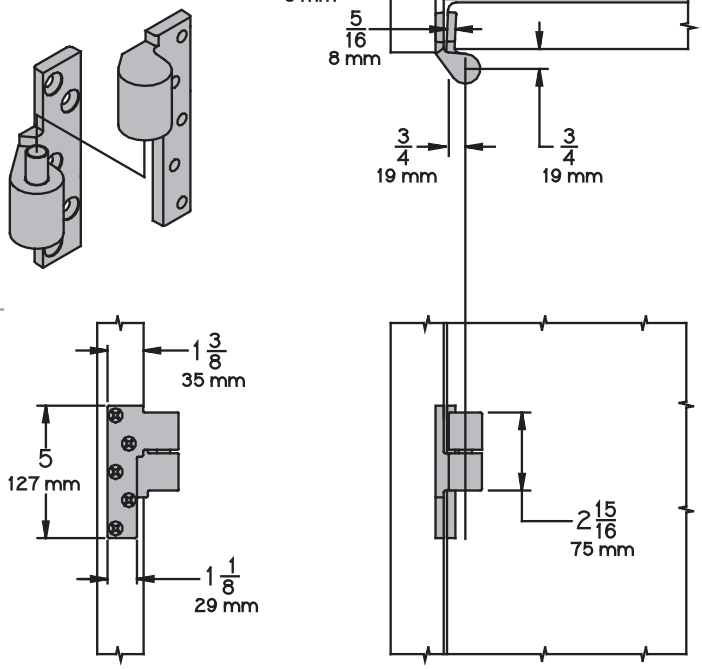


7212-7212V-7222 INT

- Handed 3/4" offset pivots compatible with the following pivot sets: 7212, 7212V and 7222.
- Maximum Load 100 pounds (45.5 kg).
- Vertical Adjustment Range of 3/16" (5mm), which includes a positive locking feature.
- Finishes: US3, US4, US10, US10B, US26, US26D, SP4, SP10, SP28, SP313 and SPBLK.

7215-7226-7227 INT

- Handed 3/4" offset pivots compatible with the following pivot sets: 7215, 7226 and 7227.
- Maximum Load 100 pounds (45.5 kg).
- UL Listed for 20 minute rated door.
- Meets ANSI/BHMA Grade 1.
- Vertical Adjustment Range of 3/16" (5mm), which includes a positive locking feature.
- Finishes: US3, US4, US10, US10B, US26, US26D, SP4, SP10, SP28, SP313 and SPBLK.



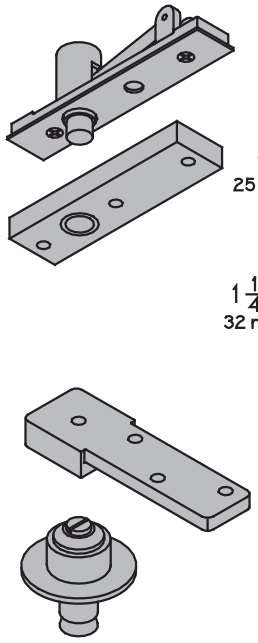
7215F-7226F-7227F INT

- Handed 3/4" offset pivots compatible with the following pivot sets: 7215F, 7226F and 7227F.
- Maximum Load 100 pounds (45.5 kg).
- UL Listed for 3 hour rated door.
- Meets ANSI/BHMA Grade 1.
- Vertical Adjustment Range of 3/16" (5mm), which includes a positive locking feature.
- Finishes: US3, US10, US32, US32D, SP4, SP10, SP28, SP313 and SPBLK.

7253 Center Hung Pivot Set

7253 Pivot Set

- Center hung pivot set consisting of base plate mounted 7253 Bottom Pivot and a head frame mounted 7253 Top Pivot.
- Maximum Load 300 pounds (136 kg).
- Easy Installation Tilt on bearing and bearing pin.
- Door Thickness minimum 1-3/4" (44mm).
- Radius Stop (A) to clear heel edge of door.
- Pivot Distance (B) 1-3/4" (44mm) minimum from jamb to centerline of pivot pin. Radius heel edge of door, 1-5/8" (41mm) minimum recommended.
- Clearance from bottom edge of door to the floor mounting surface is adjustable from 3/16" (5mm) to 3/4" (19mm) by varying the depth of the mortise (C) in the bottom rail of the door, refer to Table D. Over 3/4" (19mm) from the door to floor mounting surface, consult factory.
- Vertical Adjustment based on mortise preparation in bottom rail of the door. Refer to Table D.



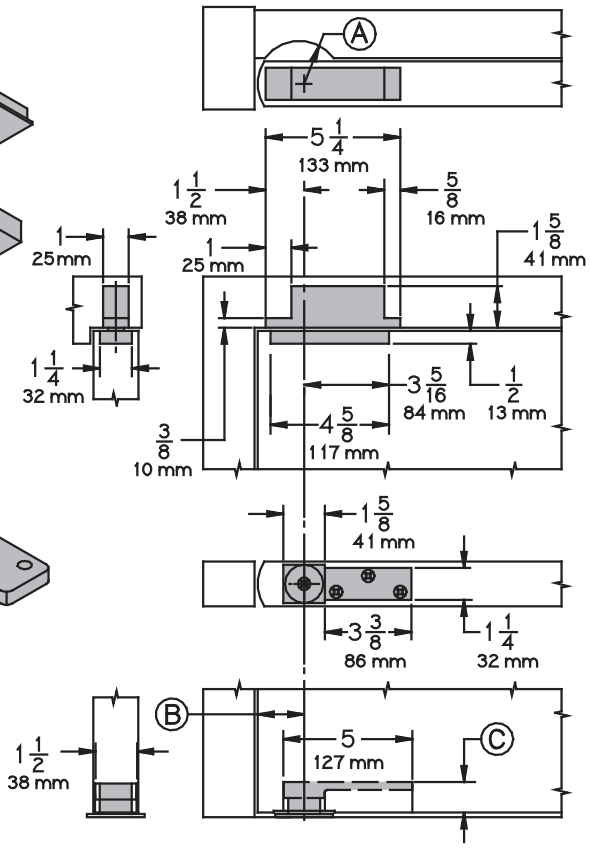


Table D

Clearance	Depth of Mortise
3/16" (5mm)	1-3/16" (30mm)
3/8" (10mm)	1" (25mm)
1/2" (13mm)	7/8" (22mm)
5/8" (16mm)	3/4" (19mm)
3/4" (19mm)	5/8" (16mm)

How to Order:

7253 - ___ - ____

Pivot Style:

Blank	Top and bottom set
TOP	Top pivot only
BTM	Bottom pivot only

Finishes:

US3, US4, US10, US10B, US26, US26D, SP4, SP10, SP28, SP313, SPBLK

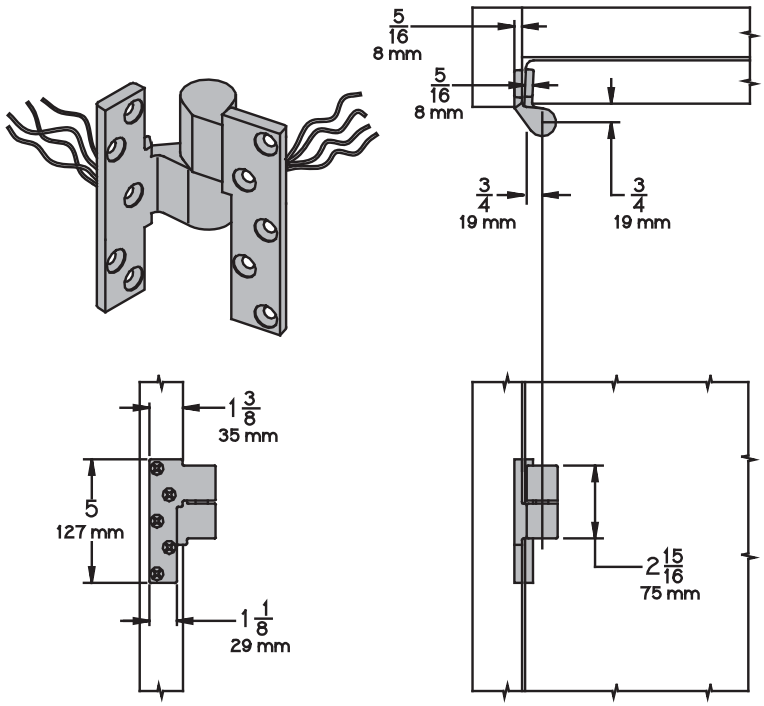
7200 Series Power Transfer Pivots

7215PT - **7226PT** - **7227PT** Pivot

- Handed 3/4" intermediate offset pivot compatible with 7210, 7220 or 7230 Series pivot sets.
- Center Line Offset 3/4" (19mm) from face of door and 3/4" from edge of door.
- Power Transfer Pivot features two pairs of conductors providing two separate, low voltage electric power and/or signal circuits between the door leaf and frame.
- Electrical Max. 1.0 Ampere @24V DC per pair of 28 gauge conductors.
- Non-Load Bearing Pivots.
- Door Thickness minimum 1-3/4" (44mm), bevel 1/8" (3mm) in 2" (51 mm).
- Raceway preparation required between the door leaf area and door mounted electrical device. A raceway or other preparation is required to protect wiring routed through all grout filled frames.

Options:

- 8 Wires



How to Order:

72 ____ PT - ____ - _____

Model:
15
26
27

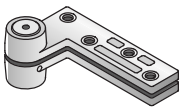
Handing:
LH Left-hand door
RH Right-hand door

Finishes:
US3, US4, US10, US10B, US26, US26D, SP4, SP10, SP28, SP313, SPBLK

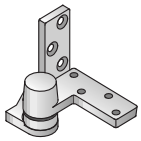
7200 Series Pivots - Overview

3/4" Offset Pivots - 200 Lb. Doors

7212-7215-7222-7226-7227 Top Pivot

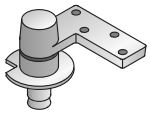


7212 PIVOT SET



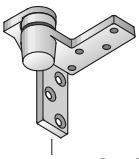
7212
Bottom Pivot

7222 PIVOT SET

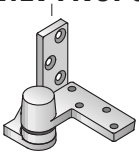


7222
Bottom Pivot

7212V Top Pivot

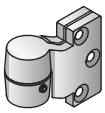


7212V PIVOT SET



7212
Bottom Pivot

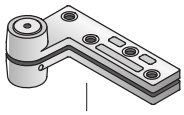
Optional



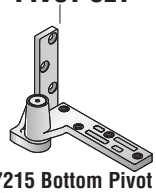
7212-7212V-7222
Intermediate Pivot

3/4" Offset Pivots - Standard and Fire-Rated - 500 to 700 Lb. Doors

7212-7215-7222-7226-7227 Top Pivot
7215F-7226F-7227F Top Pivot

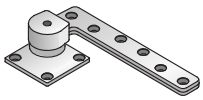


7215 OR 7215F PIVOT SET



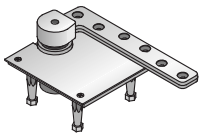
7215 Bottom Pivot
7215F Bottom Pivot

7226 OR 7226F PIVOT SET



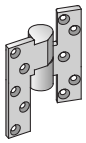
7226-Bottom Pivot
7226F-Bottom Pivot

7227 OR 7227F PIVOT SET

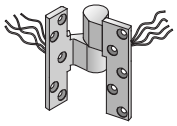


7227-7227F-Bottom Pivot

Optional



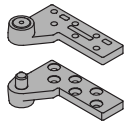
7215-7226-7227
Intermediate Pivot
7215F-7226F-7227F
Intermediate Pivot



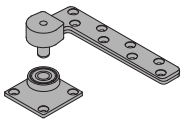
7215-7226-7227PT
Power Transfer
Intermediate Pivot

3/4" Offset Pivots - Fire-Rated - 1000 to 1750 Lb. Doors

7230F-7237F Top Pivot

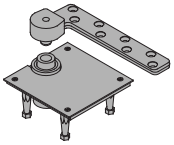


7230F PIVOT SET



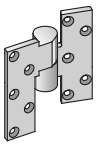
7230F
Bottom Pivot

7237F PIVOT SET



7237F
Bottom Pivot

Optional

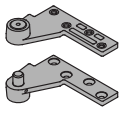


7230F-7237F
Intermediate Pivot

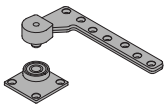
7200 Series Pivots - Overview

1-1/2" Offset Pivots - Fire-Rated - 400 to 500 Lb. Doors

7244F-7245F
Top Pivot

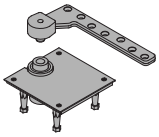


7244F PIVOT SET



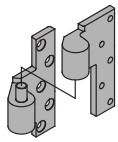
7244F
Bottom Pivot

7245F PIVOT SET



7245F
Bottom Pivot

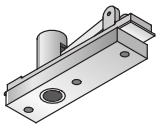
Optional



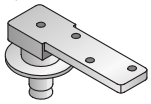
7244F-7245F
Intermediate Pivot

Center Hung Pivots - 300 to 600 Lb. Doors

7253-7255-7255J-7256 Top Pivot

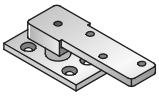


7253 PIVOT SET



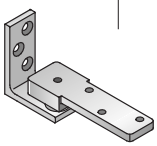
7253
Bottom Pivot

7255 PIVOT SET



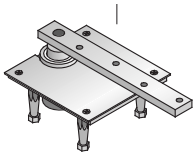
7255
Bottom Pivot

7255J PIVOT SET



7255J
Bottom Pivot

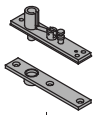
7256 PIVOT SET



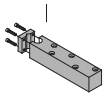
7256
Bottom Pivot

Center Hung Pivots - 1000 Lb. Doors

7259 Top Pivot



7259 PIVOT SET

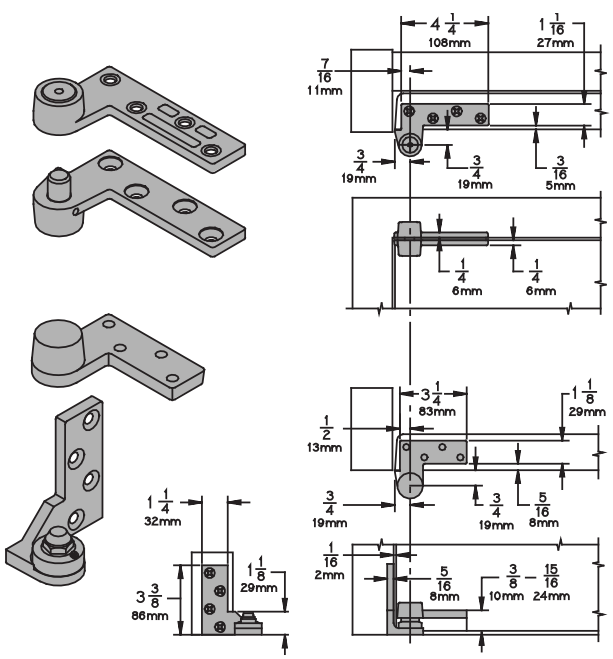


7259
Bottom Pivot

7200 Series Pivot Selection Chart

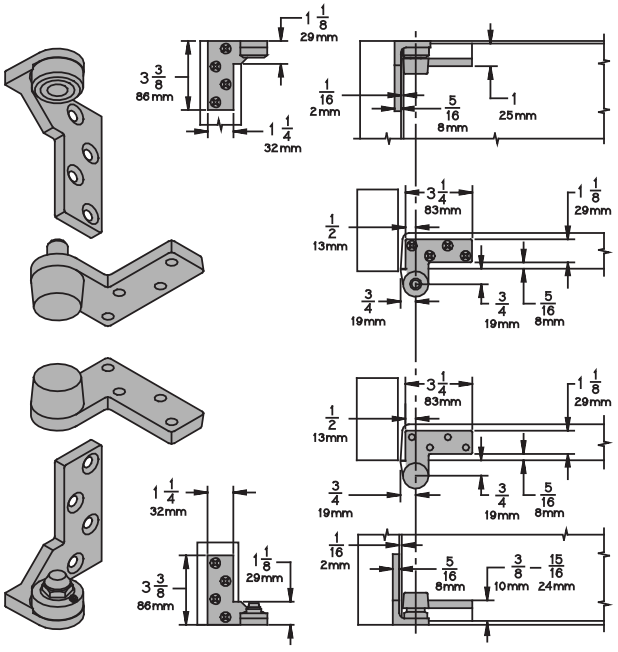
Pivot Set	UL Rating	Top Pivot	Bottom Pivot	Bottom Pivot Mounting	Recommended Intermediate Pivot	3/4" Offset	1-1/2" Offset	Center Hung	Max Door Weight	Handed
7212	None	7212-7215-7222-7226-7227 TOP	7212 BTM	Jamb Mounted	7212-7212V-7222 INT	Yes			200	Yes
7212V	None	7212V TOP	7212 BTM	Jamb Mounted	7212-7212V-7222 INT	Yes			200	Yes
7215	20 min	7212-7215-7222-7226-7227 TOP	7215 BTM	Jamb Mounted	7215-7226-7227 INT	Yes			500	Yes
7215F	3 hr	7215F-7226F-7227F TOP	7215F BTM	Jamb Mounted	7215F-7226F-7227F INT	Yes			500	Yes
7222	None	7212-7215-7222-7226-7227 TOP	7222 BTM	Floor Mounted	7212-7212V-7222 INT	Yes			200	Yes
7226	20 min	7212-7215-7222-7226-7227 TOP	7226 BTM	Floor Mounted	7215-7226-7227 INT	Yes			600	No
7226F	3 hr	7215F-7226F-7227F TOP	7226F BTM	Floor Mounted	7215F-7226F-7227F INT	Yes			600	No
7227	20 min	7212-7215-7222-7226-7227 TOP	7227 BTM	Mortised Cement Case	7215-7226-7227 INT	Yes			700	No
7227F	3 hr	7215F-7226F-7227F TOP	7227 BTM	Mortised Cement Case	7215F-7226F-7227F INT	Yes			700	No
7230F	3 hr	7230F-7237F TOP	7230F BTM	Floor Mounted	7230F-7237F INT	Yes			1000	No
7237F	3 hr	7230F-7237F TOP	7237F BTM	Mortised Cement Case	7230F-7237F INT	Yes			1750	No
7244F	3 hr	7244F-7245F TOP	7244F BTM	Floor Mounted	7244F-7245F INT		Yes		400	No
7245F	3 hr	7244F-7245F TOP	7245F BTM	Mortised Cement Case	7244F-7245F INT		Yes		500	No
7253	None	7253-7255-7255J-7256 TOP	7253 BTM	Floor Mounted	None			Yes	300	No
7255	None	7253-7255-7255J-7256 TOP	7255 BTM	Floor Mounted	None			Yes	500	No
7255J	None	7253-7255-7255J-7256 TOP	7255J BTM	Jamb Mounted	None			Yes	500	No
7256	None	7253-7255-7255J-7256 TOP	7256 BTM	Mortised Cement Case	None			Yes	600	No
7259	None	7259 TOP	7259 BTM	Mortised Cement Case	None			Yes	1000	No

7212 & 7212V 3/4" Offset



7212 Pivot Set

- Handed 3/4" offset pivot set consisting of a jamb mounted 7212 Bottom Pivot (handed), and a head frame mounted 7212 Top Pivot (non-handed).
- Door Thickness minimum 1-3/4" (44mm), bevel 1/8" (3mm) in 2" (51mm).
- Center Line Offset 3/4" (19mm) from face of door and 3/4" from edge of door.
- Maximum Load 200 pounds (91 kg).
- Vertical Adjustment Range of 3/16" (5mm), which includes a positive locking feature.
- Optional 7212 Intermediate Pivot (handed) carries up to an additional 100 pounds (45.5 kg) load or needed for doors over 7'. See page B14.



7212V Pivot Set

- Handed 3/4" offset pivot set consisting of a jamb mounted 7212 Bottom Pivot (handed), and a jamb mounted 7212V Top Pivot (handed).
- Door Thickness minimum 1-3/4" (44mm), bevel 1/8" (3mm) in 2" (51mm).
- Center Line Offset 3/4" (19mm) from face of door and 3/4" from edge of door.
- Maximum Load 200 pounds (91 kg).
- Vertical Adjustment Range of 3/16" (5mm), which includes a positive locking feature.
- Optional 7212 intermediate Pivot (handed) carries up to an additional 100 pounds (45.5 kg) load or needed for doors over 7'. See page B14.

How to Order: 7212 ___ - ___ - ___ - _____

Mounting Type:
- **Blank** Head frame mounted to pivot
- **V** Jamb mounted top pivot

Pivot Style:
- **Blank** Top and bottom set
- **TOP** Top pivot only
- **BTM** Bottom pivot only
- **INT** Intermediate pivot

Handing:
- **LH** Left-hand door
- **RH** Right-hand door

Finishes:
US3, US4, US10, US10B, US26, US26D, SP4, SP10, SP28, SP313, SPBLK

Full Mortise Hinges - 3 Knuckle

3PB1

3 Knuckle, Plain Bearing

PLAIN BEARING • LOW FREQUENCY • STANDARD WEIGHT

For use on Standard Weight Doors with Low Frequency Usage, not intended for use with door closing devices

3PB1 Steel with steel pin
3PB1 Brass with stainless steel pin
3PB1 Stainless steel with stainless steel pin (630 finish only)

- Dimensions & tolerances conform to ANSI - A156.7
- 3PB1 Steel description conforms to ANSI - A8133
- 3PB1 Stainless description conforms to ANSI - A5133
- 3PB1 Brass description conforms to ANSI - A2133
- Packed with wood and machine screws

Size (Inches)	Size (mm)	Gauge
4.5 x 4	114 x 102	0.134
4.5 x 4.5	114 x 114	0.134

3CB1

3 Knuckle, Concealed Bearing

CONCEALED BEARING • MEDIUM FREQUENCY • STANDARD WEIGHT

For use on Standard Weight Doors with Medium Frequency Usage

3CB1 Steel with steel pin
3CB1 Brass with stainless steel pin
3CB1 Stainless steel with stainless steel pin (630 finish only)
NRP = Non-Removable Pin

- Dimensions & tolerances conform to ANSI - A156.7
- 3CB1 Steel description conforms to ANSI - A8112
- 3CB1 Stainless description conforms to ANSI - A5112
- 3CB1 Brass description conforms to ANSI - A2112
- Packed with wood and machine screws

Size (Inches)	Size (mm)	Gauge
4.5 x 4	114 x 102	0.134
4.5 x 4.5	114 x 114	0.134

3CB1HW

3 Knuckle, Concealed Bearing, Heavy Weight

CONCEALED BEARING • HIGH FREQUENCY • HEAVY WEIGHT

For use on Heavy Weight Doors or High Frequency Usage

3CB1HW Steel with steel pin
3CB1HW Brass with stainless steel pin
3CB1HW Stainless steel with stainless steel pin (630 finish only)
NRP = Non-Removable Pin

- Dimensions & tolerances conform to ANSI - A156.7
- 3CB1HW Steel description conforms to ANSI - A8111
- 3CB1HW Stainless description conforms to ANSI - A5111
- 3CB1HW Brass description conforms to ANSI - A2111
- Packed with wood and machine screws

Size (Inches)	Size (mm)	Gauge
4.5 x 4	114 x 102	0.180
4.5 x 4.5	114 x 114	0.180
5 x 4.5	127 x 114	0.190

Full Mortise Hinges - 3 Knuckle

3CB1SH

3 Knuckle, Concealed Bearing, Security Stud

CONCELED BEARING • MEDIUM FREQUENCY • SECURITY STUD

For use on Standard Weight Doors with Medium Frequency Usage

3CB1SH Brass with stainless steel pin
3CB1SH Stainless steel with stainless steel pin
NRP = Non-Removable Pin

- Dimensions & tolerances conform to ANSI - A156.7
- 3CB1SH Brass conforms to ANSI - A2112
- 3CH1SH Stainless Steel description conforms to ANSI - A5112
- Packed with wood and machine screws

Size (Inches)	Size (mm)	Gauge
4.5 x 4.5	114 x 114	0.134
5 x 4.5	127 x 114	0.146

3CB1SHHW

3 Knuckle, Concealed Bearing, Security Stud, Heavy Weight

CONCEALED BEARING • HIGH FREQUENCY • SECURITY STUD • HEAVY DUTY

For use on Heavy Weight Doors or High Frequency Usage

3CB1SHHW Brass with stainless steel pin
3CB1SHHW Stainless steel with stainless steel pin (630 finish only)

- 3CB1SHHW Stainless description conforms to ANSI - A5111
- 3CB1SHHW Brass description conforms to ANSI - A2111
- Packed with wood and machine screws

Size (Inches)	Size (mm)	Gauge
4.5 x 4.5	114 x 114	0.180
5 x 4.5	127 x 114	0.190

3SP1

3 Knuckle, Spring Hinge

SPRING HINGE

For automatic closing of door.

3SP1 Steel with steel pin
3SP1 Brass with stainless steel pin
3SP1 Stainless steel with stainless pin (630 finish only)

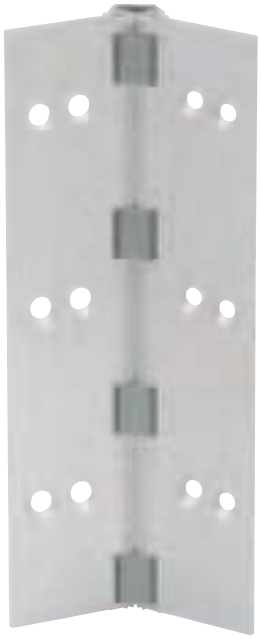
- UL listed for use with fire rated doors
- Packed with wood and machine screws
- 3SP1 Steel description conforms to ANSI - K81071F
- 3SP1 Brass description conforms to ANSI - K21071F
- 3SP1 Stainless Steel description conforms to ANSI - K51071F

Size (Inches)	Size (mm)	Gauge
4.5 x 4.5	114 x 114	0.134

Aluminum Geared Continuous Hinges

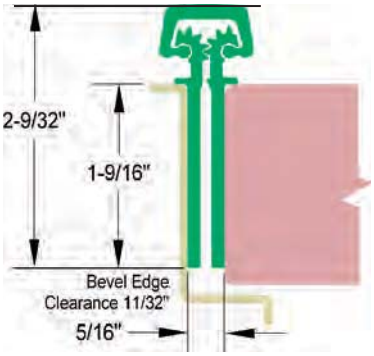
Ives 112HD

Full Mortise



Concealed Hinge
Flush Mounted, No Inset
Non Handed

Standard Mounting Hardware
12-24 X 1/2" Steel Self Tapping Screws
#12 x 1-1/2" Flathead Wood Screws
Optional Security Fasteners Available

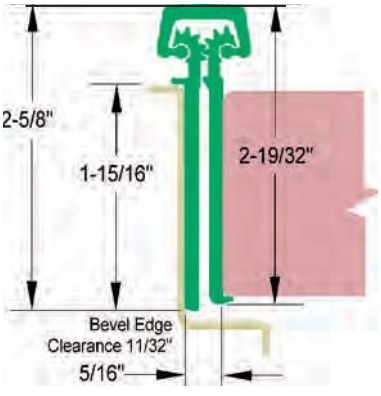


Ives 224HD

Full Mortise

Concealed Hinge
Door Edge Protector
1/16" Door Inset
Non Handed

Standard Mounting Hardware
12-24 X 1/2" Steel Self Tapping Screws
#12 x 1-1/2" Flathead Wood Screws
Optional Security Fasteners Available



Pin and Barrel Continuous Hinges

General Information

Lengths
83", 85", 95", 120"
Custom Lengths are available, consult factory

Barrel Type
Twin Self Lubricated Nylon Bearings with Stainless Steel Pin.

Door Weight
Each hinge can hold a door up to 600 lbs (Rivet nuts recommended) and a max door width of 4'0".

ANSI Certified
All Ives Pin and Barrel Hinges certified to ANSI 156.26, Grade 2.

UL Listed
All Ives Steel and Stainless Steel Pin and Barrel Hinges are tested and approved UL 10C (3 hr).

Field Modifications
All Ives Pin and Barrel Continuous Hinges can be cut to length during installation. If more than 6" from bottom of hinge, additional modifications may be necessary (see instructions for further information).

Electrification Options

Only available for the Full Mortise Hinges

Electric Power Transfer (EPT)
Electric power transfer provides a means of transferring power from the door frame to the edge of a swinging door. Ives Continuous Hinges provide cut outs to fit Von Duprin EPT-2, EPT-10 and PNT-1 devices.

Electrical Through-Wire (TW)
Provides electric power transfer from the frame to the door in order to supply power to an electrified mortise or cylindrical locks, exit devices with electric latch retraction, and/or electric strikes (pairs of doors). Through-wire is rated for 3.5 amp continuous and 16 amp pulse. Offers 4 wire (TW4) or 8 wire (TW8).

Electrical Through-Wire + Monitoring (TWM)
Combines electric through-wire with monitoring the status of the door showing open or closed; offers 4 wire (TW4M) or 8 wire (TW8M).

Exposed Electric Contacts (EC)
Provides electric power from the building to the door when in closed position. Rated for 50V AC/DC at 1 amp. Comes with 2 (EC2) or 4 (EC4) contacts.

Manual Flush Bolts - Wood Doors

FB358 Series for Wood Doors

- When the active door is opened, the lever can be moved to the 'up' position, retracting the bolt and allowing the inactive leaf to be opened. When the inactive leaf is closed, the lever can be moved to the 'down' position, projecting the bolt into the strike and securely locking the inactive leaf.
- Reduces installation costs; requires only simple router mortise at top and bottom corners of doors.
- Door strength and rigidity maintained by tying door faces to reinforcing extensions on guide with machine screws and bearing washers.
- UL Listed for Fire Doors.
- Non-handed.
- Brass Finishes: B3, B4, B5, B10, B10B, B14, B15, B15A, B26, B26D.
- Bolts have 3/4" throw with a 7/8" vertical adjustment.
- Meets ANSI/BHMA A156.16, L04261.
- Optional Dust Proof Strikes—DP1 or DP2, prevents dirt build-up assuring full engagement of bottom bolt.
- Not available for rabbeted door installations.

FB358

Top or Bottom Bolts

- UL Listed 90 minutes on 8'0" x 10'0" Opening

Dimensions:

Body Size: 1" Wide x 6-3/4" Long x 1-3/8" Deep
Guide Size: 1" Wide x 2-1/2" Long x 5/64" Thick
Strike Size: 15/16" Wide x 2-1/4" Long x 5/64" Thick

Dust Proof Strikes

DP1 and DP2 Dust Proof Strikes

- Designed for use with the bottom bolt of all flush bolts.
- Spring-loaded plunger returns to floor or threshold level anytime flush bolt is retracted, eliminating need to clean standard floor strikes.
- Meets ANSI/BHMA 156.16, L14011.
- Finishes: US3, US4, US10, US10B, US26, US26D.

Dimensions:

DP1 Face Plate: 1-7/16" Diameter
DP2 Face Plate: 1-5/8" Wide x 3-1/2" Long x 1/8" Thick
DP1 and DP2 Body: 1-3/16" Diameter x 1-7/8" Deep

DP1

Threshold only.

DP2

Floor and/or threshold.

DP3 and DP4 Dust Proof Strikes

- Designed for use with the bottom bolt of the Ives extension flush bolts on non-fire rated openings. DP3 for installation in thresholds up to 1/4" thick. DP4 includes plate for installation in thresholds or floor.
- 3/4" diameter plunger accepts up to 5/8" diameter round bolts or 1/2" square bolts.
- Can be locked in up position by rotating plunger with screwdriver or coin. Eliminates trapping of spiked heels.
- Made from polished wrought brass.
- Brass Finishes: B3, B4, B5, B10, B10B, B14, B15, B15A, B26, B26D.

Dimensions:

DP3 Faceplate: 1-3/8" Diameter
DP4 Faceplate: 1-5/8" Wide x 3-1/2" Long x 1/8" thick
DP3 and DP4 Body: 1-61/64" Overall Depth, Fits Hole 1-1/16" in Diameter

DP3

Threshold only.

DP4

Floor and/or threshold.

VON DUPRIN® 9847/9947 Concealed Vertical Rod Device

338
Top Strike

385A
Bottom Strike

9847/9947 concealed vertical rod device for use on single or double metal doors, UL listed for Panic Exit Hardware. Devices are ANSI A156.3 – 2001 Grade 1. The 9847 device has a smooth mechanism case and the 9947 device has a grooved case. The concealed vertical rod device is non-handed except when the following device options are used: SD (Special Dogging), or SS (Signal Switch). See Opposite page for available outside trim and device functions.

The 9847/9947 devices are available in the following finishes: US3, US4, US10, US26, US26D, US28, 313AN, 315AN and US32D for the 9847 device only. See page 52 for component finishes and the inside cover for finish chips.

Specifications

Device Functions	Device ships EO/DT/NL. Field selectable. For TP,K,or L remove NL drive screw from device		
Device Lengths	3'	2'4" to 3' (711mm to 914 mm) Door Size	
	4'	2'10" to 4' (864 mm to 1219 mm) Door Size	
Strikes	Top - 338 – Unfinished, Bottom – 385A - Unfinished Optional Strikes – see page 39		
Dogging Feature	Hex key dogging standard		
Dogging Options	CD	Cylinder Dogging	see page 48
	SD	Special Center Case Dogging	see page 48
	LD	Less Dogging	see page 48
Electric Options	LX	Latchbolt Monitor Switch	see page 42
	RX	Pushpad Monitor Switch	see page 42
	RX2	Double Pushpad Monitor Switch	see page 42
	EL	Electric Latch Retraction	see page 43
	SS	Signal Switch	see page 43
	CX	Chexit Delayed Exit	see page 45
	ALK	Alarm Exit Kit	see page 42
Miscellaneous Options	PN	Pneumatic Latch Retraction	see page 48
	LBR	Less Bottom Rod	see page 49
	GBK	Glass Bead Kit	see page 49
	PL	Pullman Latch	see page 49
Fasteners & Sex Bolts (SNB)	Includes 1 ¾" (19mm) – 2 ¼" (57mm) Wood & Metal Doors Optional SNB available for device, see next page for quantities		
Latch Bolt	Deadlocking Top & Bottom Bolt, ⅝" (16mm) throw		
Device Centerline from Finished Floor	39 ⅝" (1006 mm) Standard, Adjustable from 35 ⅝" (905mm) to 49 ⅝" (1260mm)		
Door Undercut	¼" (7mm) maximum		
Center Case Dimensions	8" x 2 ¾" x 2 ⅜" (203mm x 70mm x 60mm)		
Mechanism Case Dimensions	2 ¼" x 2 ¼" (57mm x 57mm)		
Top & Bottom Latch Case	4 ½" x 2 ⅛" x 1 ½" (114mm x 54mm x 38mm)		
Vertical Rods	Round 2 piece adjustable rods Top rod adjustable from 6'8" (2027mm) to 8'4"(2533mm) Bottom rod adjustable 35 ⅝" (905 mm) to 49 ⅝" (1260 mm) Extension rod kits available for doors over 8'4" (2533mm)		
Projection	Pushbar Neutral – 3 ¹³⁄₁₆" (97 mm) Pushbar Depressed – 3 ¹⁄₁₆" (78 mm)		

See page 53 for How to Order specification

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VON DUPRIN® 9847/9947 Concealed Vertical Rod Device Standard Trim

	Exit only	**Dummy Trim** Pull when Dogged	**Night Latch** Key Retracts Latchbolt	**Night Latch** Key Retracts Latchbolt Optional Pull Required	**Thumbturn** Key Locks & Unlocks (Use with DT Trim)	**Thumbturn** Blank Escutcheon Always Operable (No Cylinder) (Use with DT Trim)
Product Description	9847EO 9947EO	9847DT 9947DT	9847NL 9947NL	9847NL-OP 9947NL-OP	9847TL 9947TL	9847TL-BE 9947TL-BE
Trim Description	—	990DT	990NL-R/V	110NL-MD	374T x 990DT	374T-BE x 990DT
Escutcheon Plate Size	—	3" x 14³⁄₁₆" x ³⁄₃₂" *(76x360x2mm)*	3" x 14³⁄₁₆" x ³⁄₃₂" *(76x360x2mm)*	—	2¾" x 10¾" x ²⁷⁄₃₂" *(70x273x21mm)*	2¾" x 10¾" x ²⁷⁄₃₂" *(70x273x21mm)*
Pull Center to Center	—	5½" *(140mm)*	5½" *(140mm)*	—	—	—
Projection	—	2" *(51mm)*	2" *(51mm)*	—	3¼" *(83mm)*	3¼" *(83mm)*
ANSI Function	01	02	03	03	11	—
Cylinder Type	—	—	Rim	Rim	1¼" Mortise	—
Optional Trim (See pages 32 – 34)	x990EO x992EO x994EO x996EO	x991K-DT x992L-DT x994L-DT x996L-DT x696DT x697DT	x991K-NL x992L-NL x994L-NL x996L-NL x696NL x697NL			
Optional #425 Sex Bolt Quantity for Device	6	2	2	6	2	2

	Lever Key Locks & Unlocks	**Lever – Night Latch** Key Retracts Latchbolt	**Lever – Blank Escutcheon** Always operable (No Cylinder)	**Lever Dummy Trim** Pull when Dogged
Product Description	9847L 9947L	9847L-NL 9947L-NL	9847L-BE 9947L-BE	9847L-DT 9947L-DT
Trim Description	996L-CV	996L-NL-CV	996L-BE-CV	996L-DT-CV
Escutcheon Plate Size	2¾" x 10¾" x ²⁷⁄₃₂" *(70x273x21mm)*	2¾" x 10¾" x ²⁷⁄₃₂" *(70x273x21mm)*	2¾" x 10¾" x ²⁷⁄₃₂" *(70x273x21mm)*	2¾" x 10¾" x ²⁷⁄₃₂" *(70x273x21mm)*
Pull Center to Center	—	—	—	—
Projection	2⅞" *(73mm)*	2⅞" *(73mm)*	2⅞" *(73mm)*	2⅞" *(73mm)*
ANSI Function	08	09	—	02
Cylinder Type	Rim	Rim	—	—
Optional Trim (See pages 32 – 34)	x992L x994L	x992L-NL x994L-NL	x992L-BE x994L-BE	x992L-DT x994L-DT
Optional #425 Sex Bolt Quantity for Device	2	2	2	2

For optional trims and functions see pages 32-34

VON DUPRIN® 98/99™ Rim Exit Device

299 Strike

98 and 99 rim exit devices for all types of single and double doors with mullion, UL listed for Panic Exit Hardware. Devices are ANSI A156.3 – 2001 Grade 1. The 98 device has a smooth mechanism case and the 99 device has a grooved case. The rim device is non-handed except when the following device options are used: SD (Special Dogging), -2 (Double Cylinder) or SS (Signal Switch). See Opposite page for available outside trim and device functions. Covers stock hollow metal doors with 86 or 161 cutouts on single doors (may cover cutouts on pairs – consult template).

The 98/99 devices are available in the following finishes: US3, US4, US10, US26, US26D, US28, 313AN, 315AN and US32D for the 98 device only. See page 52 for component finishes and the inside cover for finish chips.

Specifications

Device Functions	Device ships EO/DT/NL. Field selectable. For TP,K,or L remove NL drive screw from device		
Device Lengths	3'	2'4" to 3' (711mm to 914 mm) Door Size	
	4'	2'10" to 4' (864 mm to 1219 mm) Door Size	
Strikes	299 – Dull Black Optional Strikes – see page 39		
Dogging Feature	Hex key dogging standard		
Dogging Options	CD	Cylinder Dogging	see page 48
	SD	Special Center Case Dogging	see page 48
	LD	Less Dogging	see page 48
Electric Options	LX	Latchbolt Monitor Switch	see page 42
	RX	Pushpad Monitor Switch	see page 42
	RX2	Double Pushpad Monitor Switch	see page 42
	E	Electric Locking & Unlocking	see page 44
	EL	Electric Latch Retraction	see page 43
	SS	Signal Switch	see page 43
	CX	Chexit Delayed Exit	see page 45
	ALK	Alarm Exit Kit	see page 42
Miscellaneous Options	PN	Pneumatic Latch Retraction	see page 48
	-2	Double Cylinder	see page 48
	GBK	Glass Bead Kit	see page 49
Fasteners & Sex Bolts (SNB)	Includes 1 ¾" (19mm) – 2 ¼" (57mm) Wood & Metal Doors Optional SNB available for device, see next page for quantities		
Latch Bolt	Deadlocking, ¾" (19mm) throw		
Device Centerline from Finished Floor	39 13⁄16" (1011 mm) 39 11⁄16" (1008 mm) with Mullion		
Center Case Dimensions	8" x 2 ¾" x 2 ⅜" (203mm x 70mm x 60mm)		
Mechanism Case Dimensions	2 ¼" x 2 ¼" (57mm x 57mm)		
Projection	Pushbar Neutral – 3 13⁄16" (97 mm) Pushbar Depressed – 3 1⁄16" (78 mm)		

See page 53 for How to Order specification

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VON DUPRIN® 98/99™ Rim Exit Device Standard Trim

	Exit only	**Dummy Trim** Pull when Dogged 	**Night Latch** Key Retracts Latchbolt 	**Night Latch** Key Retracts Latchbolt Optional Pull Required
Product Description	98EO 99EO	98DT 99DT	98NL 99NL	98NL-OP 99NL-OP
Trim Description	—	990DT	990NL-R/V	110NL-MD 110NL-WD
Escutcheon Plate Size	—	3" x 14³⁄₁₆" x ³⁄₃₂" *(76x360x2mm)*	3" x 14³⁄₁₆" x ³⁄₃₂" *(76x360x2mm)*	—
Pull Center to Center	—	5½" *(140mm)*	5½" *(140mm)*	—
Projection	—	2" *(51mm)*	2" *(51mm)*	—
ANSI Function	01	02	03	03
Cylinder Type	—	—	Rim	Rim
Optional Trim (See pages 32 – 34)	x990EO x992EO x994EO x996EO	x991K-DT x992L-DT x994L-DT x996L-DT x696DT x697DT	x991K-NL x992L-NL x994L-NL x996L-NL x696NL x697NL	
Optional #425 Sex Bolt Quantity for Device	6	2	2	6

	Lever Key Locks & Unlocks 	**Lever – Night Latch** Key Retracts Latchbolt 	**Lever – Blank Escutcheon** Always operable (No Cylinder) 	**Lever Dummy Trim** Pull when Dogged
Product Description	98L 99L	98L-NL 99L-NL	98L-BE 99L-BE	98L-DT 99L-DT
Trim Description	996L-R/V	996L-NL-R/V	996L-BE-R/V	996L-DT-R/V
Escutcheon Plate Size	2¾" x 10¾" x ²⁷⁄₃₂" *(70x273x21mm)*	2¾" x 10¾" x ²⁷⁄₃₂" *(70x273x21mm)*	2¾" x 10¾" x ²⁷⁄₃₂" *(70x273x21mm)*	2¾" x 10¾" x ²⁷⁄₃₂" *(70x273x21mm)*
Pull Center to Center	—	—	—	—
Projection	2⅞" *(73mm)*	2⅞" *(73mm)*	2⅞" *(73mm)*	2⅞" *(73mm)*
ANSI Function	08	09	—	02
Cylinder Type	Rim	Rim	—	—
Optional Trim (See pages 32 – 34)	x992L x994L	x992L-NL x994L-NL	x992L-BE x994L-BE	x992L-DT x994L-DT
Optional #425 Sex Bolt Quantity for Device	2	2	2	2

For optional trims and functions see pages 32-34

VON DUPRIN® 98-F/99-F Rim Fire Exit Device

299F Strike

499F Strike
With 9854/9954
Mullion

98-F and 99-F rim fire exit devices for all types of single doors up to 4´ x 10´ *(1219mm x 3048mm)* or 8´ x 10´ *(2438mm x 3048mm)* double doors with 9954 or 9854 mullion, UL listed for Fire Exit Hardware. See page 41 for detailed information on UL listed fire exit hardware label and door opening size information. Devices are ANSI A156.3 – 2001 Grade 1. The 98-F device has a smooth mechanism case and the 99-F device has a grooved case. The rim device is non-handed except when the following device options are used: -2 (Double Cylinder) or SS (Signal Switch). See Opposite page for available outside trim and device functions.

The 98-F/99-F devices are available in the following finishes: US3, US4, US10, US26, US26D, US28, 313AN, 315AN and US32D for the 98-F device only. See page 52 for component finishes and the inside cover for finish chips.

Specifications

Device Functions	Device ships EO/DT/NL. Field selectable. For TP,K,or L remove NL drive screw from device	
Device Lengths	3' 2'4" to 3' (711mm to 914 mm) Door Size 4' 2'10" to 4' (864 mm to 1219 mm) Door Size	
Strikes	299F – Dull Black, 499F with Mullions Optional Strikes – see page 39	
Dogging Feature	No Mechanical Dogging, EL option available	
Electric Options	LX Latchbolt Monitor Switch RX Pushpad Monitor Switch RX2 Double Pushpad Monitor Switch E Electric Locking & Unlocking EL Electric Latch Retraction SS Signal Switch CX Chexit Delayed Exit ALK Alarm Exit Kit	see page 42 see page 42 see page 42 see page 44 see page 43 see page 43 see page 45 see page 42
Miscellaneous Options	PN Pneumatic Latch Retraction -2 Double Cylinder GBK Glass Bead Kit	see page 48 see page 48 see page 49
Fasteners & Sex Bolts (SNB)	Includes 1 ¾" (19mm) – 2 ¼" (57mm) Wood & Metal Doors Optional SNB available for device, see next page for quantities Optional SLM Blocking Pkg for wood doors with SLM blocking SNB required for wood doors, unless SLM Blocking Pkg specified	
Latch Bolt	Deadlocking, ¾" (19mm) throw	
Device Centerline from Finished Floor	39 13⁄16" (1011 mm) 39 11⁄16" (1008 mm) with Mullion	
Center Case Dimensions	8" x 2 ¾" x 2 ⅜" (203mm x 70mm x 60mm)	
Mechanism Case Dimensions	2 ¼" x 2 ¼" (57mm x 57mm)	
Projection	Pushbar Neutral – 3 13⁄16" (97 mm) Pushbar Depressed – 3 1⁄16" (78 mm)	

See page 53 for How to Order specification

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VON DUPRIN® 98-F/99-F Fire Exit Rim Device Standard Trim

	Exit only	**Dummy Trim** Pull when Dogged (Not recommened for Fire Device) 	**Night Latch** Key Retracts Latchbolt 	**Night Latch** Key Retracts Latchbolt Optional Pull Required
Product Description	98EO-F 99EO-F	— —	98NL-F 99NL-F	98NL-OP-F 99NL-OP-F
Trim Description	—	990DT	990NL-R/V	110NL-MD 110NL-WD
Escutcheon Plate Size	—	3" x 14³⁄₁₆" x ³⁄₃₂" *(76x360x2mm)*	3" x 14³⁄₁₆" x ³⁄₃₂" *(76x360x2mm)*	—
Pull Center to Center	—	5½" *(140mm)*	5½" *(140mm)*	—
Projection	—	2" *(51mm)*	2" *(51mm)*	—
ANSI Function	01	02	03	03
Cylinder Type	—	—	Rim	Rim
Optional Trim (See pages 32 – 34)	x990EO x992EO x994EO x996EO	x991K-DT x992L-DT x994L-DT x996L-DT x696DT x697DT	x991K-NL x992L-NL x994L-NL x996L-NL x696NL x697NL	
#425 SNB optional-HMD Req. WD w/o SLM Pkg.	6	2	2	6
#825 SNB Req. WD w/o SLM Pkg.	2	2	2	2
#425 SNB Req. w/ 499F	2	2	2	2

	Lever Key Locks & Unlocks 	**Lever – Night Latch** Key Retracts Latchbolt 	**Lever – Blank Escutcheon** Always operable (No Cylinder) 	**Lever Dummy Trim** Pull when Dogged (Not recommened for Fire Device)
Product Description	98L-F 99L-F	98L-NL-F 99L-NL-F	98L-BE-F 99L-BE-F	— —
Trim Description	996L-R/V	996L-NL-R/V	996L-BE-R/V	996L-DT-R/V
Escutcheon Plate Size	2¾" x 10¾" x ²⁷⁄₃₂" *(70x273x21mm)*	2¾" x 10¾" x ²⁷⁄₃₂" *(70x273x21mm)*	2¾" x 10¾" x ²⁷⁄₃₂" *(70x273x21mm)*	2¾" x 10¾" x ²⁷⁄₃₂" *(70x273x21mm)*
Pull Center to Center	—	—	—	—
Projection	2⅞" *(73mm)*	2⅞" *(73mm)*	2⅞" *(73mm)*	2⅞" *(73mm)*
ANSI Function	08	09	—	02
Cylinder Type	Rim	Rim	—	—
Optional Trim (See pages 32 – 34)	x992L x994L	x992L-NL x994L-NL	x992L-BE x994L-BE	x992L-DT x994L-DT
#425 SNB optional-HMD Req. WD w/o SLM Pkg.	2	2	2	2
#825 SNB Req. WD w/o SLM Pkg.	2	2	2	2
#425 SNB Req. w/ 499F	2	2	2	2

For optional trims and functions see pages 32-34

Knob and Thumbpiece Trim

	Knob Key Locks & Unlocks	**Knob – Night Latch** Key Retracts Latchbolt	**Knob – Blank Escutcheon** Alwaya Operable (No Cylinder)	**Knob – Dummy Trim** Pull when Dogged	**Thumbpiece** Key Locks & Unlocks	**Thumbpiece Blank Escutcheon** Always Operable (No Cylinder)
Trim Description	991K	991K-NL	991K-BE	991K-DT	990TP	990TP-BE
Escutcheon Plate Size	2¾" x 10¾" x 27/32" (*70x273x21mm*)	2¾" x 10¾" x 27/32" (*70x273x21mm*)	2¾" x 10¾" x 27/32" (*70x273x21mm*)	2¾" x 10¾" x 27/32" (*70x273x21mm*)	2¾" x 10¾" x 27/32" (*70x273x21mm*)	2¾" x 10¾" x 27/32" (*70x273x21mm*)
Pull Center to Center	—	—	—	—	5½" (*140mm*)	5½" (*140mm*)
Projection	3¼" (*83mm*)	3¼" (*83mm*)	3¼" (*83mm*)	3¼" (*83mm*)	2" (*51mm*)	2" (*51mm*)
ANSI Function	08	09	—	02	05	05
Cylinder Type						
Rim or Vertical Rod Device	Rim	Rim	—	—	Rim	—
Mortise Lock Device	1¼" Mortise	1¼" Mortise			1¼" Mortise	—
#425 SNB optional-HMD Req. WD w/o SLM Pkg.	2	2	2	2	2	2
#825 SNB Req. WD w/o SLM Pkg. F Rim device ONLY	2	2	2	2	2	2
#425 SNB Req. w/ 499F	2	2	2	2	2	2

Lever Design Options

#01

#02

#03

#05

#06 Standard

#07

#12 Handed

#16

#17

#18

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Pneumatic Controlled Exit Devices–PN

The PN feature provides remote latch bolt retraction in hazardous areas where electrically operated devices would not be permitted. The pneumatic solenoid will retract the latch bolt for momentary or prolonged periods. PN exit devices are particularly suited for use with automatic door operators. The PN feature is available on both Panic and Fire Exit Hardware devices.

The PN feature includes a special actuating linkage that gives building owners the option of mechanically or pneumatically dogging the exit device. If manual hex-key dogging is required, specify HD-PN (Dogging the device, whether mechanically or pneumatically, makes the device function as a push/pull unit and reduces the wear on its moving parts.) If cylinder dogging is required, the standard cylinder dogging is not available, but special center case dogging is available, specify SD-PN. SD-PN is not available on the 9875 or 9975 devices.

When activated pneumatically, the latch bolt(s) of the exit device retract in ½ to 1 ½ seconds. This pneumatic operation uses air pressure ranging from 50 to 100 pounds per square inch.

This product will function only when it is part of a pneumatic system (air compressor, air lines, pneumatic system, etc.). Contact LCN for correct control boxes

To Order, Specify:

- Standard — Use prefix PN, example PN99NL
- Hex Key Dogging — Use prefix HD-PN, example HD-PN99NL
- Special Center Case Dogging — Use prefix SD-PN, example SD-PN99NL

Double Cylinder – 2

Double cylinder features an inside key cylinder which locks or unlocks the outside trim and an outside key cylinder which retracts the latch bolt only(Night Latch Function) . Available on rim or mortise lock device.

Rim requires two rim type cylinders. Mortise device requires 1 rim cylinder and 1 mortise cylinder wit a straight cam. (Schlage cam reference B502-191.)

Available functions are thumbpiece, knob or lever.

To Order, Specify:

1. Suffix-2 with device/trim number, example 99TP-2.
2. Handing required, LHR or RHR.

Less Dogging – LD

Less Dogging is available in all 98/99™ Panic Exit devices to remove the dogging option.

To Order, Specify:

- Use prefix LD, example LD99L

Special Center Case Dogging – SD

Special cylinder dogging in the center case is available for Chexit, EL, ALK panic devices to allow for mechanical push/pull operation. With this option, the latchbolt is held retracted and pushbar is still operable. Specify handing — RHR or LHR.

SD requires 1 ¼" (32mm) mortise cylinder with a straight cam. (Schlage cam reference B502-191.)

Note: Available on Rim and Vertical Rod Panic Exit Devices only.

To Order, Specify:

- Use prefix SD, example SD99L

Cylinder Dogging — CD

Cylinder dogging is available on all 98/99™ Panic Exit devices to replace the standard hex key dogging. Unit requires a standard 1¼" *(32mm)* mortise cylinder with a straight cam (Schlage Cam B502-191 reference).

To Order, Specify:

- Use prefix, CD, example CD99L

Cylinder Dogging Kit — CDK

For field conversion, a cylinder dogging conversion kit is available. Cannot be added to fire exit hardware.

Order: 33A/99CDK or **35A/98CDK**, specify finish.

Hex Key Dogging Kit — HDK

For field conversion, a hex key dogging conversion kit is available. Cannot be added to fire exit hardware.

Order: 33A/99HDK or **35A/98HDK**, specify finish.

Braille, Embossed and Knurled Touchpads

Braille touchpad is embossed with the message “CAUTION STAIRWELL” in braille and raised letters provides assistance to person with impaired vision. Letters are ½" (13mm) high and braille is #2, raised height is 3⁄32" (2mm). Other messages are available on special order, limited to 20 characters per line.

Embossed touchpad is embossed with the word “PUSH”
Knurled touchpad is to provide warning to person with impaired vision.

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Electric Latch Retraction — EL

The EL feature allows for the remote unlatching of exit devices. A control station operator can flip a switch to retract the latch bolt and immediately change an exit door to push-pull operation. A powerful, continuous duty solenoid retracts the latch bolt, either for momentary unlatching, or for extended periods of time. The EL feature is an alternative to manual dogging.

If manual hex-key dogging is required, specify HD-EL. If cylinder dogging is required, the standard cylinder dogging is not available, but special center case dogging is available, specify SD-EL. SD-EL is not available on the 9875 or 9975 devices.

EL devices are also useful with automatic door operators, and may be applied to fire-rated applications when under the control of an **automatic fire alarm system.**

UL approved for Class II circuit applications.

The EL option does not include the power transfer from door to frame, the power supply, or the control operator. Refer to EPT-2 power transfer and the PS873 power supply.

The PS873 with the 871-2 option card is minimum option card required. Other option cards available for other functions, see PS873 power supply for additional information.

Solenoid Specifications:

Continuous Duty — 24 VDC

Current Inrush — 16 Amps

Current Holding — 0.3 Amps

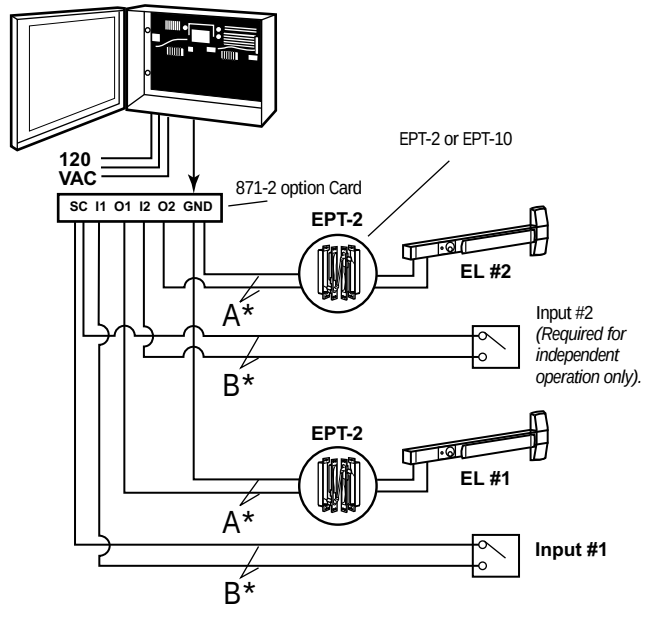
To order, specify:

Standard — Use prefix EL, example EL99L.
Hex Key dogging — Use prefix HD-EL, example HD-EL99L
Special Center Case Dogging — Use prefix SD-EL, example SD-EL99L

Popular EL Application

Power Supply PS873-2

Electric Power Transfer EPT-2 or EPT-10



Signal Switch — SS

Monitors pushpad and latch bolt

The SS feature is used to signal the unauthorized use of an opening. This device is equipped with two internal SPDT switches. One switch monitors both the pushpad and the latch bolt assembly, making the latch bolt tamper resistant, for positive security. An additional SPDT switch is connected to the 1 ¼" *(32mm)* mortise with straight cam for alarm "bypass." (Schlage cam reference B502-191). The device can be connected to a security console, or may be used as a single door alarm when used with a horn and power supply. A continuous current electric transfer must be used for transferring power from the frame to the door.

Pushpad reads:
"EMERGENCY EXIT ONLY – PUSH TO OPEN AND SOUND ALARM."
Pushpad is only available in US32D finish with red silk-screened lettering.

The SS mortise lock device is furnished with both the signal switch device and the SS7500 mortise lock. The SS7500 mortise lock has the versatility and advantages of the 7500 lock with the addition of signalling functions to monitor latch bolt operation and the trim locking function. The SS7500 mortise lock is supplied standard with the SS mortise lock device.

To Order, Specify:

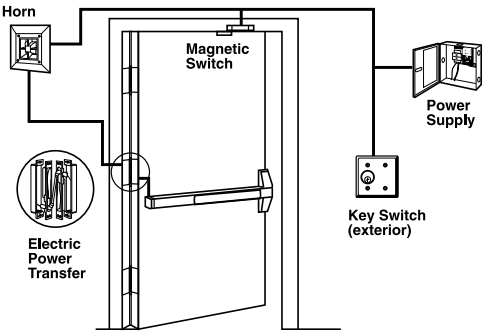
1. Prefix SS, example SS99L.
2. Handing Required, LHR or RHR.

Electrical Ratings:

Up to 2.0 AMPS @ 24VDC

Popular SS Application

Unauthorized use of this opening will activate the local horn.
The key switch permits inhibiting this system for authorized entry.



EL Device Wire Selection Size

A*

Run Length	EL Device w/EPT or Door Loop
0-100 ft.	14 gauge
100-200 ft.	12 gauge

A*

Run Length	EL Device w/Electric Hinge/Pivot
0-75 ft.	14 gauge
75-150 ft.	12 gauge

B*

Wire Selection	Switch Wire Size
1200 ft. Max.	18 gauge

VON DUPRIN® 98/99™ Optional Lever Trim

996L Trim

The new 996L Breakaway™ trim has become the standard lever trim offering on the 98L/99L series devices. The 996L trim blends two successful Von Duprin designs; the look of the traditional 992L lever trim and the security and durability of the Von Duprin Breakaway™ design. The Breakaway™ design is especially effective in areas where vandalism to door hardware is a problem. The design intent is to discourage costly repairs from becoming necessary. The Breakaway™ feature is not available on the NL (night-latch) or DT (dummy trim) versions.

Optional Lever Trims – 992

	Lever Key Locks and Unlocks	**Lever – Night Latch** Key Retracts Latchbolt	**Lever – Blank Escutcheon** Always Operable (No Cylinder)	**Lever – Dummy Trim** Pull when Dogged (Not recommended for Fire Device)
Trim Description	992L	992L-NL	992L-BE	992L-DT
Escutcheon Plate Size	2¾" x 10¾" x 27/32" *(70x273x21mm)*	2¾" x 10¾" x 27/32" *(70x273x21mm)*	2¾" x 10¾" x 27/32" *(70x273x21mm)*	2¾" x 10¾" x 27/32" *(70x273x21mm)*
Pull Center to Center	—	—	—	—
Projection	2⅞" *(73mm)*	2⅞" *(73mm)*	2⅞" *(73mm)*	2⅞" *(73mm)*
ANSI Function	08	09	—	02
Cylinder Type				
Rim or Vertical Rod Device	Rim	Rim	—	—
Mortise Lock Device	1¼" Mortise	1¼" Mortise	—	—

992L Trim

The 992L trim series provides the traditional Von Duprin escutcheon design. Special versions available for doors of over 2 ¼" *(57mm)* thicknesses. Additionally available in an RX and E-locking/unlocking version.

Optional Lever Trims – 994

	Lever Key Locks and Unlocks	**Lever – Night Latch** Key Retracts Latchbolt	**Lever – Blank Escutcheon** Always Operable (No Cylinder)	**Lever – Dummy Trim** Pull when Dogged (Not recommended for Fire Device)
Trim Description	994L	994L-NL	994L-BE	994L-DT
Escutcheon Plate Size	2¾" x 9¼" x 27/32" *(70x235x21mm)*	2¾" x 9¼" x 27/32" *(70x235x21mm)*	2¾" x 9¼" x 27/32" *(70x235x21mm)*	2¾" x 9¼" x 27/32" *(70x235x21mm)*
Pull Center to Center	—	—	—	—
Projection	2⅞" *(73mm)*	2⅞" *(73mm)*	2⅞" *(73mm)*	2⅞" *(73mm)*
ANSI Function	08	09	—	02
Cylinder Type				
Rim or Vertical Rod Device	Rim	Rim	—	—
Mortise Lock Device	1¼" Mortise	1¼" Mortise	—	—

VON DUPRIN® 98/99™ Exit Rim Device

Optional Lever Trims – 696/697

	Dummy Trim Pull when Dogged (Not recommended for Fire Device)	**Dummy Trim** Pull when Dogged (Not recommended for	**Night Latch** Key Retracts Latchbolt	**Night Latch** Key Retracts Latchbolt
Trim Description	696DT	697DT	696NL	697NL
Escutcheon Plate Size	1⅝" x 13½" x 3⁄16" (*41x343x5mm*)	1⅝" x 13½" x 3⁄16" (*41x343x5mm*)	1⅝" x 13½" x 3⁄16" (*41x343x5mm*)	1⅝" x 13½" x 3⁄16" (*41x343x5mm*)
Pull Center to Center	5½" (*140mm*)	5½" (*140mm*)	5½" (*140mm*)	5½" (*140mm*)
Projection	2⅛" (*52mm*)	3" (*76mm*)	2⅛" (*52mm*)	3" (*76mm*)
ANSI Function	02	02	03	03
Cylinder Type				
Rim or Vertical Rod Device	—	—	Rim	Rim
Mortise Lock Device	—	—	1¼" Mortise	1¼" Mortise
#425 SNB optional-HMD Req. WD w/o SLM Pkg.	2	2	2	2
#825 SNB Req. WD w/o SLM Pkg.	2	2	2	2
#425 SNB Req. w/ 499F	2	2	2	2

Optional Lever Trims – 696/697

	Thumbpiece Key Locks & Unlocks	**Thumbpiece** Key Locks & Unlocks	**Thumbpiece - Blank Escutcheon** Always Operable (No Cylinder)	**Thumbpiece - Blank Escutcheon** Always Operable (No Cylinder)
Trim Description	696TP	697TP	696TP-BE	697TP-BE
Escutcheon Plate Size	1⅝" x 13½" x 3⁄16" (*41x343x5mm*)	1⅝" x 13½" x 3⁄16" (*41x343x5mm*)	1⅝" x 13½" x 3⁄16" (*41x343x5mm*)	1⅝" x 13½" x 3⁄16" (*41x343x5mm*)
Pull Center to Center	5½" (*140mm*)	5½" (*140mm*)	5½" (*140mm*)	5½" (*140mm*)
Projection	2⅛" (*52mm*)	3" (*76mm*)	2⅛" (*52mm*)	3" (*76mm*)
ANSI Function	05	05	05	05
Cylinder Type				
Rim or Vertical Rod Device	Rim	Rim	—	—
Mortise Lock Device	1¼" Mortise	1¼" Mortise	—	—
#425 SNB optional-HMD Req. WD w/o SLM Pkg.	2	2	2	2
#825 SNB Req. WD w/o SLM Pkg.	2	2	2	2
#425 SNB Req. w/ 499F	2	2	2	2

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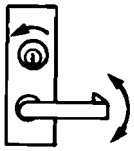
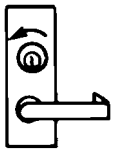
VON DUPRIN® 98/99™ Trim Operation Selection

Operation Options

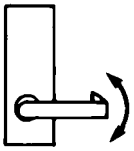
Lever and Knob Operations



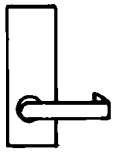
Standard operation, key locks and unlocks lever or knob. e.g., 996L (Classroom)



Night latch, key retracts latch bolt. Lever or knob is rigid. Use NL suffix, e.g. 996LNL. (Storeroom)



Blank escutcheon, lever or knob always active. Use BE suffix, e.g., 996L-BE. (Passage)



Dummy trim, lever or knob rigid for pull operation. Use DT suffix, e.g., 996L-DT.

374T/376T Series Thumbturn Control
(Shown with 990DT Trim)

Standard operation, key locks and unlocks thumbturn. Optional operation, key unlocks thumbturn, re-locks when key is removed. This operation is created by changing the cylinder plate included with control. Use 1¼" mortise cylinder with a straight cam. Schlage cam reference B502-191.

HL6 Exit Device Trim Option

Von Duprin and Glynn-Johnson have collaborated on an exit device trim that answers the problem of accessibility and performance.Using the Von Duprin 98/9975 mortise lock exit device along with the Glynn-Johnson HL6 Push/Pull latch, Ingersoll-Rand has created an exit device with mortise lock durability that utilizes a fully ADA compliant Pull paddle trim. The 98/9975HL device is available in all standard architectural finished and can be found in the Von Duprin device price list for easy ordering.

Vandal Resistant Trim

VR910 & VR914 Series

Features:

- Stainless Steel construction, 11 gage (0.120" thick)
- Thru-bolts and rugged mounting screws for maximum fastening strength.
- 10-24 screws supplied with VR910 & VR914 models.
- Built-in lock protector prevents vandalism to mortise latchbolt (available on certain models).
- Extra-tough stainless steel cylinder collar prevents pipe wrench or similar tool from damaging cylinder. Tapered design prevents side impacts from transferring directly to cylinder. Collar spins freely.
- Furnished with mounting screws for door thicknesses of 1¾" to 2¼"
- Finish: US32D
- VR910 grip coated in black plastisol for softer touch and resilience to temperature extremes. Grip designed for comfortable operation.
- VR914 grip in all stainless steel.
- Meets ANSI/BHMA 156.13, Trim Security Test and California State Accessibility Standards Title 24.
- 1½" (38mm) clearence from grip to door
- 1⅞" (48mm) total projection from door
- Consult IVES catalog for specification/ordering information.

Model	For Use With	Size
VR910DT & VR914DT	98/99 Rim or Vert. Rod Device	5¼" (133mm) w x 11" (279mm) h
VR910NL & VR914NL	98/99 Rim or Vert. Rod Device	5¼" (133mm) w x 11" (279mm) h
VR910M-DT & VR914M-DT	9875/9975 Mortise Device	7¼" (184mm) w x 11" (279mm) h
VR910M-NL & VR914M-NL	9875/9975 Mortise Device	7¼" (184mm) w x 11" (279mm) h

Nomenclature – How To Order

EL 99 27 -L -16 -F LBR 3' US3 RHR

SD — Special Dogging - Panic Only
CD — Cylinder Dogging - Panic Only
CX — Chexit
E — Electric Locking (Rim or Mortise)
EL — Electric Latch Retraction
LX — Latch Bolt Monitoring
PL — Pullman Latch
PN — Pneumatic Latch Retraction
RX — Request to Exit
RX2 — Double Request to Exit
SS — Signal Switch

98 — Series 98-smooth
99 — Series 99-grooved

None — Rim Device
27 — Surface Mounted Vertical Rod Device
47 — Concealed Vertical Rod Device
47WDC — Concealed Vertical Rod Wood Door Device
48 — Concealed Vertical Rod Device
57 — Three Point Latch Device
75 — Mortise Lock Device

DT — Dummy Trim
EO — Exit Only
K — Knob (Classroom)
K-BE — Knob-Blank Escutcheoon
K-DT — Knob-Dummy Trim
K-NL — Rigid Knob - NightLatch (Key retracts Latchbolt)
L — Lever (Classroom)
L-BE — Lever-Blank Escutcheon
L-DT — Lever-Dummy Trim
L-NL — Rigid Lever - Night Latch (Key retracts Latchbolt)
NL — Night Latch (Key retracts Latchbolt)
NL-OP — Night Latch Cylinder Assembly — Optional Pull
TL — Turn Lever
TL-BE — Turn Lever-Blank Escutcheon
TP — Thumbpiece
TP-BE — Thumbpiece-Blank Escutcheon

XX — Lever Style 06 standard
optional — 01, 02, 03, 05, 07, 12, 16, 17, 18

F — Fire Exit Device

LBR — Less Bottom Rod
2 — Double Cylinder (Rim & Mortise Only)
ALK — Standard Alarm Kit
ALK-EI — External Inhibit Alarm Kit
ALK-AR1 — Auto-Reset 1½ minute Alarm Kit
ALK-AR3 — Auto-Reset 3 minute Alarm kit
ALK-AR6 — Auto-Reset 6 minute Alarm Kit

3' — 3' Device (2' 4" — 3' Door Size)
4' — 4' Device (2' 10" — 4' Door Size)

US3, US4, US10, US26, US26D, 313AN, 315AN
US32D – 98 ONLY

– HR — Handing – RHR or LHR

VON DUPRIN® E996L Electrified Breakaway™ Lever Trim

E996L electrified Breakaway lever trim provides remote locking and unlocking capabilities while incorporating the patented Breakaway trim design.

The 24VDC solenoid can be energized from a distant controller, thus allowing access control of the opening. The control of stairwells in high-rise buildings is a common application for this trim.

When electrically unlocked the unit operates as a normal lever trim. When electrically locked, the lever feels locked, but when more than 35 pounds of torque pressure is applied, the Breakaway lever feature engages.

The E996L is provided standard in a fail safe (FS) condition, but can be field converted to a fail secure (FSE) where allowed. The trim can be ordered with a device, added to an existing 98/99 series device application, or a conversion kit can be added to an existing 996L Breakaway lever trim. On new construction applications, the E996L trim will require less door prep.

The E996L is available with a blank escutcheon (BE) function, or with a cylinder for night latch function.

The E996L electrified trim replaces the current "E" electric feature on 98/99 series rim devices. Consult factory for requirements.

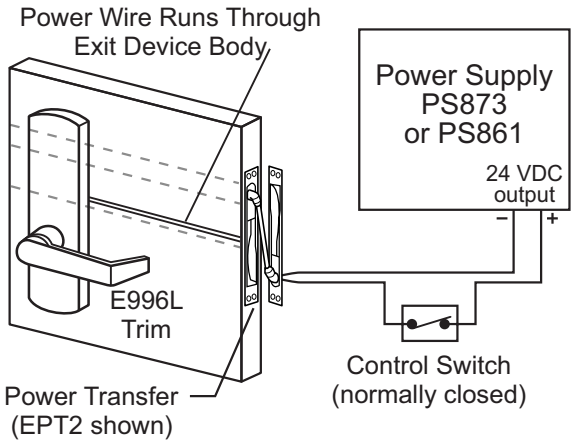
SPECIFICATIONS
Solenoid – Continuous Duty 24VDC
Solenoid Draw – 0.22 amp

To Order, Specify:

1. Use "E" prefix, example E996L.
   When ordering with device specify trim series with "E" prefix, example 9927L-BE 3´ US26D E996.
2. Device type, R/V (rim/surface or concealed vertical rod) or M (mortise).
3. RHR is furnished standard if not specified.
   Field reversible.
4. Lever style (06 lever is furnished standard).
5. Finish: US3, US4, US10, US10B, SP313, US26, US26D, SPBLK, US15

E996L ELECTRICAL WIRING

- Power input for E996L is 24VDC
- Two wires on trim are non-polarized (18 AWG minimum)

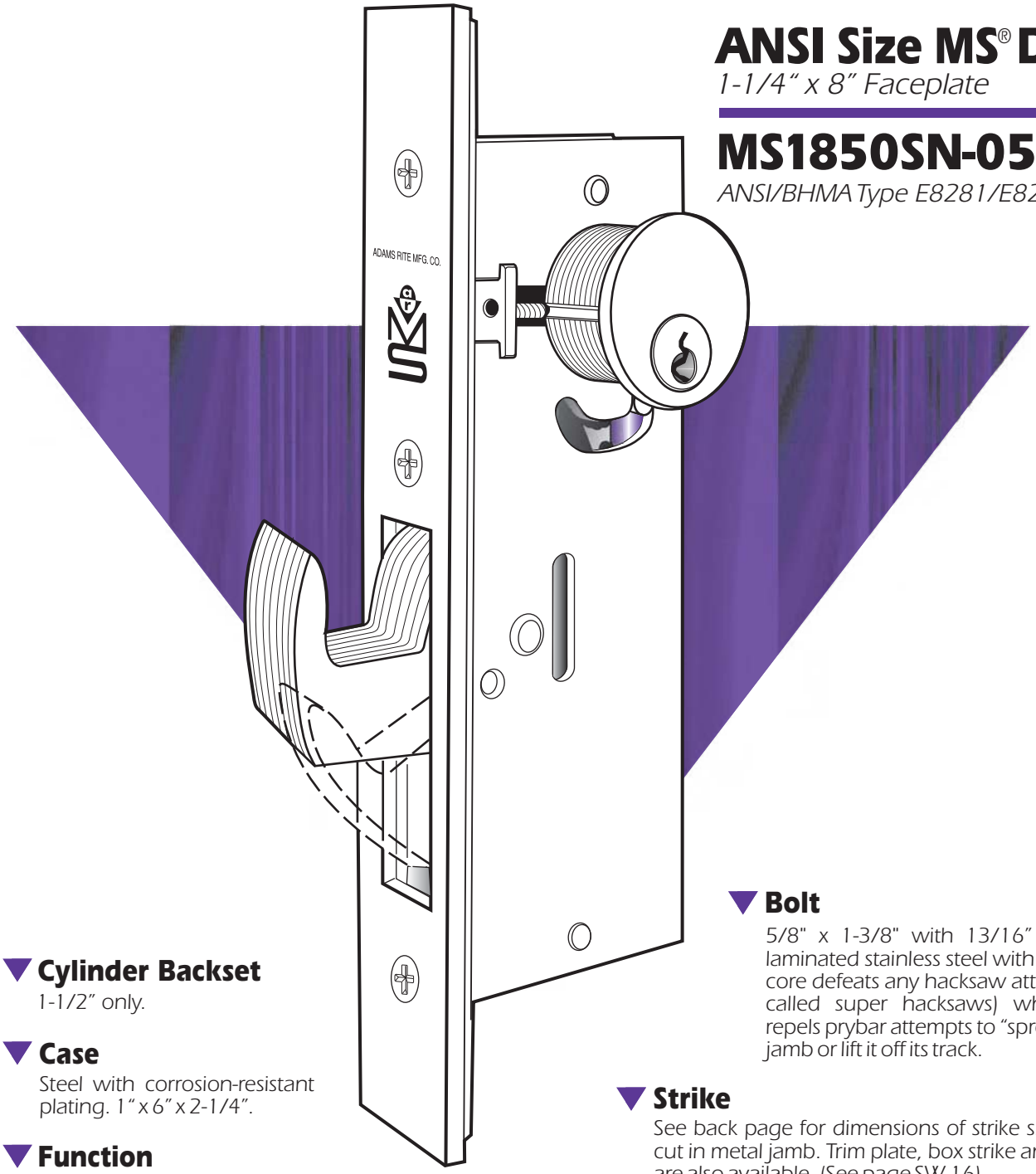


LEVER DESIGN OPTIONS

#01 **#02** **#03** **#05** **#06 Standard**

#07 **#12 Handed** **#16** **#17** **#18**

SLIDING DOOR HARDWARE



ANSI Size MS® Deadbolt

1-1/4" x 8" Faceplate

MS1850SN-050 Series

ANSI/BHMA Type E8281/E8291 (Grade1)

Cylinder Backset

1-1/2" only.

Case

Steel with corrosion-resistant plating. 1" x 6" x 2-1/4".

Function

For hollow metal or wood sliding doors prepared for hardware according to the specifications of the American National Standards Institute, this MS® deadbolt provides maximum security and ease of installation. Its standard 1-1/2" backset dimension provides adequate clearance for the deep jamb "pocket" of many commercial and industrial entrances. Also useful for swinging doors closing against jambs too shallow for the 1-3/8" throw of the MS1850SN swinging door deadbolt.

Bolt

5/8" x 1-3/8" with 13/16" throw. Eight-ply laminated stainless steel with Alumina Ceramic core defeats any hacksaw attack (including so-called super hacksaws) while hook shape repels prybar attempts to "spread" door from its jamb or lift it off its track.

Strike

See back page for dimensions of strike slot which can be cut in metal jamb. Trim plate, box strike and armored strike are also available. (See page SW-16).

Operation

360° turn of key or thumbturn throws or retracts the counterbalanced bolt. Key can be removed only when bolt is in a positively locked or unlocked position. Lock accepts any standard 1-5/32" diameter mortise cylinder or thumbturn from either or both sides. Cylinder must have MS® dimensioned cam. (See page SW-30).

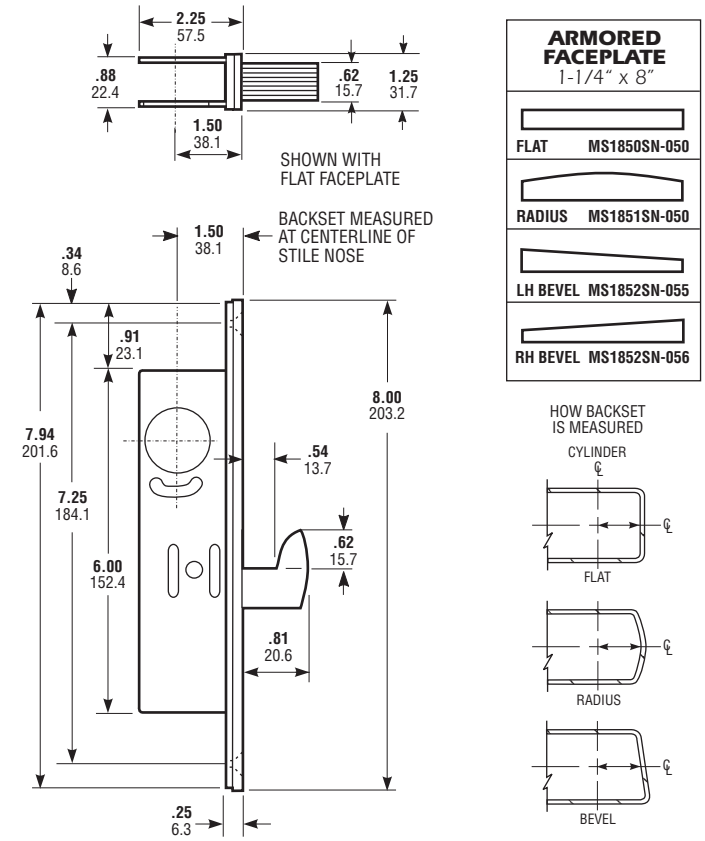
ADAMS RITE MANUFACTURING CO.

260 Santa Fe Street
Pomona, California 91767
(800) 872-3267 Fax: (800) 232-7329

MS1850SN-050 ANSI Size Deadbolt

DIMENSIONS

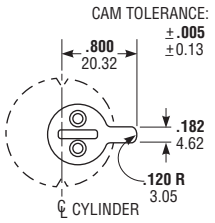
INCHES
MILLIMETERS
Nominal, subject to tolerance extremes.



ARMORED FACEPLATE
1-1/4" x 8"

FLAT	MS1850SN-050
RADIUS	MS1851SN-050
LH BEVEL	MS1852SN-055
RH BEVEL	MS1852SN-056

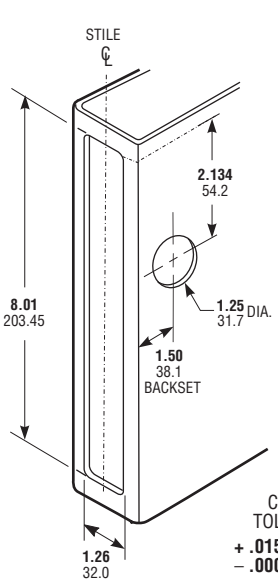
HOW BACKSET IS MEASURED



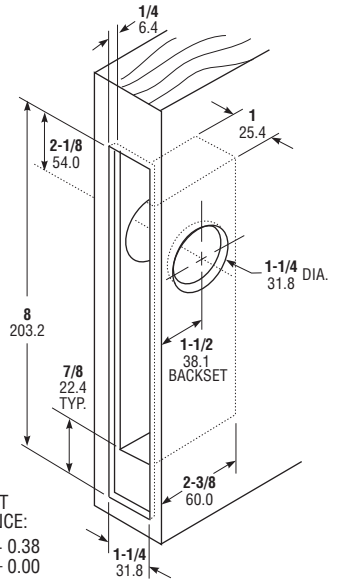
Cylinder Cam

MS1850SN-050 Series locks are operable by any standard 1-5/32" diameter mortise cylinder with special MS® cam dimensioned as shown. Cylinders with MS® cams can be readily obtained from most cylinder manufacturers. See page SW-30 for cylinder make and trim ring information.

INSTALLATION

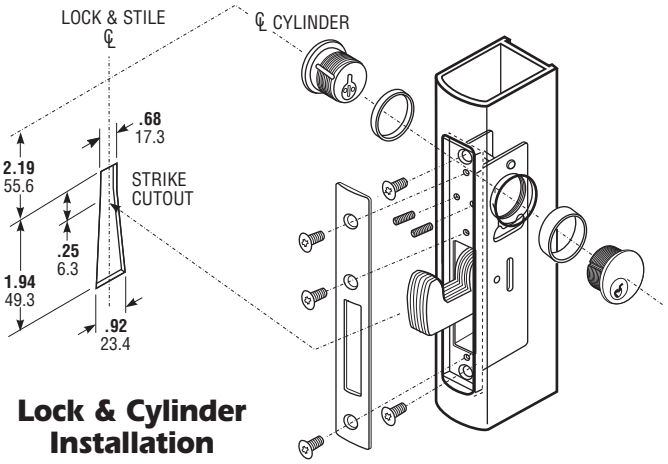


Stile Preparation



CUTOUT TOLERANCE:
+ .015 + 0.38
– .000 – 0.00

Wood Door Preparation



Lock & Cylinder Installation

HOW TO ORDER

Specify quantity and the following information.
Order related hardware separately.

Faceplate Shape	
1850SN	Flat
1851SN	Radius
1852SN	Bevel

Handing	
455	LH or RHR
456	RH or LHR
450	Non-Handed*

MS 1850SN - 450

**Any flat or radius face.*

Faceplates available in standard Satin Aluminum finish. Consult factory about special finishes.

OPTIONS

Choice of faceplate finish and shape (flat, radiused or bevel cross-section to match door nose) must be specified.

STANDARD PACKAGE

Individually boxed with machine screws for mounting. Cylinders and/or thumbturn available at extra cost. Shipping weight: 1-1/2 lbs. Also available in a 20 unit pack for volume users.

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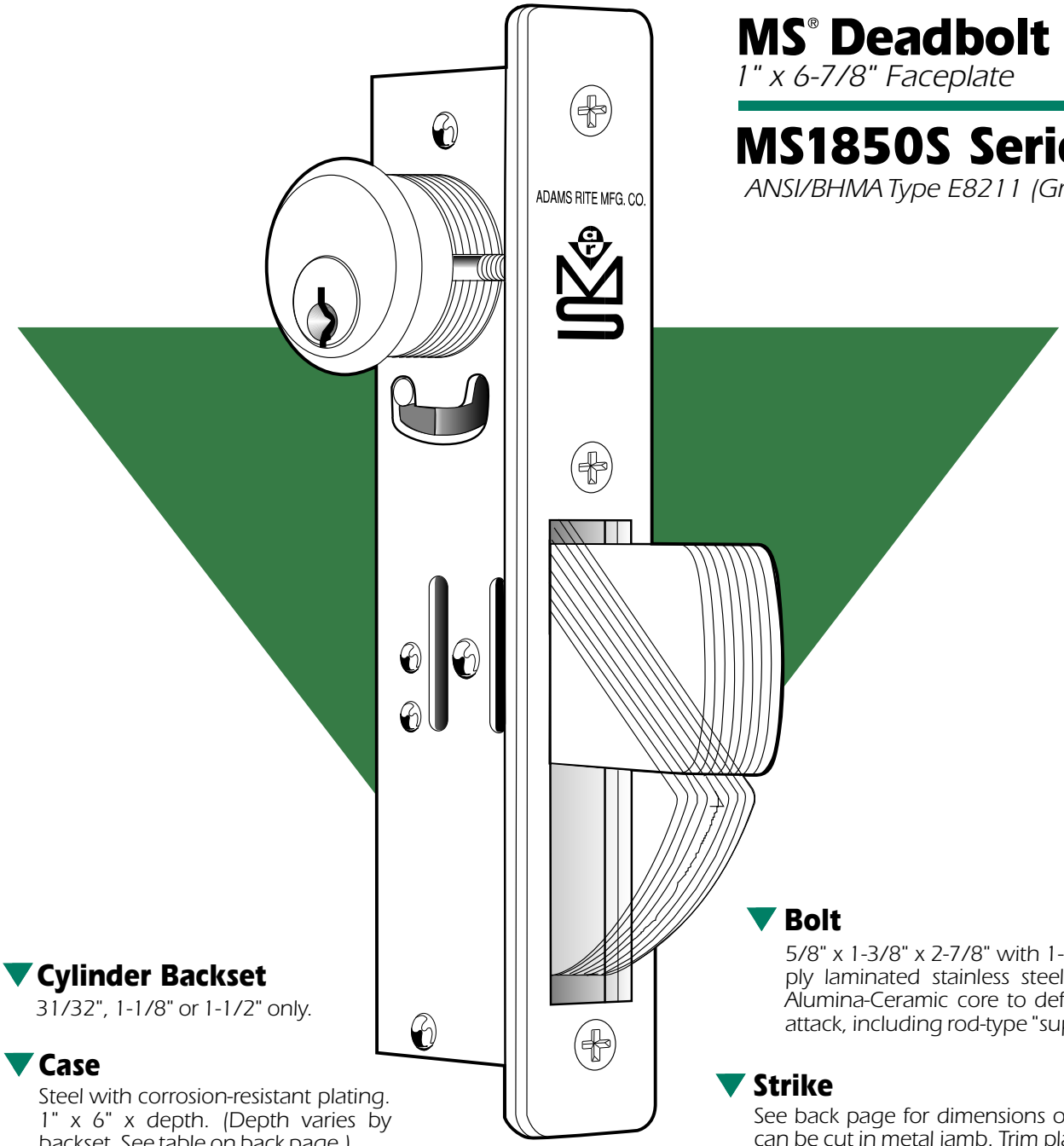
SWINGING DOOR HARDWARE



MS® Deadbolt

1" x 6-7/8" Faceplate

MS1850S Series

ANSI/BHMA Type E8211 (Grade 1)

Cylinder Backset

31/32", 1-1/8" or 1-1/2" only.

Case

Steel with corrosion-resistant plating. 1" x 6" x depth. (Depth varies by backset. See table on back page.)

Bolt

5/8" x 1-3/8" x 2-7/8" with 1-3/8" throw. Eight ply laminated stainless steel. Center ply has Alumina-Ceramic core to defeat any hacksaw attack, including rod-type "super" hacksaws.

Strike

See back page for dimensions of strike slot which can be cut in metal jamb. Trim plate, box strike and armored strike are also available. (See page SW-16.)

Function

A huge bolt of laminated stainless steel, nearly three inches long, activated by an uncomplicated pivot mechanism, has made this basic MS® Deadlock the standard of the narrow stile door industry. The length of this bolt provides maximum security for a single leaf door, even a very tall and flexible one or an installation where the gap between door and jamb is greater than it should be.

Operation

360° turn of key or thumbturn throws or retracts the counterbalanced bolt. Key can be removed only when bolt is in a positively locked or unlocked position. Lock accepts any standard 1-5/32" diameter mortise cylinder or thumbturn from either or both sides. Cylinder must have MS® dimensioned cam. (See page SW-30.)

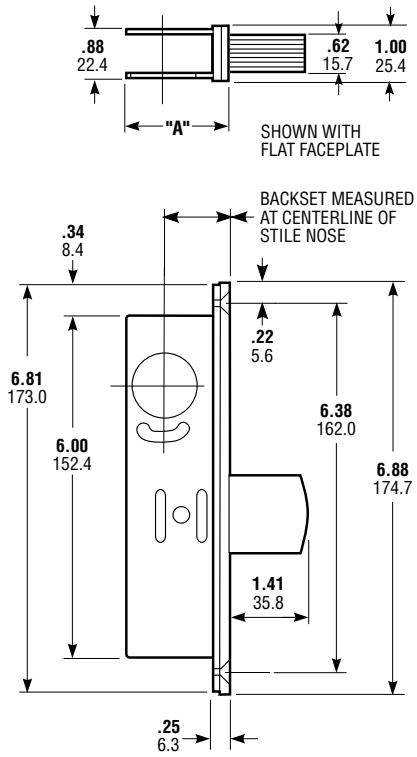
ADAMS RITE MANUFACTURING CO.

260 Santa Fe Street
Pomona, California 91767
(800) 872-3267 Fax:(800) 232-7329
www.adamsrite.com

MS1850S Deadbolt

DIMENSIONS

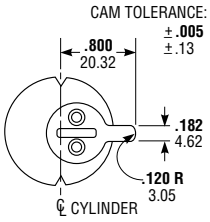
INCHES
MILLIMETERS
Nominal, subject to tolerance extremes.



BACKSET	"A"
31/32" 24.6	1.63 41.4
1-1/8" 28.6	1.78 45.2
1-1/2" 38.1	2.25 57.1

ARMORED FACEPLATE
1" x 6-7/8"

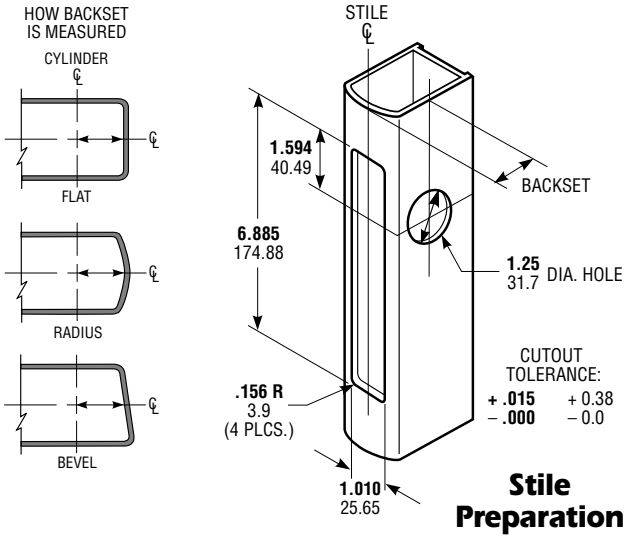
FLAT	MS1850S
RADIUS	MS1851S
RADIUS w/WEATHERSTRIP	MS1851SW
LH BEVEL	MS1852S-015
RH BEVEL	MS1852S-016



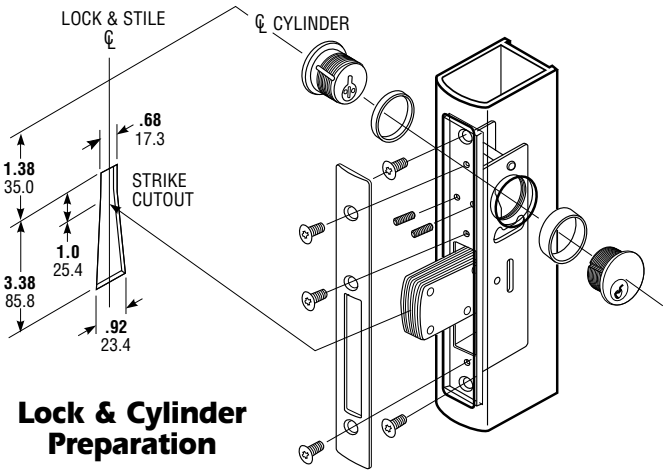
Cylinder Cam

MS1850S Series locks are operable by any standard 1-5/32" diameter mortise cylinder with special MS® cam dimensioned as shown. Cylinders with MS® cams can be readily obtained from most cylinder manufacturers. See page SW-30 for cylinder make and trim ring information.

INSTALLATION



Stile Preparation



Lock & Cylinder Preparation

HOW TO ORDER

Specify quantity and the following information.
Order related hardware separately.

Faceplate Shape
1850S Flat
1851S Radius
1851SW Radius w/wistrip
1852S Bevel

Backset
2 31/32"
3 1-1/8"
4 1-1/2"

Handing
15 LH or RHR
16 RH or LHR
10 Non-Handed*

MS 1850S - 2 15 - 628

Finish
628 Satin Aluminum
313 "Bronze" Anodized
335 Black Anodized

**Any flat or radius face, except Schoolhouse.*

OPTIONS

For jambs too narrow to accept the long bolt, the MS1850S-050 offers a shorter bolt with hook shape to provide equal security against door-prying attempts. (See catalog page SL-1.) 1850S-020 short throw without hook also available. Second and third point locking bolts are available for pairs of doors. (See pages SW-11 and SW-12.) All use any make standard mortise cylinder and thus can be keyed into systems with other types of doors. "SCHOOLHOUSE" version, also available, is modified so that operation from inside is "unlock only." This lock is handed and must be specified LH or RH. Specify Series SCH 1850S. Same faceplate and backset options as Series MS1850S. Operation from inside, with standard Adams Rite 4066 Turn seen on page SW-30. For wood or hollow metal, see MS1850SN.

STANDARD PACKAGE

Individually boxed with machine screws for mounting. Cylinders and/or thumbturn available at extra cost. Shipping weight: 1-1/2 lbs. Also available in a 25 unit pack for volume users.

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SWINGING DOOR HARDWARE

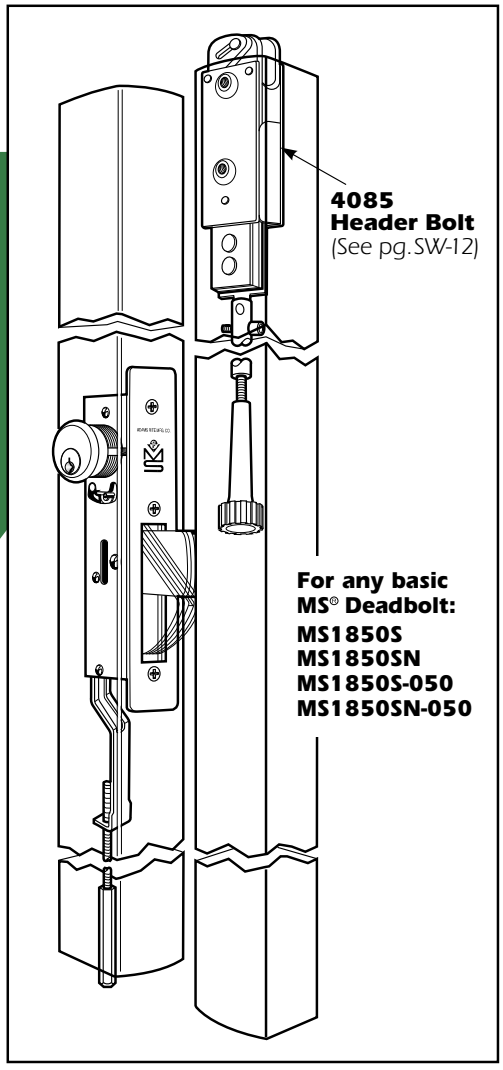
Threshold Bolt

4015

ANSI/BHMA Type E8241 (Grade 1)

Cylinder Height

Standard threshold bolt rod is sufficient for cylinder height up to 53-7/16". It is fully threaded and can be cut off for low cylinder heights. Also available to volume users , cut and threaded only for specific cylinder heights.

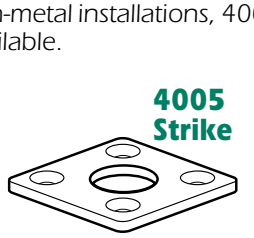


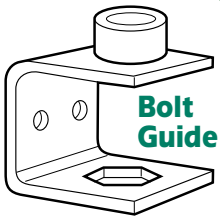
Adjustment

Exact adjustment of threaded rod to cylinder height is locked in place by hexagonal threshold bolt.

Strike

For drop-bolt, a 1/2" diameter hole in metal threshold is suitable or, for non-metal installations, 4005 strike is available.





Function

Adding the 4015 bolt to a pivoted bolt MS® deadbolt allows Maximum Security for pairs of doors by the turn of a single key. Simultaneously dropping a hardened steel hexbolt into the threshold and pivoting the massive MS® bolt into the mating door's stile, the two-point lock secures the entire double door entrance. The 4015 threshold bolt is harnessed to the rear of the pivoted bolt. It may be added to any basic MS1850S or MS1850SN deadbolt.

Threshold Bolt

Hexagonal 3/8" flat to flat. Made of hardened steel, plated for corrosion resistance.

Operation

360° turn of key or thumbturn in basic MS® lock throws counterbalanced bolt into opposite door and drop-bolt into threshold. Key can be removed only when bolts are in a positively locked or unlocked position.

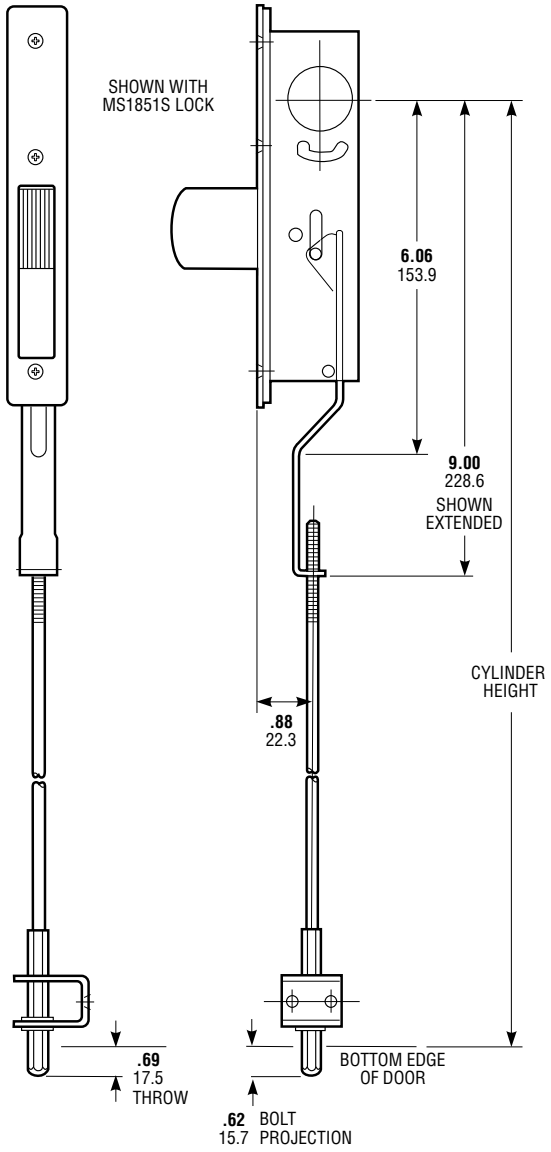
ADAMS RITE
MANUFACTURING CO.

260 Santa Fe Street
Pomona, California 91767
(800) 872-3267 Fax:(800) 232-7329
www.adamsrite.com

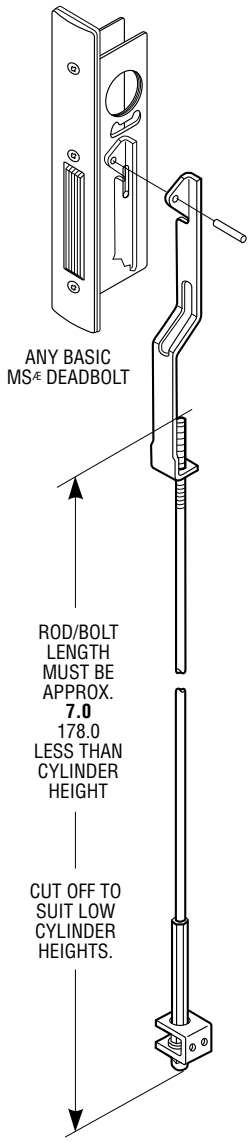
4015 Threshold Bolt

DIMENSIONS

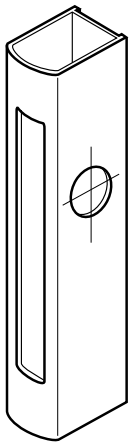
INCHES
MILLIMETERS
Nominal, subject to tolerance extremes.



INSTALLATION

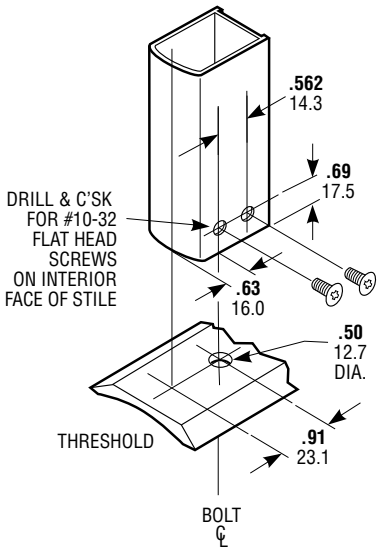


INSTALL ADAPTOR ARM IN LOCK FROM REAR WITH BOLT RETRACTED AS SHOWN. DRIVE PIN THROUGH SLOTS IN LOCK SIDE PLATES PASSING THROUGH HOLE IN THE ADAPTOR ARM.



Stile Preparation

See basic MS Æ Deadlocks:
MS1850S
MS1850
MS1850SN



HOW TO ORDER

Specify quantity and the following information.
Order related hardware separately.

Add Dash Number for "universal" size

4015 -18

If ordering in volume quantity for specific cylinder height, specify CYLINDER HEIGHT.

OPTIONS

For "universal" application, specify 4015-18 with fully threaded rod for cut off to any cylinder height below 53". For greater height or precut rod for high volume use, specify exact cylinder height. Order 4085 Header Bolt separately (Page SW-12.)

STANDARD PACKAGE

Packed separately with bolt guide, screws and attachment pin. Shipping weight: 1 lb.

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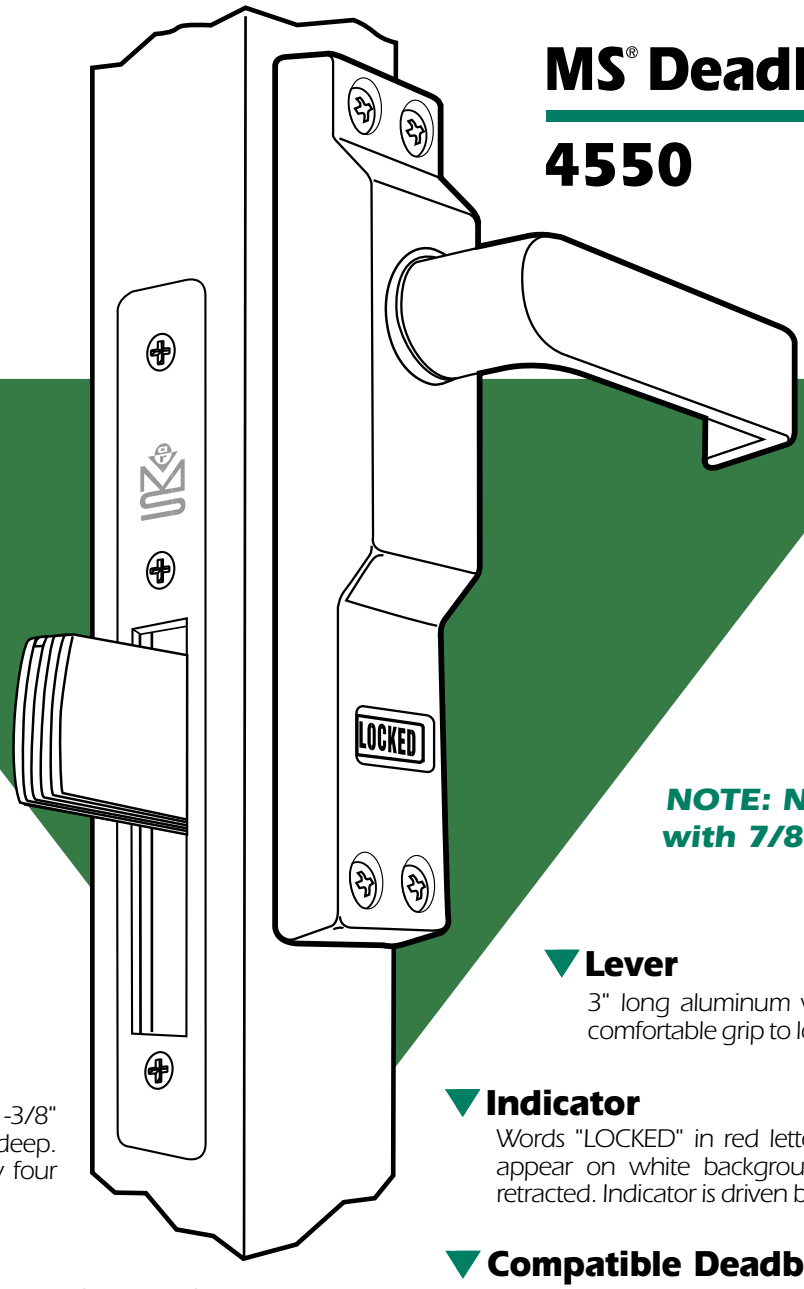
SWINGING DOOR HARDWARE

SW-13



MS® Deadbolt Lever

4550

NOTE: Not compatible with 7/8" backset locks

Housing

Aluminum casting is 1-3/8" wide x 7-1/2" long x 1" deep. Attached to door stile by four #10 screws.

Lever

3" long aluminum with end-return design offers comfortable grip to lock or unlock.

Indicator

Words "LOCKED" in red letters or "OPEN" in black letters appear on white background when lock is thrown or retracted. Indicator is driven by lock bolt itself.

Stop Clearance

Lever housing projects 11/16" forward of cylinder backset centerline. Depending on height of door stop and width of door/jamb gap, it may be necessary to modify the stop to clear the housing. (For fin type stops, this is easily accomplished.) Hollow stops may preclude use of lever.

Compatible Deadbolts

Any MS® pivoted bolt deadbolt including "Schoolhouse" versions can be fitted with the 4550: MS1850S, MS1837, etc. Derivative units such as 1870, 1870HM or 1877 flushbolts (bolt into threshold) are also operable by the 4550 lever. Not compatible with MS+1890 latchlock or with 7/8" backset locks.

Function

Easy unlocking of any MS® deadbolt by approximately 3 lbs. downward force on inch lever. Lever is spring loaded to horizontal, relocks with upward motion. Indicator signals lock status. Can be installed in place of existing key cylinder or cylinder type thumbturn on inside of door.

Operation

Turn lever downward 90° to unlock. When released, lever returns to horizontal. Turn lever upward 90° to relock. Key operation from outside is not affected. Clutching action prevents damage to internal components.

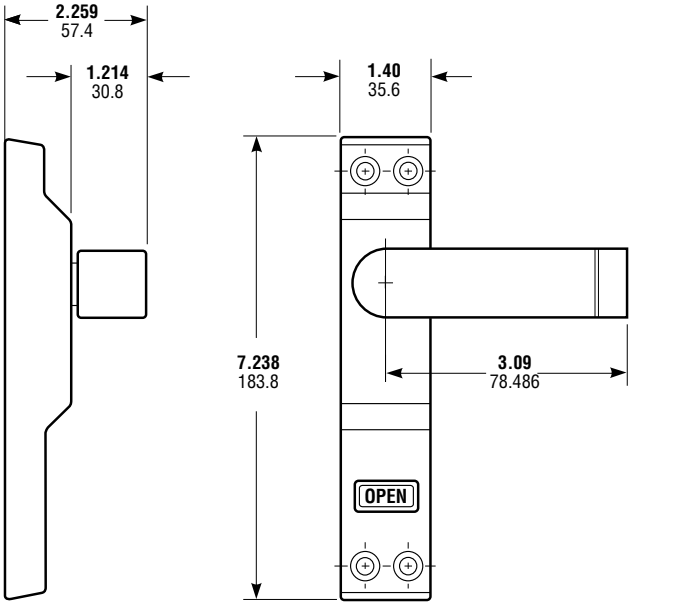
ADAMS RITE MANUFACTURING CO.

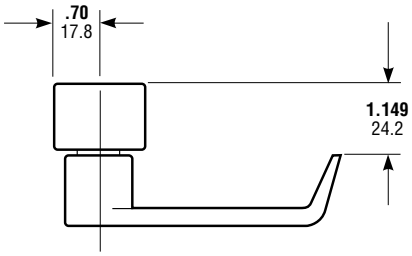
260 Santa Fe Street
Pomona, California 91767
(800) 872-3267 Fax:(800) 232-7329
www.adamsrite.com

4550 MS® Deadbolt Lever

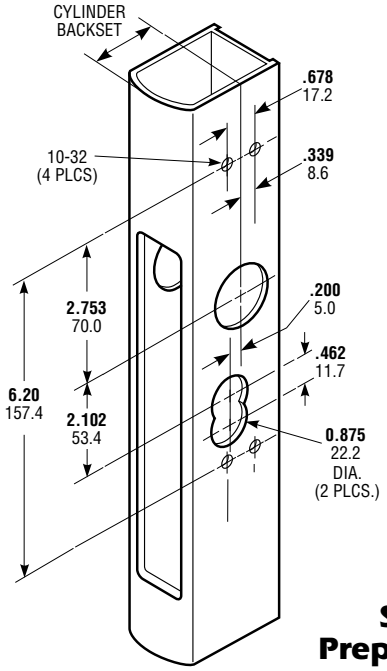
DIMENSIONS

INCHES
MILLIMETERS
Nominal, subject to tolerance extremes.

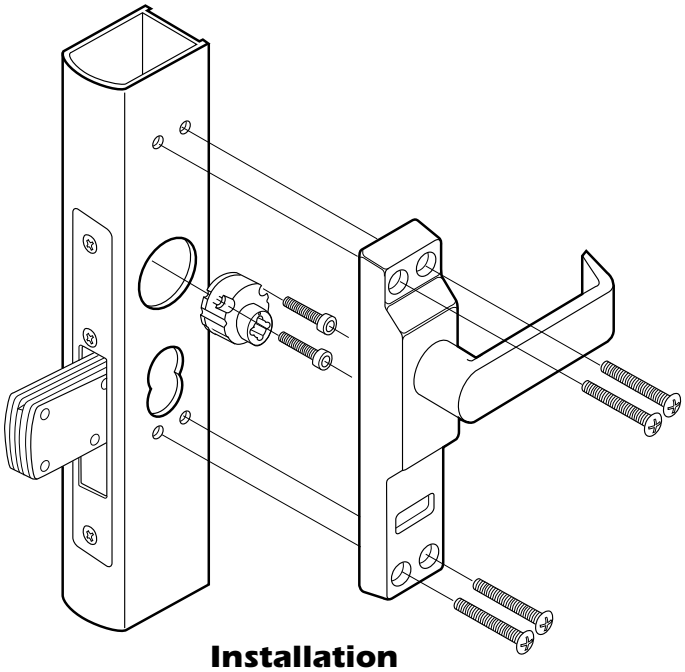




INSTALLATION



Stile Preparation



Installation

HOW TO ORDER

Specify quantity and the following information.
Order related hardware separately.

Door Hand*
R RH or RHR
L LH or LHR

4550R-121

Finish	To Match
130	Aluminum 628
121	"Bronze" 313
119	Black 335

**Regardless of swing*

OPTIONS

Available in three Ritecoat finishes to match anodized aluminum finishes. Can be ordered for left or right hand door, but is rehandable in the field.

STANDARD PACKAGE

Individually boxed with installation instructions, mounting screws and drive pins for both single point and threshold bolt-equipped locks. Shipping weight: 1 lb.

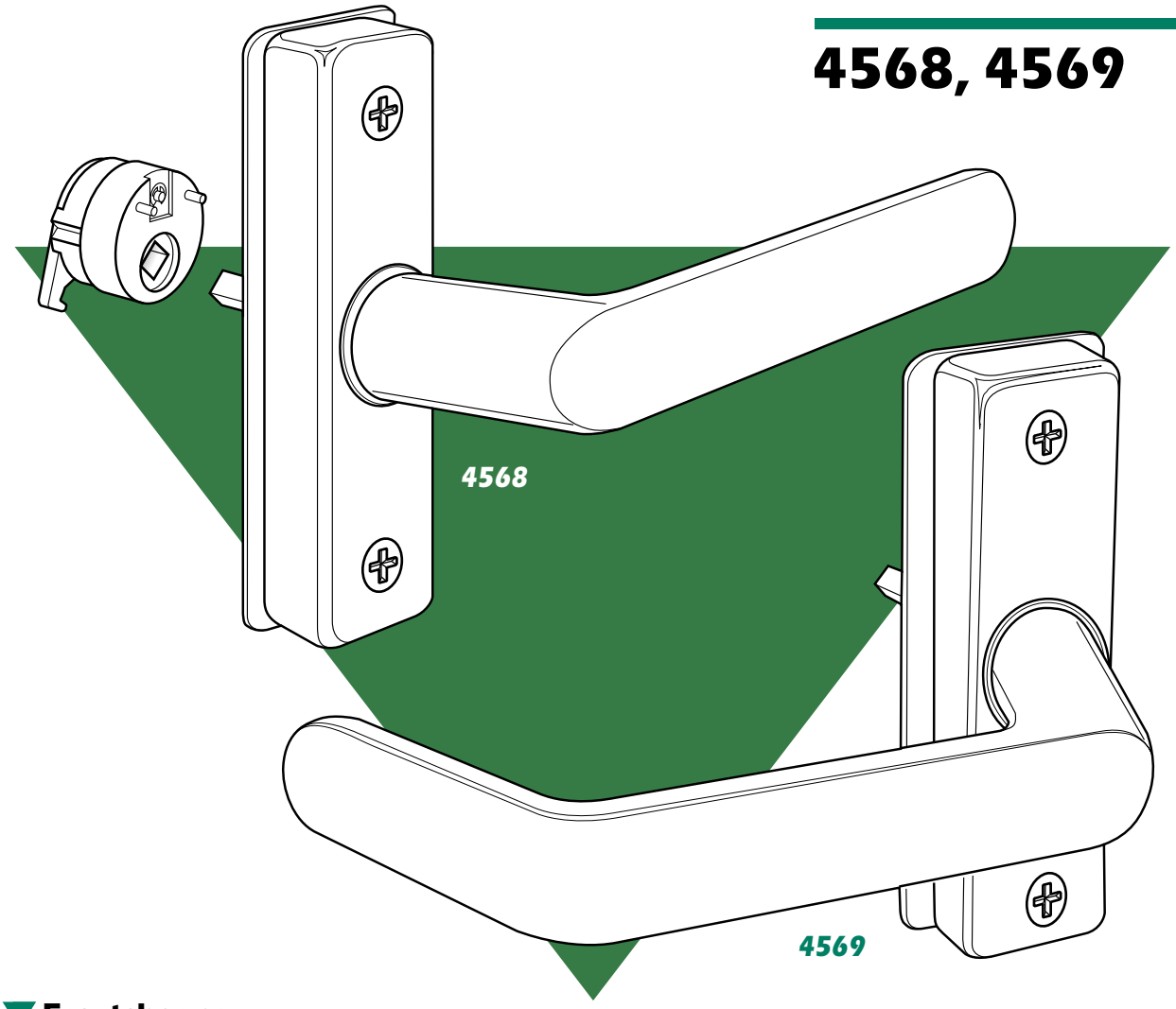
 ©2000 ADAMS RITE MANUFACTURING CO.

SWINGING DOOR HARDWARE

SW-26

Eurostyle Deadlatch Handles

4568, 4569



Escutcheons

1-3/8" x 4", designed to match the narrow stile doors clean lines. Steel mounted base is secured by hidden screws and has two large helical compression springs. (One becomes a "spare" once handling is given.) A 1/4" square heat-treated spindle is part of escutcheon assembly, which interlocks with the cam plug. Finished to match lever.

Function

Designed to operate 4500 or 4700 Series latches (except 4750) by a natural downward hand movement. These handles incorporate an activator cam disc that mounts on the handle escutcheon and fits solidly into the cylinder hole of the latch. Not intended for use as a door pull.

Cam Plugs

Secured in latch body by cylinder setscrew, plug is also rigidly tied to handle escutcheon by hardened steel pins. Handing can be reversed by removing a spring clip, "flopping" the cam and replacing the clip.

Levers

Lever of cast aluminum, in choice of 130 Satin Aluminum, 121 Dark "Bronze" or 119 Black. Modern European styling offers a generous hand grip with shank offset away from the narrow stile jamb for hand safety. 4569 has return end to meet anti-snag code requirements.

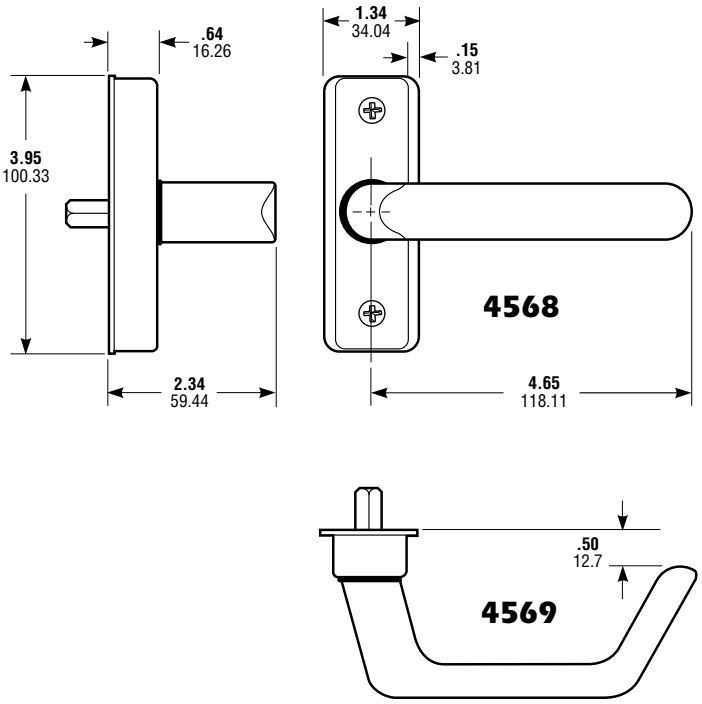
ADAMS RITE
MANUFACTURING CO.

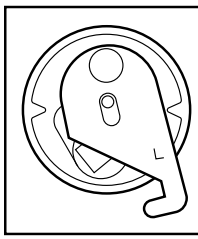
260 Santa Fe Street
Pomona, California 91767
(800) 872-3267 Fax:(800) 232-7329
www.adamsrite.com

4568, 4569 Eurostyle Handles

DIMENSIONS

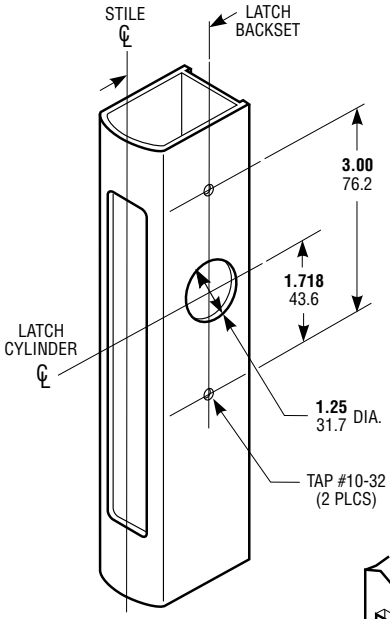
INCHES
MILLIMETERS
Nominal, subject to tolerance extremes.



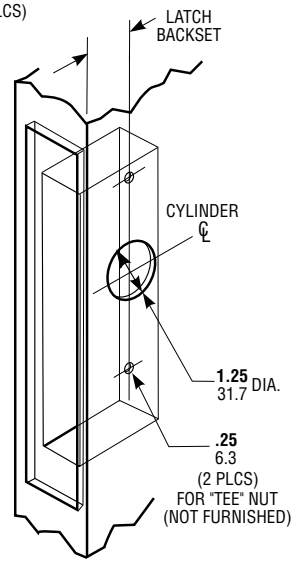


REVERSIBLE
4580 Cam Disc
INCLUDED WITH 4568 & 4569 HANDLES. REQUIRED TO OPERATE 4500 OR 4700 SERIES LATCHES.

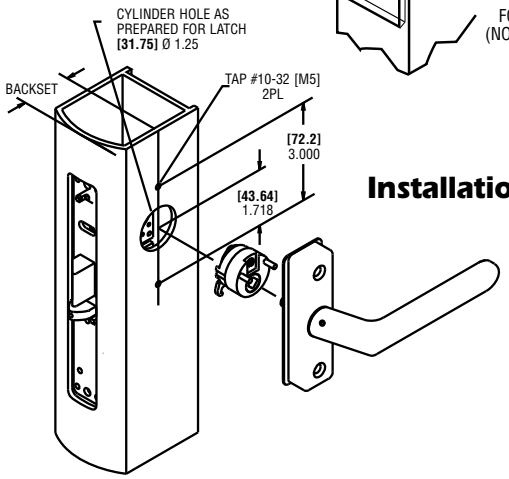
INSTALLATION



Narrow Stile Preparation



Wood Door Preparation
(Hole locations same as above.)



Installation

HOW TO ORDER

Specify quantity and the following information.

Lever Type
4568 Straight
4569 Return End

Handing*
5 LH or LHR
6 RH or RHR

Door Thickness**
01 1-3/4" - 2"
02 2-1/4" - 2-1/2"
03 2-3/4" - 3"
04 3-1/4"

4568-501-313

Finish (Painted to Match)
130 Satin Aluminum
121 "Bronze"
119 "Black"

**Assuming handle on interior of door.*
***For handle without cam plug for use with MS+1890 in 1-3/4" door, specify-11.*

OPTIONS

Pre-handing can be specified LH or RH although re-handing in the field is easily accomplished. Standard handles are for 1-3/4" thick doors. Available on special order for doors up to 3-1/4" at extra cost.

STANDARD PACKAGE

Packed individually with cam plug handed LH or RH as specified. Two 10-32 mounting screws furnished. Shipping weight: 1/2 lb.

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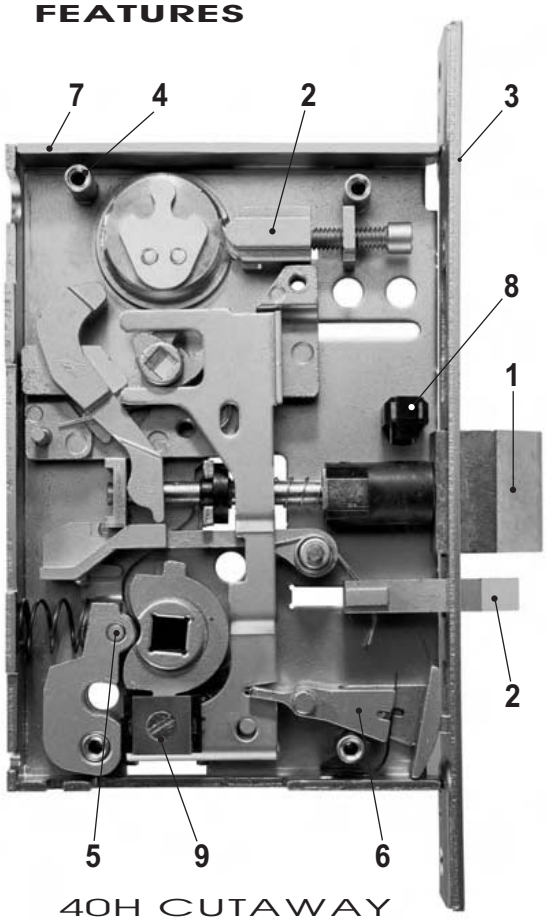
CONTENTS

FEATURES

TABLE OF CONTENTS

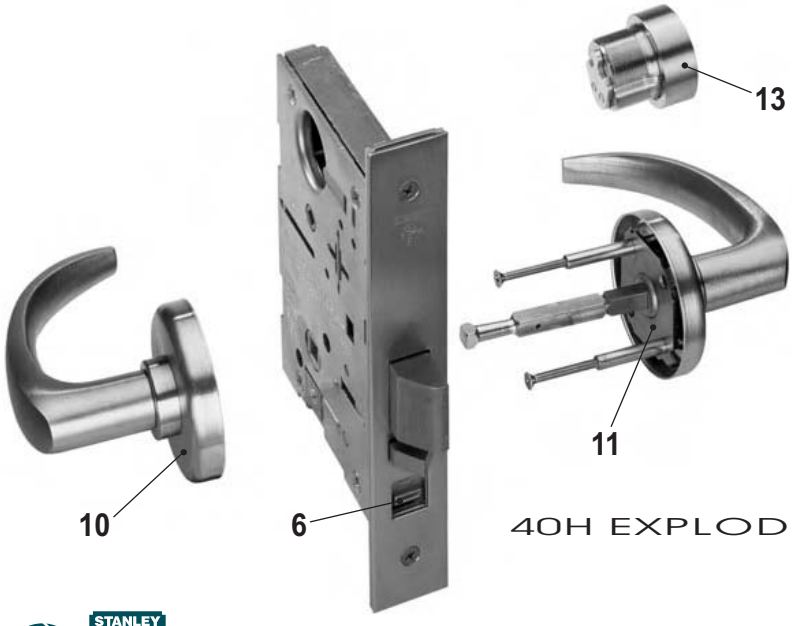
	Page		Page
40H Features	2	Hand of Door	8
40H Specification	3	Lever/Knob/Trim Variations	9
Universal Lock Concept	4-5	40H Functions	10–13
How To Order	6, 7	48H/49H High Security Specification	14
40H Special Features	8	48H/49H Function & How To Order	14
Service Equipment	8	Architectural Specification	15

FEATURES

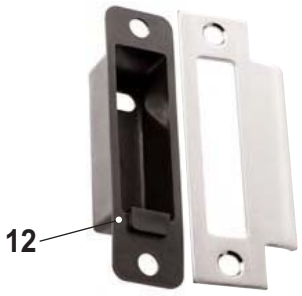


40H CUTAWAY

1. Solid one-piece stainless steel anti-friction latch provides 50% more surface contact with strike for superior strength and security. Reversible latch rotates 180 degrees for easy handing change without opening case. Precision-engineered curve provides enhanced cycle life with reduced wear to the strike.
2. Non-handed cylinder retainer and stainless steel auxiliary bolt for ease of changing hand.
3. Armored front completely surrounds latch and deadbolt providing increased lateral strength. Staked assembly design allows the armored front to self-align with the door bevel during installation.
4. Enhanced case integrity achieved through four case cover screws (one at each corner), plus interlocking armored front and cover design at the latch.
5. Roller bearing hub mechanism provides smooth, wear resistant operation.
6. Locking toggle includes clear indication of “locked” and “unlocked” states.
7. 40H case, cover, and armored front manufactured from 0.095” cold rolled steel for strength and durability.
8. Fusible link.
9. Four position hub toggle design determines whether each hub is always locked, always unlocked, or locked by key for easy handing change without opening case.
10. Lever return spring mechanism located in trim for enhanced protection against lever droop, providing a firm, positive return of the lever to the horizontal position.
11. Self-aligning trim mechanism for fast, easy, and accurate installation.
12. Curved lip strike and strike box assembly provides an aesthetic, non-handed solution to complement field reversible case.
13. Solid machined cylinder rings with tension spring provide resistance to wrenching of cylinder. Cylinder security screw prevents removal of cylinder without first removing interchangeable core.



40H EXPLODED



STRIKE BOX & STRIKE

STANLEY BEST ACCESS SYSTEMS

HEAVY DUTY M

The 45H and 47H mortise locks meet or exceeded the following standards:

American National Standards:

45H Series - ANSI A156.13, Series 1000, Grade 1 Operational and Grade 2 Security.

American National Standards Institute
11 West 42nd Street, New York, NY 10036

47H Series - ANSI A156.13, Series 1000, Grade 1 Operational and Grade 1 Security.

BHMA CERTIFIED

Underwriters Laboratories®

The 40H series is listed by Underwriters Laboratories for use on a 3 hour A label doors. These locks also carry the C-UL mark which is officially accepted in all of Canada, indicating compliance with appropriate Canadian standards and codes. The 47H series locks conform to UL437 Standard for Key Locks, referencing Door Locks. The 1E7J4 Cylinder used in the 47H series also conforms to UL437 Standard for Key Locks, referencing High Security Cylinders, and is listed for Canada as well as the United States.

UL Listed for both Canada and the US.

ANSI A250.13 Windstorm Standard

The 40H series lock is certified for use in Severe Windstorm Resistant Components for Swinging Door Assemblies standard ANSI A256.13-2003.

Miami-Dade County Code Compliance Office

The 40H series lock is certified for use in applications requiring a design pressure rating of ± 90 PSF for single doors and ± 50 PSF for double door openings.

Products protected by one or more of the following patents:

4873853 Other patents pending.

Case: 0.095″ cold rolled steel, 5 7/8″ H x 7/8″ D x 4 1/16″ W. Steel is zinc dichromate plated for corrosion protection.

Faceplate: Brass or bronze material, 8″ H x 1 1/4″ W x 1/16″ T. Lock face automatically adjusts to proper bevel during installation.

Strike: Brass, bronze, or stainless steel base material, 4 7/8″ x 1 1/8″ x 3/32″. Fits standard door frame cut out as specified in ANSI A115.1. Universal (non-handed) strike and strike box combination supplied standard with lock. Handed strikes (for use without strike box) available for special order.

Backset: 2 3/4″

Door Thickness: Standard lock configuration designed for doors 1 3/4″ thick. Thick door configuration available for doors up to 5″ thick (specify thickness when ordering).

Latchbolt: Solid stainless steel, 3/4″ throw. Latch is oil-impregnated for anti-friction operation. Reversible without opening case.

Deadbolt: Stainless steel, 1″ throw.

Auxiliary bolt: Stainless steel, non-handed.

Lever handle: Brass, bronze, or stainless steel base material. Lever styles 3, 14, and 15 return to a minimum of 1/2″ of door surface. Lever 16 does not return. Levers project 2 15/16″ from door surface with H, J, R, S trim, 3 1/64″ with M, N trim. Levers 3, 14, and 15 conform to California Titles 19 and 24.

Roses: Wrought brass, bronze, or stainless steel base material. H – Flat w/ round edge, 2 3/4″ diameter. R – Contoured w/ round edge, 2 3/4″ diameter. S – Flat w/ beveled edge, 3 1/2″ diameter.

Escutcheons: J – Wrought brass, bronze, or stainless steel base material, 7 1/2″ H x 2 9/32″ W x 17/32″ T. M & N – Forged brass or bronze, 8″ H x 2 1/8″ W x 11/64″ T, through bolt mounted (no exposed screws outside). M – Standard cylinder; N – Concealed cylinder.

Finishes:

- 605 – bright brass, clear coated
- 606 – satin brass, clear coated
- 611 – bright bronze, clear coated
- 612 – satin bronze, clear coated
- 613* – oxidized satin bronze, oil rubbed
- 618 – bright nickel plated, clear coated (brass base material)
- 619 – satin nickel plated, clear coated (brass base material)
- 622 – flat black coated (brass base material)
- 625 – bright chromium plated (brass base material)
- 626 – satin chromium plated (brass base material)
- 629 – bright stainless steel
- 630 – satin stainless steel
- 690* – dark bronze coated (brass base material)

* 613 finish is designed to wear over time, providing an "antique" appearance. 690 finish will continue as a dark brown appearance over time.

The following functions and trim styles may not be immediately available to order. Please consult your local BEST representative for specific details and timing.

Functions: C, CHB, H, RHB
Trims: M, N, S

The 47H and 49H series will not be available until third quarter 2005.

PDF created by Specworks® Page 46 of 95

40H SERIES - LEVER & TRIM VARIATIONS

Lever - 3
Rose - H

Lever - 14
Rose - H

Lever - 15
Rose - H

Lever - 1
Rose - H

nob- 4
Rose - H

Lever - 3
Rose - R

Lever - 14
Rose - R

Lever - 15
Rose - R

Lever - 1
Rose - H

nob- 4
Rose - R

Lever - 3
Rose - S

Lever - 14
Rose - S

Lever - 15
Rose - S

Lever - 1
Rose - S

nob- 4
Rose - S

Lever - 3
Escutcheon -

Lever - 14
Escutcheon -

Lever - 15
Escutcheon -

Lever - 1
Escutcheon -

nob- 4
Escutcheon -

Lever - 3
Escutcheon - M

Lever - 14
Escutcheon - M

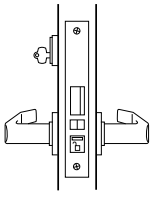
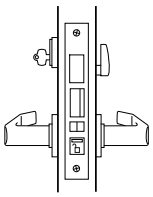
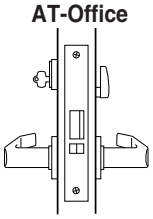
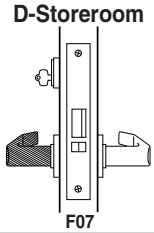
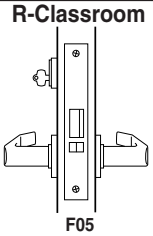
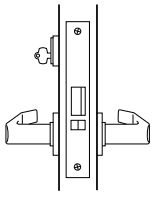
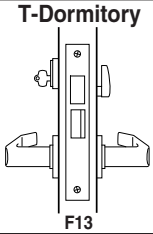
Lever - 15
Escutcheon - M

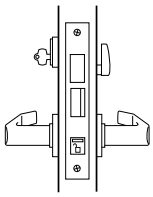
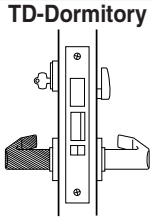
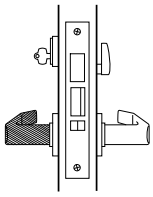
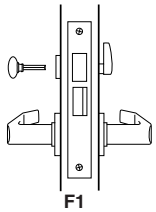
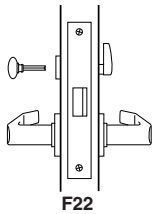
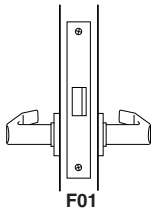
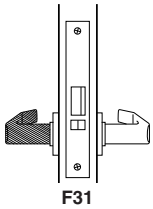
Lever - 1
Escutcheon - N

nob- 4
Escutcheon - N

PDF created by Specworks® Page 47 of 95

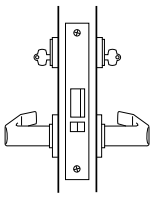
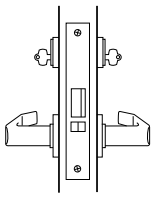
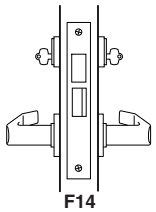
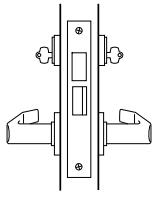
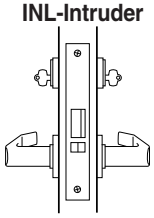
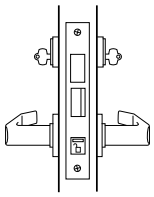
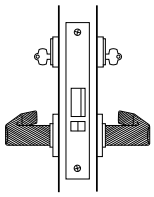
FUNCTIONS

Function Diag. ANSI No.	Description	Outside Lever or nob			Inside Lever or nob	
	Latch operated by	Deadbolt operated by	Locked by	Unlocked by	Locked by	Unlocked by
Single eyed						
A-Office  F04	• Rotating inside lever, OR • Rotating outside lever– only when locking toggle is in unlocked position, OR • Turning key in outside cylinder.	N/A	Placing locking toggle in locked position	Placing locking toggle in unlocked position	Cannot be locked	Always unlocked
	The latchbolt is deadlocked with an auxiliary deadlatch					
AB-Office  F20	• Rotating inside lever, OR • Rotating outside lever–only when locking toggle is in unlocked position, OR • Turning key in outside cylinder.	• Turning key in outside cylinder, OR • Inside turn lever, OR • Inside lever retracts deadbolt and latch simultaneously	• Placing locking toggle in locked position, OR • Projecting dead-bolt by key or turn lever	Turning key in outside cylinder and placing locking toggle in unlocked position	Cannot be locked	Always unlocked
	The latchbolt is deadlocked with an auxiliary deadlatch					
AT-Office  F04	• Rotating inside lever, OR • Rotating outside lever only when unlocked by key or turn lever, OR • Turning key in outside cylinder.	N/A	• Turning inside turn lever, OR • Turn key in outside cyliinder	• Turning inside turn lever, OR • Turning key in outside cylinder.	Cannot be locked	Always unlocked
	The latchbolt is deadlocked with an auxiliary deadlatch					
D-Storeroom  F07	• Rotating inside lever, OR • Turning key in outside cylinder.	N/A	Always locked	Cannot be unlocked	Cannot be locked	Always unlocked
	The latchbolt is deadlocked with an auxiliary deadlatch					
R-Classroom  F05	• Rotating inside lever, OR • Rotating outside lever only when unlocked by key, OR •Turning key in outside cylinder.	N/A	Turning key in outside cylinder	Turning key in outside cylinder	Cannot be locked	Always unlocked
	The latchbolt is deadlocked with an auxiliary deadlatch					
RHB-Classroom Holdback  F0	• Rotating inside lever, OR • Turning key in outside cylinder, OR • Outside lever except when locked by outside key, OR • Latchbolt held retracted by turning O/S key while holding up I/S lever	N/A	Turning key in outside cylinder	Turning key in outside cylinder	Cannot be locked	Always unlocked
	The latchbolt is deadlocked with an auxiliary deadlatch					
T-Dormitory  F13	• Rotating inside lever, OR • Rotating outside lever only when deadbolt is retracted OR • Turning key in out side cylinder	• Turning key in out-side cylinder, OR • Inside turn lever, OR • Inside lever retracts deadbolt and latch simultaneously	• Turning key in outside cylinder, OR • Turning inside turn lever.	• Turning key in outside cylinder, OR • Turning inside turn lever, OR • Rotating inside lever.	Cannot be locked	Always unlocked

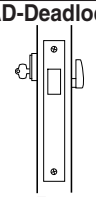
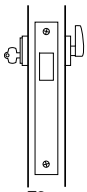
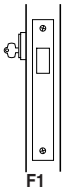
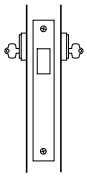
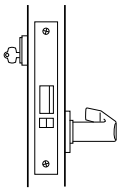
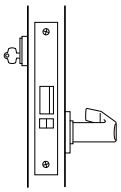
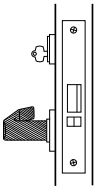
Function Diag. ANSI No.	Description	Outside Lever or nob			Inside Lever or nob	
	Latch operated by	Deadbolt operated by	Locked by	Unlocked by	Locked by	Unlocked by
Single eyed continued						
TA- Dormitory  F12	• Rotating inside lever, OR • Rotating outside lever only when locking toggle is in unlocked position and deadbolt is retracted, OR • Turning key in outside cylinder.	• Turning key in outside cylinder, OR • Turning inside turn lever. (Rotating inside knob/lever retracts deadbolt and latch simultaneously.)	• Placing locking toggle in locked position, OR • Projecting deadbolt by key or turn lever.	• Turning key in outside cylinder and placing locking toggle in unlocked position, OR • Rotating inside lever retracts latch and deabolt simultaneously.	Cannot be locked	Always unlocked
TD-Dormitory 	• Rotating inside lever, OR • Turning key in outside cylinder.	• Turning inside turn lever, OR • Rotating inside lever retracts deadbolt and latch simultaneously.), OR • Turning key in out-side cylinder	Always locked	Cannot be unlocked	Cannot be locked	Always unlocked
The latchbolt is deadlocked with an auxiliary deadlatch						
H -Hotel  F15	• Rotating inside lever, OR • Turning key in outside cylinder.	• Turning inside turn lever, OR • Turning emergency key in outside cylinder. (Rotating inside lever retracts deadbolt and latch simultaneously.)	Always locked	Cannot be unlocked	Cannot be locked	Always unlocked
The latchbolt is deadlocked with an auxiliary deadlatch. Throwing deadbolt blocks out all ieys except “ER” key.						
Non- eyed						
L-Privacy  F1	• Rotating inside lever, OR • Rotating outside lever only when deadbolt is retracted.	• Turning the emergency key, OR • Turning inside turn lever. (Rotating inside knob/lever retracts deadbolt and latch simultaneously.)	• Turning inside turn lever, OR • Turning the emergency key.	• Turning inside turn lever, OR • Rotating inside lever retracts latch and dead-bolt simulta-neously, OR • Turning the emergency key.	Cannot be locked	Always unlocked
LT-Privacy  F22	• Rotating inside lever, OR, • Rotaing outside lever only when turn knob is unlocked.	N/A	• Turning inside turn lever, OR • Turning the emergency key.	• Turning inside turn lever, OR • Rotating inside lever retracts latch, OR • Turning the emergency key.	Cannot be locked	Always unlocked
N-Passage  F01	Rotating inside or outside lever	N/A	Cannot be locked	Always unlocked	Cannot be locked	Always unlocked
N -Exit  F31	Rotating inside lever	N/A	Always locked	Cannot be unlocked	Cannot be locked	Always unlocked
The latchbolt is deadlocked with an auxiliary deadlatch						

PDF created by Specworks® Page 49 of 95

FUNCTIONS

Function Diag. ANSI No.	Description	Outside Lever or nob			Inside Lever or nob	
	Latch operated by	Deadbolt operated by	Locked by	Unlocked by	Locked by	Unlocked by
Double eyed						
C-Public Entrance  **F0**	• Rotating inside lever, OR • Rotating outside lever only when unlocked by key in inside cylinder, OR • Turning key in outside cylinder only.	N/A	Turning key in inside cylinder	Turning key in inside cylinder	Cannot be locked	Always unlocked
	The latchbolt is deadlocked with an auxilary deadlatch. When required, inside cylinder may be combinated to operate by master key only.					
CHB-Holdback 	• Turning outside key, OR • Rotating outside lever only when unlocked by key in inside cylinder, OR • Inside lever, OR • Latchbolt held retracted by turning inside key while holding up on inside lever.	N/A	Turning key in inside cylinder	Turning key in inside cylinder	Cannot be locked	Always unlocked
	The latchbolt is deadlocked with an auxilary deadlatch.					
-Communicating  **F14**	Rotating inside or outside lever only when deadbolt is retracted	Turning key in inside or outside cylinder	Turning key in inside or outside cylinder	Turning key in inside or outside cylinder	Turning key in inside or outside cylinder	Turning key in inside or outside cylinder
IND-Intruder  **F33 F34**	• Turning key in inside or outside cylinder, OR • Rotating outside lever when deadbolt is retracted, OR • Rotating inside lever	• Turning key in outside or inside cylinder, OR • Rotating inside lever (Retracts the deadbolt and latch simultaneously)	Extending the deadbolt by turning key in inside or outside cylinder	• Retracting the deadbolt by turning key in inside or outside cylinder, OR • Rotating inside lever (Retracts the deadbolt and latch simultaneously)	Cannot be locked	Always unlocked
INL-Intruder  **F32**	• Rotating inside lever, OR • Rotating outside lever only when unlocked by inside or outside key, OR • Turning key in inside or outside cylinder.	N/A	Turning key in inside or outside cylinder	Turning key in inside or outside cylinder	Cannot be locked	Always unlocked
	The latchbolt is deadlocked with an auxilary deadlatch. When required, inside cylinder may be combinated to operate by master key only.					
S-Storeroom  **F35**	• Rotating inside lever, OR • Rotating outside lever only when locking toggle is in unlocked position and deadbolt is retracted, OR • Turning key in inside or outside cylinder.	Turning key in inside or outside cylinder	Placing locking toggle in locked position	Turning key in outside cylinder or inside cylinderand placing locking toggle in unlocked position	Extending the deadbolt	Retracting the deadbolt
W-Storeroom  **F30**	Turning key in inside or outside cylinder	N/A	Always locked	Cannot be unlocked	Always fixed	Cannot be unlocked
	The latchbolt is deadlocked with an auxilary deadlatch. When required, inside cylinder may be combinated to operate by master key only.					
	ATTENTION: Locksets that secure both sides of the door are controlled by building codes and the Life Safety Code®. In an emergency exit situation, failure to quickly unlock the inside lever could be hazardous or even fatal.					

FUNCTIONS

Function Diag. ANSI No.	Description	Outside Lever or nob		Inside Lever or nob	
	Latch operated by	Deadbolt operated by	Locked by	Unlocked by	Locked by	Unlocked by
Deadlocks						
AD-Deadlock  F17	N/A	• Turning key in outside cylinder OR • Turning inside turn lever.	N/A	N/A	N/A	N/A
RD-Classroom Deadlock  F2	N/A	• Turning key in outside cylinder OR • Turning inside turn lever.*	N/A	N/A	N/A	N/A
	*Function RD–the inside turn knob retracts deadbolt but will not project it. (Specify hand of door.)					
D-Deadlock  F1	N/A	Turning key in outside cylinder only	N/A	N/A	N/A	N/A
WD-Deadlock  F1	N/A	Turning key in outside or inside cylinder	N/A	N/A	N/A	N/A
Special						
R-Classroom 	• Rotating inside lever, OR • Turning key in outside cylinder.	N/A	N/A	N/A	Cannot be locked	Always unlocked
RHB-Classroom Holdback 	• Rotating inside lever, OR • Turning key in outside cylinder. • Latchbolt held retracted by turning O/S key while holding up I/S lever	N/A	N/A	N/A	Cannot be locked	Always unlocked
	The latchbolt is deadlocked with an auxiliary deadlatch					
D-Storeroom 	Turning key in outside cylinder	N/A	Always locked	Cannot be unlocked	N/A	N/A
	The latchbolt is deadlocked with an auxiliary deadlatch					

ATTENTION: Locksets that secure both sides of the door are controlled by building codes and the Life Safety Code®. In an emergency exit situation, failure to quickly unlock the inside lever could be hazardous or even fatal.

PDF created by Specworks® Page 51 of 95

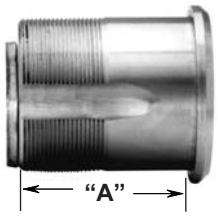
TABLE OF CONTENTS

	Page
1E Series Features	2
1E Series Specs/How to Order	2
1E Series Rings/Spindles/Mortise Service Equipment	3
1E Series Special Cylinders	4, 5
1E7J4/1E7K4 High Security Cylinders	6
Patented Keying	6
Eurocylinders	7
Cylinders and Cams	8
1E Cylinder Special Rings	9
5E Series Specs/Accessories	10
5E Series How to Order	11

1E SERIES FEATURES

1E Mortise Cylinder

Standard mortise applications require use of BEST's 1E Series cylinders with standard 1E-C4 cam. BEST cylinders may be altered to function with other manufacturers' locks by use of different cams (see page 8) and different cylinder rings (see page 9). Special cylinder variations are available for most applications (see pages 4 & 5). BEST cylinders are machined from brass or bronze bar stock and are available in a variety of finishes. Additional security is provided by a set screw that mounts diagonally in the cylinder wall and when tightened, holds the cylinder securely in the housing. BEST mortise cylinders feature the BEST interchangeable core and may be masterkeyed into any existing BEST system. Contact your local Best Access Systems sales office for information on special cylinder applications not listed in this catalog.



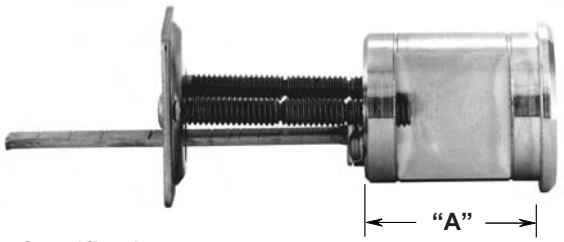
Specifications

Cylinder Nomenclature	Dimension "A"	Door Thickness
1E-64	1 1/8"	1 5/8" to 2 1/4"
1E-74	1 1/4"	1 7/8" to 2 1/2"

Cylinder diameter - 1 5/32"
To order: see below example: **1E74-C4-RP3-626**
Products covered by on or more of the following patents:
4,437,695 4,633,690 4,616,394

1E Rim Cylinder

Standard rim cylinder applications require the use of BEST's 1E rim cylinder series. BEST rim cylinders are interchangeable with other manufacturers' rim cylinders. BEST rim cylinders are machined from solid bar stock and are available in a variety of finishes. The standard package for the BEST rim cylinder includes cylinder, RP3 ring package, 1E-S2 spindle, clamp plate and clamp plate screws. BEST rim cylinders feature the BEST interchangeable core and may be masterkeyed into any existing Best system.



Specifications

Cylinder Nomenclature	Dimension "A"	Door Thickness
1E-62	1 3/16"	1" to 2 3/4"
1E-72	1 11/32"	1 1/4" to 3"

Cylinder diameter– 1 5/32"
To order: see below example: 1E72-S2-RP3-626

HOW TO ORDER

STEP A	B	C	D	E	F	G	
1E	**7**	**4**		**C4**	**RP3**	**626**	**
Cylinder Diameter	**Core Housing**	**Function Code Length**	**Standard Mortise Code**	**Cam or Spindle**	**Rings**	**Standard Finishes**	
1E– 1 5/32" **3E–** 1 1/2" **5E–** see pages 10,11 **8E–** see page 7	**0–** dummy **6–** 6 pin **7–** 7 pin housing accepts all Best cores	**2–** rim **4–** mortise* **6–** tapered mortise see pages 4-5 for special cylinders	**Blank–** standard **22–** 1 3/8" **24–** 1 1/2" up to **96–** 6" (see page 4-5)	**C4–** standard cam **C181**– Adams Rite MS cam **S2–** standard spindle (For special cams see page 8)	**RP1–** tapered cyl. **RP2–** 6 pin mortise **RP3–** std. package **RP4–** 3E mortise (For special rings see page 9)	**605 606** **612 613** **622 625** **626 690** Specify hand if required	

* For additional special mortise cylinders, see pages 4 and 5.
** Must specify keymark and number of keys or designate L/C for less core.

PDF created by Specworks® Page 52 of 95

STANDARD RINGS

RP Standard Ring Package

The RP standard ring package includes a 1E-R3 (3⁄16″) and 1E-R5 (3⁄8″) ring.

1E-R3 3⁄16″ **1E-R5** 3⁄8″

RP1 Ring Package

The RP1 ring package for the 1E-76 cylinder includes a 1E-R2 (1⁄8″) and 1E-R3 (3⁄16″) ring.

1E-R2 1⁄8″ **1E-R3** 3⁄16″

RP2 Ring Package

The RP2 ring package for the 1E-64 cylinder includes a 1E-R2 (1⁄8″) and 1E-R4 (1⁄4″) ring.

1E-R2 1⁄8″ **1E-R4** 1⁄4″

RP3 Ring Package

The RP3 ring package for the 1E-62, 1E-72 and 1E-74 cylinders includes a 1E-R2 (1⁄8″) and a 1E-R5 (3⁄8″)

1E-R2 1⁄8″ **1E-R5** 3⁄8″

STANDARD CAM

Standard Cam for 1E-64, and 1E-74 Mortise Cylinders

Standard 1E-C4 Cam

Unless otherwise specified, the 1E-C4 cam is supplied on all 1E mortise cylinders.

Commonly used cams are listed on page 8.

If a cam other than the variety listed is needed, a sample cam should be forwarded to your local BEST office along with the lock manufacturer's name and lock series or identification number.

SPINDLES

1E-S2 Spindle (Steel) - A-40100-SH
1E-S3 Spindle (Bronze) - A-40100-Z
5″ Spindle - A-54950; **5⁄32″ Spindle -** A-40101

The 1E-S2 flat spindle is supplied standard on all 1E rim cylinders. If marine application is necessary, request "marine construction" (1E-S3 bronze spindle and non ferrous materials supplied). A five (5) inch spindle is available for thick door applications.

MORTISE SERVICE EQUIPMENT

ED211

ED212

ED211 Mortise Cylinder Wrench
The Best mortise cylinder wrench and test handle is an essential dual-purpose tool. The double end is used primarily to install or remove BEST mortise cylinders without marring the cylinder surface finish. The single end may be used to test the lock operation, as well as align the throw pins.
To order specify: ED211 mortise cylinder wrench.

ED212 Mortise Cylinder Cam Assembly Tool
Mortise cylinder cams are quickly changed with the use of this tool. Approximate length 1 3⁄4″.
To order specify: ED212 assembly tool.

ED221 Mortise Cylinder Thread Repair Die
Tool for re-threading 1 5⁄32″ diameter cylinders.
To order specify: ED221 thread repair die.

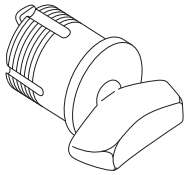
ED222 Cylinder Cam Testing Tool
Special cylinder / wrench assembly. Screws provide rapid means to install cams for testing.
To order specify: ED222 cam testing tool.

ED225 Hole Tap For 1 5⁄32″ Mortise Cylinder
Tap tool used to re-thread housing threads for 1E Mortise Cylinders.

A40095 Standard Throw Pins

Classroom Thumbturn Cylinders

These cylinders are for L463 and L9463 classroom function deadlocks. They are handed. They have a rotational stop in one direction to prevent *locking* from the inside but allow *unlocking*. Cylinders are field reversible by changing the position of the rotational stop. All cylinders furnished with L583-254 cam.

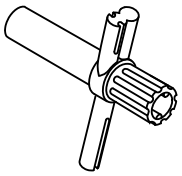


Number	Collar(s)
09-900	None
09-904	Compression ring and spring
09-905	For 1 3/4" doors: compression ring, spring and 1/8" blocking ring
09-907	For 1 3/8" doors: compression ring, spring and 1/4" blocking ring

Specify hand of door and finish.
1 1/8" length standard. 09-900 and 09-905 also available in 1/8" increments up to 1 3/4".

IC Installation Tool

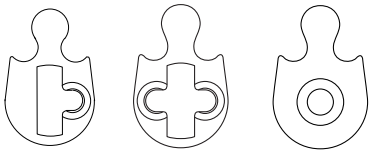
This tool is used to install and remove mortise cylinder housings and test mortise cylinder cam action for both small format and full size interchangeable core cylinders. Its other ends are designed to install the driver and retainer for full size IC in Schlage key-in-knob/lever locksets.



M504-413 (Order as needed)

Mortise Cylinder Cams

Most Functions
L400 and L9000 Series

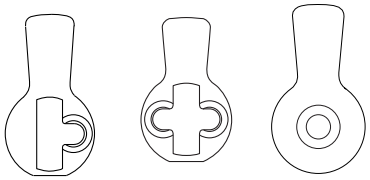


L583-153 Everest® & Primus®

L583-254 Classic Conventional

L583-255 All IC

L9060 Outside Only



B502-948 Everest & Primus

B502-191 Classic Conventional

K510-680 All IC

Cam Screws

B502-942	Everest and Primus (non-IC)
B502-468	Classic conventional (non-IC)
L583-333	All full size interchangeable core
B520-484	All small format interchangeable core

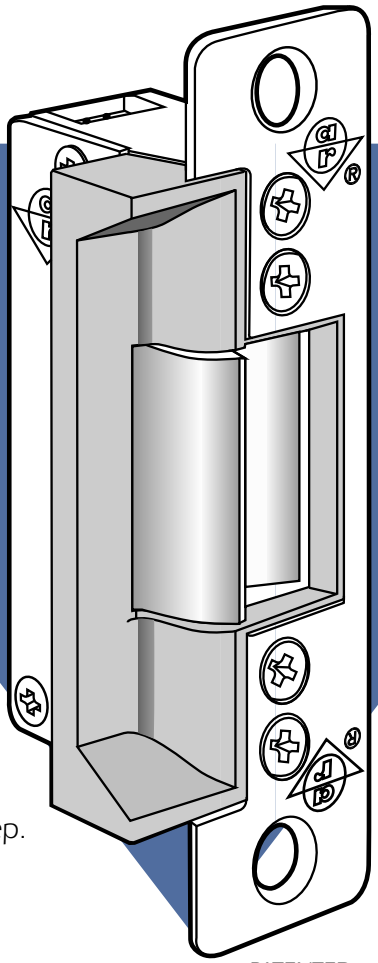
ELECTRIC STRIKES

VOLTAGE		
Available in 12, 16 or 24 volt AC and DC. DC and AC Continuous units are silent, AC intermittent units "buzz" on operation.		
CURRENT DRAW/AMPS		
Volts	**AC Int.**	**DC or AC Cont.**
12	1.42	.33
16	1.03	.22
24	.74	.17

7100
Flat Faceplate for Aluminum Jambs

7101
Radiused Faceplate for Aluminum Stiles

ANSI/BHMA Type EO9321 (Grade 1) for Adams Rite or Cylindrical Latches



PATENTED

UL Listed for Burglary Resistance

Case
Approx. 1" x 3-3/8" x 1-5/8" deep. Zinc-aluminum alloy.

Strike Lip
Basic 7100 strike has lip of proper length for 1-3/4" thick door that closes flush with jamb edge. Where door thickness or jamb shape differs from this standard relationship, extended lip available, specified by last dash number. (Not available on 7101.)

Fail Safe/Fail Secure
Field convertible from one mode to the other. However, AC intermittent solenoid must not be used continuously in either.

Strike Opening
5/8" x 1-7/16" x 1/2" deep. Bolt retainer jaw is stainless steel. Strike accepts bolt of any Adams Rite 4700 Series deadlatch or cylindrical latches shown with model 7140. See 7160 and 7170 strikes for use with other make mortise latches.

Faceplate
Measures 1-1/4" x 4-7/8". 7100 has flat face-plate; 7101 is radiused to match nose on inactive leaf in a pair of narrow stile glass doors. Available in our full range of architectual finishes.

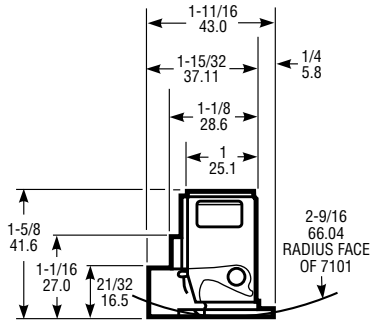
Function
Remote electrical control of any door equipped with an Adams Rite Series 4500 or 4700 (or similar) deadlatch or "key-in-knob" sets. Electrical actuation unlocks strike jaw, releasing latchbolt so door can be opened without operating latch itself. Extremely compact mechanism fits into aluminum jamb (or opposing door) sections as shallow as 1-21/32". Fits prep for 7500/7800/7000 Series.

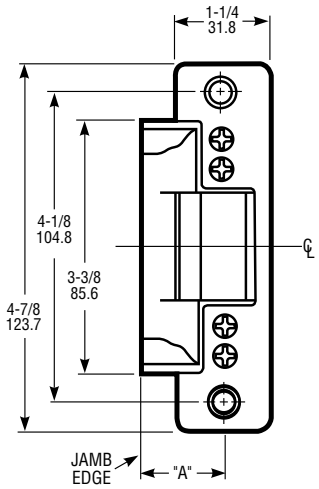
ADAMS RITE MANUFACTURING CO.
260 Santa Fe Street
Pomona, California 91767
(800) 872-3267 Fax:(800) 232-7329
www.adamsrite.com

7100, 7101 Electric Strike

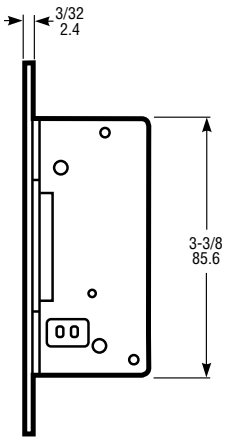
DIMENSIONS

INCHES
MILLIMETERS
Nominal, subject to tolerance extremes.





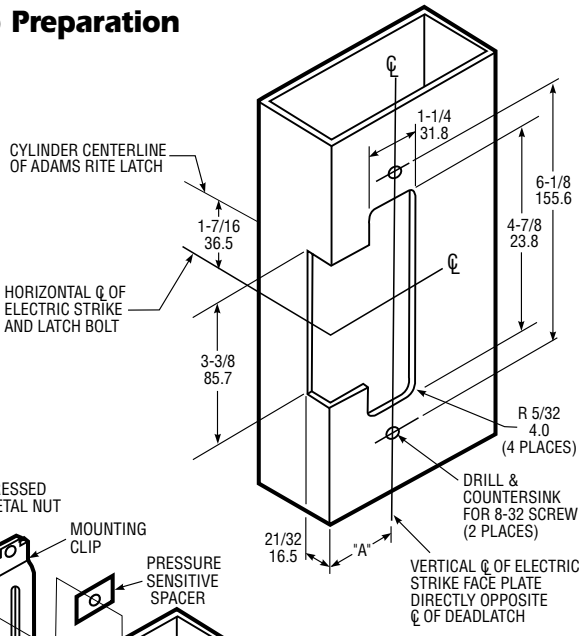
STANDARD UNIT FITS DIM. "A" UP TO 1-1/16" (SEE DASH NO.)

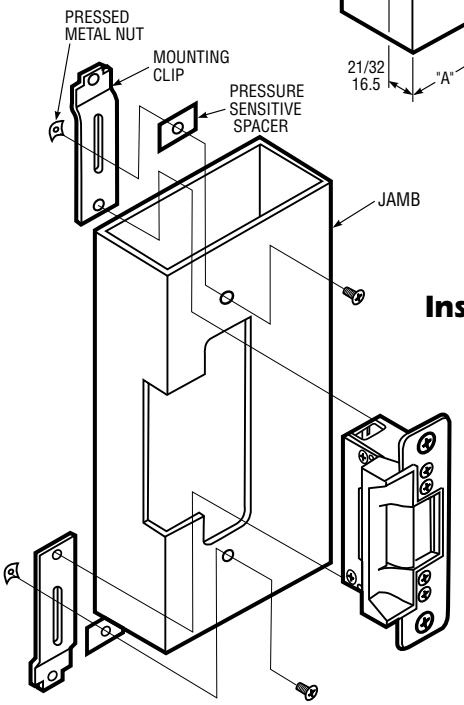


MOUNTING BRACKETS FURNISHED

INSTALLATION

Jamb Preparation





Installation

Turn strike upside down for opposite hand.

HOW TO ORDER

Specify quantity and the following information.
Order 4603 Rectifier and/or 4605 or 4606 Transformer separately.
(4603 included with AC Cont.)

Specify Model	Voltage	Current & Duty	Features**
7100 Flat	**3** 12 Volt	**1** DC Continuous or Intermittent	**0** Std/Fail-Secure
7101 Radius	**4** 16 Volt	**2** AC Continuous*	**5** Fail-Safe
	5 24 Volt	**4** AC Intermittent	**7** Monitor/Fail-Safe
			9 Monitor/Fail-Secure

7100 - 3 1 5 - 605 - 00

**A DC strike with rectifier attached for use on AC current.*

***Fail-secure can be field converted to fail-safe or vice-versa.*

Finish	
628	Satin Aluminum
605	Bright Brass
612	Satin Bronze
613	Oil Bronze
313	Dark "Bronze"
335	Black
625	Bright Chrome
626	Satin Chrome

7100 Lip Extension (Dim."A") (Door Centerline to Jamb Edge)			
00	1.06" or less	**07**	2.25"
01	1.50"	**08**	2.38"
02	1.63"	**09**	2.50"
03	1.75"	**10**	2.63"
04	1.88"	**11**	2.75"
05	2.00"	**12**	2.88"
06	2.13"	**13**	3.00"

STANDARD PACKAGE

Individually boxed with mounting screws, mounting brackets and adhesive shims to accommodate jamb or stile extrusion thickness greater or less than nominal 1/8 inch.

OPTIONS

Available with two monitoring signal switches which sense whether latch bolt is in strike and whether strike jaw is blocked. Choice of voltage in AC and DC for intermittent or continuous duty. Series 7100 (flat) available with extended strike lip (see chart). Specify assembled for either fail-secure (locked when unpowered) or fail-safe (locked when powered) operation, but can be field-converted to the other mode.

4603 Rectifier - Converts AC to DC, installs in low voltage line between transformer and strike. Rated 2 amps. (200 PIV).

4605 Transformer - Converts 120VAC to 24VAC. Rated 40 Volt-amp output assures plenty of power for strike release. Patented mounting bracket fits in knockout hole of standard junction boxes.

4606 Transformer - Plug-in version for standard wall outlet.

See separate specification sheet for more information on Strike options.

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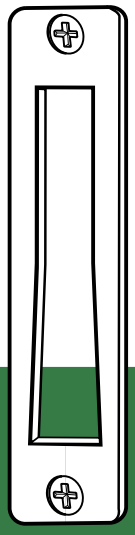
SWINGING DOOR HARDWARE

4000 Trim Strike

A simple strike plate that can be surface mounted on a wood or metal jamb or mortised flush. Furnished with two #10 flat head machine screws and two #10 flat head wood screws.

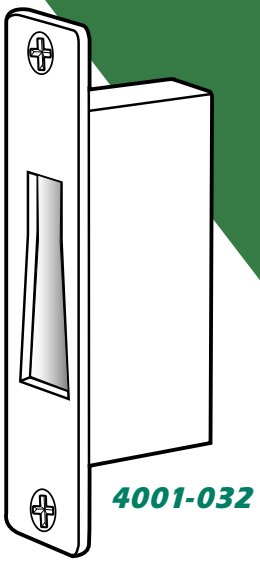
MATERIAL/FINISH:
Made of aluminum. Available in US28 (628) Satin Aluminum, anodized. Also anodized in 313 and 335. Contact factory for other available finishes.



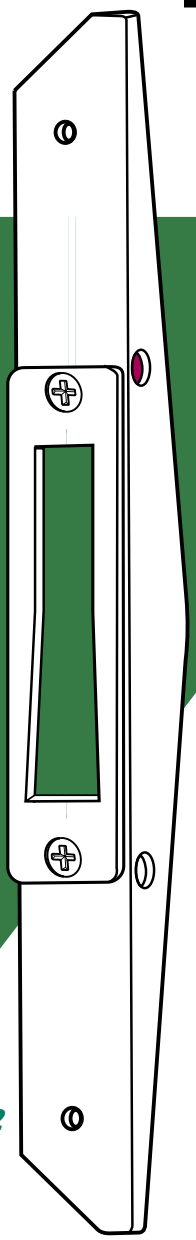
4000-012

MS® Deadbolt Strikes

4000, 4001, MS4002



4001-032



MS4002-012

MS4002 Armored Strike

Same trim plate as 4000 and 4001, but backed up by a massive steel doubler designed to prevent the method of forced entry known as "jamb peeling." Fits within aluminum or other hollow jamb sections with trim face flush, the steel completely hidden. Available flat or radiused, for pairs of doors*, and to fit all MS® deadbolts including the hookbolt version in sliding doors. (Hookbolt use dictates door/jamb gap of 1/8" or less.) Unhanded, may be used with RH or LH swinging or sliding doors.

MATERIAL/FINISH:
Trim plate is aluminum. Reinforcement doubler is steel plated for corrosion resistance. Available in US28 (628) Satin Aluminum, anodized. Also anodized in 313 and 335. Contact factory for other available finishes.

Can be used with two-point and three-point MS® locks.

4001 Box Strike

Same trim plate as 4000 but with dust box added. Customarily used only for wood construction where the dust box prevents chips, sawdust and other debris from entering strike. Also furnished with both wood and machine screws.

MATERIAL/FINISH:
Trim plate is aluminum, box is steel plated for corrosion resistance. Available in US28 (628) Satin Aluminum, anodized. Also anodized in 313 and 335. Contact factory for other available finishes.

Function

The majority of Adams Rite MS® deadbolts are installed in metal construction where the strike cutout can be simply a slot in the jamb. However, for aesthetic reasons or, in the case of the MS4002, for added security, many who specify the MS® deadbolt add one of these strikes.

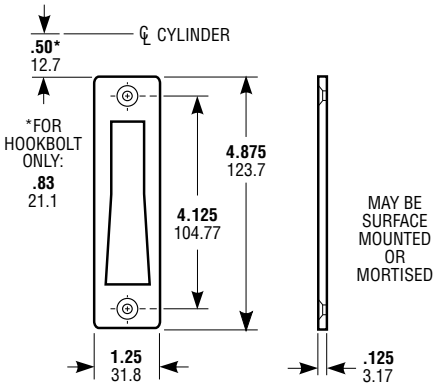
ADAMS RITE
MANUFACTURING CO.

260 Santa Fe Street
Pomona, California 91767
(800) 872-3267 Fax:(800) 232-7329
www.adamsrite.com

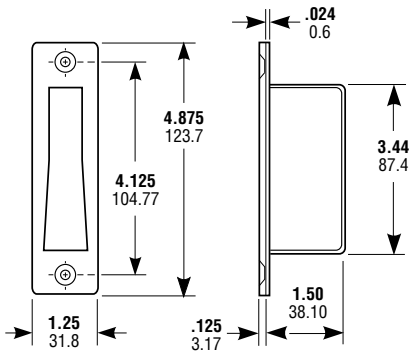
4000 Series MS® Deadbolt Strikes

DIMENSIONS & INSTALLATION

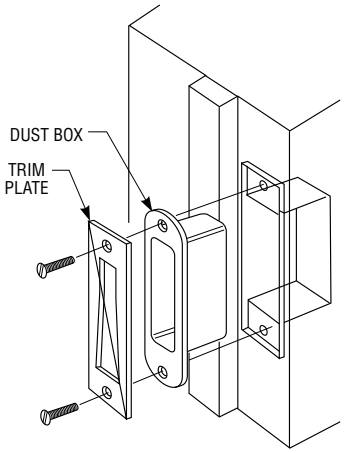
INCHES
MILLIMETERS
Nominal, subject to tolerance extremes.



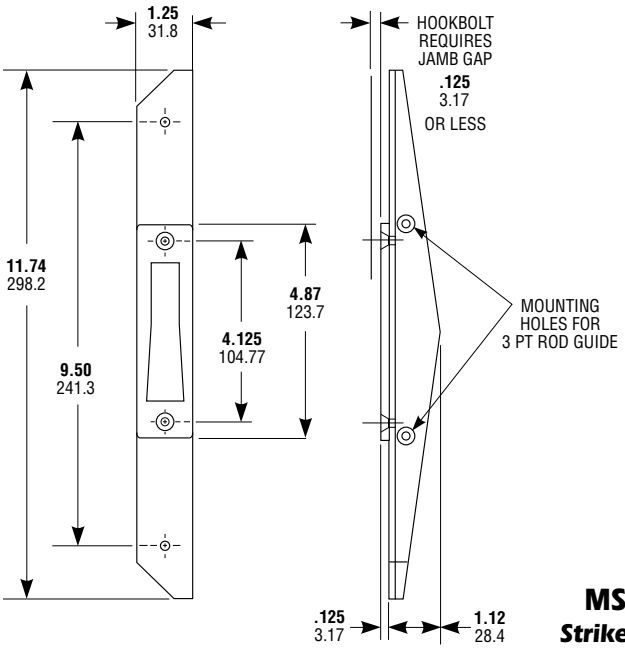
4000 Trim Strike
Strike Plate Only



4001 Box Strike
Strike Plate with Dust Box

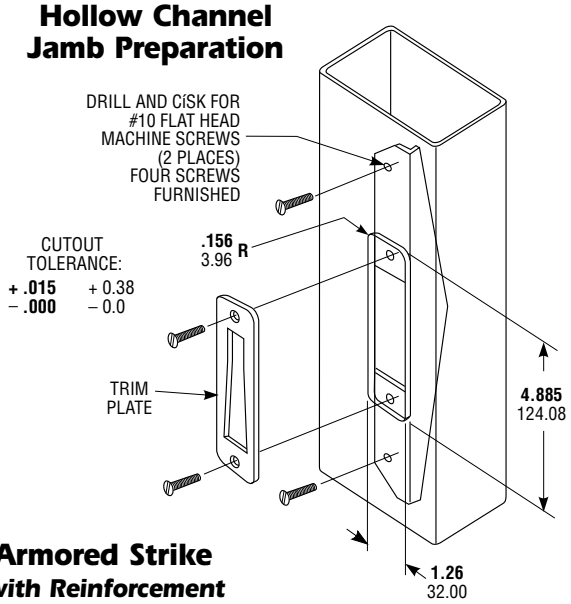


Mortise Jamb Preparation



MS4002 Armored Strike
Strike Plate with Reinforcement

Hollow Channel Jamb Preparation



HOW TO ORDER

Specify quantity and the following information.

Strike Model		Trim Plate Shape		Trim Plate Corners	
4000	Trim Strike	**0**	Flat	**1**	Square corners
4001	Box Strike	**1**	Radius	**2**	Round corners
MS4002	Armored Strike				

4001-011

Compatible Deadlock
- **1** All standard MS® locks with 1-3/8" bolt throw
- **2** 1850A-020 with 3/4" bolt throw only
- **3** All MS–050 "Hookbolt" locks

OPTIONS

Specify flat or radius shape of trim plate, round or square corners and lock compatibility when ordering. 4003-01 ANSI-dimensioned lipped strike also available for MS1850SN Deadbolt. (See page SW-2.)

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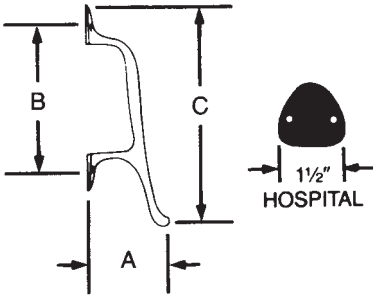
Architectural Door Trim

8100 Series Door Pulls

- Made from the finest architectural brass, stainless steel and aluminum available.
- Each pull is carefully machined, polished and inspected before being individually wrapped and packaged.
- Door pulls are packed with standard type fasteners for 1-3/4" doors. For special mounting methods other than standard, see pages C11 - C13.
- For sizes and finishes not listed in this catalog, contact our Customer Service Department for availability.



8121 Door Pull

Prod. No.	Proj. "A"	Center to Center "B"	Overall Length "C"
8121-5	3-1/2"	5-3/4"	8-3/4"

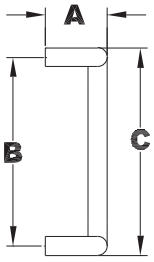
How to Order

8121-5 - ____ - ____

Finishes:
US3, US10, US10B, US15, US15A, US26, US26D, US28

Mounting Type:

Blank	Standard
F	Concealed wood door w/push plate (special)
K	Back to back pulls. Furnished is Pairs (PR).



8190 90° Offset Door Pull

Prod. No.	Proj. "A"	Center to Center "B"	Overall Length "C"
8190	3-1/4"	8"	9"
8190	3-1/4"	10"	11"
8190	3-1/4"	12"	13"
8190	3-1/4"	18"	19"

How to Order

8190 - ___ - ___ - ___

Size:
8 for 8"
0 for 10"
2 for 12"
18 for 18"

Finishes
US3, US4, US10, US10B, US15, US15A, US26, US26D, US32, US32D

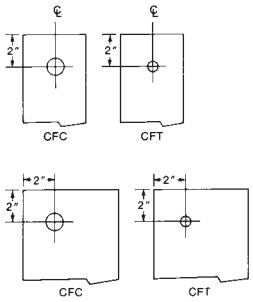
Mounting Type:

Blank	Standard
L	Surface Concealed Two-Anchor
M	Back-To-Back with Spanner Collar. Furnished in Pairs. (PR)
M1	Single (SGL) Pull. Back-to-Back With Spanner Collar. RH Thread.
M2	Single (SGL) Pull. Back-to-Back With Spanner Collar. LH Thread.
N	Back-to-Back Two-Anchor. Furnished in Pairs. (PR)
N2	Single (SGL) Pull, Back-to-Back Two Anchor.
O	Decorative Blind Thru-Bolt

Architectural Door Trim

8200 Series Push Plates and 8300 Series Pull Plates

- Made from the finest architectural aluminum, brass, and stainless steel.
- For Push Plate sizes other than listed, contact our Customer Service Department or your local sales representative.
- All aluminum, brass, and stainless steel Push Plates meet ANSI A156.6 requirements for .050" thickness.
- Each Push Plate is packaged individually wrapped with mounting screws.
- For special mounting methods other than standard, see pages C11 - C13.



Push and Pull Plates Cut for Cylinder or Thumbturns

- All plates may be ordered with cutout for cylinder or thumbturn. Standard cutouts are positioned 2" from top of plate and centered on plates up to 4" wide or 2" from edge on plates over 4" wide. Specify hand of door when ordering cutout for plates wider than 4". On pull plates, if the pulls center-to-center dimension interferes with the cutout for the cylinder or thumbturn, please provide drawing of cutout location when ordering.
- Standard size for cylinder cutouts is 1-1/4" diameter and for thumbturn cutout is 3/8" diameter.
- When ordering, add suffix CFC for cut for cylinder, and CFT for cut for thumbturn to product number.

8200 Push Plate
8300 Pull Plate (less pull)

Available Sizes
3" x 12"
3.5" x 15"
4" x 16"
6" x 16"
8" x 16"

How to Order

8 ___ - ____ - ____ - ____ - ____

Model:
- **200** Push Plate,
- **300** Pull Plate, less pull

Hole Spacing: (for Pull Plate only)
- **5** for 5-1/4"
- **6** for 6"
- **8** for 8"
- **0** for 10"

Finishes:
US3, US4, US5, US10, US10B, US15, US15A, US26, US26D, US28, US32, US32D

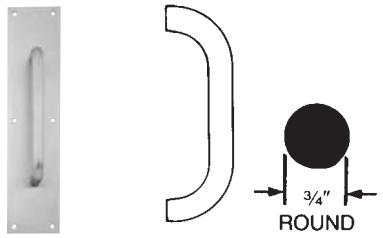
Size:
3 x 12, 3-1/2 x 15, 4 x 16, 6 x 16, 8 x 16

Special Options: (specify handing for plates over 4" wide)
- **CFC** Cylinder cutout
- **CTC** Thumbturn cutout

Architectural Door Trim

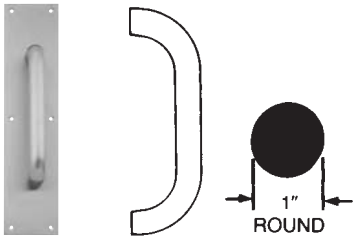
8300 Series Pull Plates

- Made from the finest architectural aluminum, brass and stainless steel.
- For Pull Plate sizes other than listed, contact our Customer Service Department or your local sales representative.
- All aluminum, brass, and stainless steel Pull Plates meet ANSI A156.6 requirements for .050" thickness.
- Each Pull Plate is packaged individually wrapped with mounting screws.
- Pulls are centered on plates up to 4" wide and offset 2" from edge of plates wider than 4".
- For special mounting methods other than standard, see pages C11 - C13.



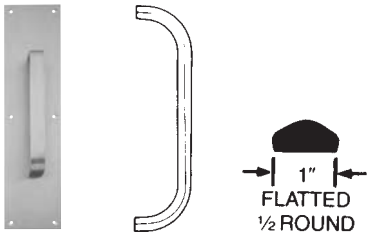
8302 Pull Plate

- 8300 Plate
  3-1/2" x 15"
  4" x 16"
  6" x 16"
- 8102 Pull
  6" centers
  8" centers
  10" centers



8303 and 8303EZ Pull Plate

- 8300 Plate
  3-1/2" x 15"
  4" x 16"
  6" x 16"
- 8103 Pull
  8" centers
  10" centers



8305 Pull Plate

- 8300 Plate
  3-1/2" x 15"
  4" x 16"
  6" x 16"
- 8105 Pull
  6" centers
  8" centers
  10" centers

How to Order

83 ____ - ____ - _____ - _____ - ____ - ____

Pull Style:
- **02** for 8102
- **03** for 8103
- **05** for 8105

Pull Center to Center:
- **6** for 6" (not available on 8303)
- **8** for 8"
- **0** for 10"

Finishes:
US3, US4, US5, US10, US10B, US15, US15A, US26, US26D, US28, US32D

Size:
3-1/2" x 15", 4" x 16", 6" x 16"

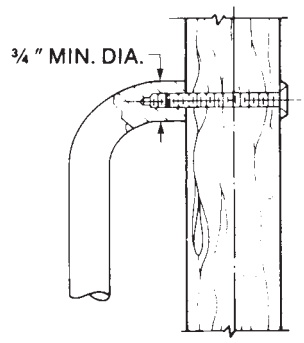
Special Options: (Handing needed for 6" x 16", LH or RH)
- **CFC** Cylinder cutout
- **CTC** Thumbturn cutout

Mounting:
- **Blank** Standard
- **F** Concealed pull wood doors w/push plate (special. Not available 8303EZ.)
- **G** Concealed pull plate (Only available 8302, 8303 and 8303EZ)
- **I** Concealed pull wood door (not available 8305 and 8303EZ)
- **J** Back to back pull (not available 8305 and 8303EZ)

Architectural Door Trim

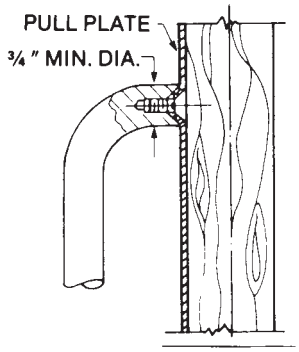
Mounting

- All mounting hardware is for standard 1-3/4" door.
- Consult Customer Service if other than standard.



Standard Mounting

- (2) 1/4-20 x 2-1/4" brass, oval head machine screws; plated to match.
- (2) No. 14 countersunk washers; plated to match



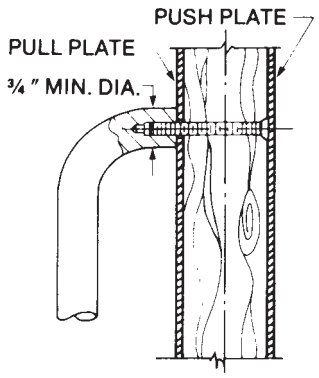
Type G

Concealed Pull Plate Mounting

Available only for 8302, 8303, 8311 and 8314 Pull Plates.

- (2) 1/4-20 x 5/8" steel flat head machine screws; zinc plated.

Pull mounts directly onto plate. Plate is attached to door by 6 screws.

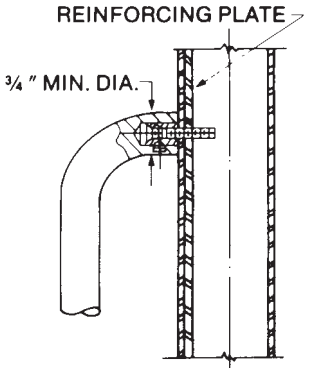


Type F-Special

Wood Doors
Concealed Pull Mounting With Push Plate

- (2) 1/4-20 x 2-1/4" steel flat head machine screws; zinc plated.

Available only for 8102, 8103, 8105, 8111, 8113, 8114, 8302, 8303, 8305, 8311, 8313 and 8314. Plate on opposite side of door must be ordered separately.



Type H-Special

Reinforced Hollow Metal Door
Concealed Pull Mounting

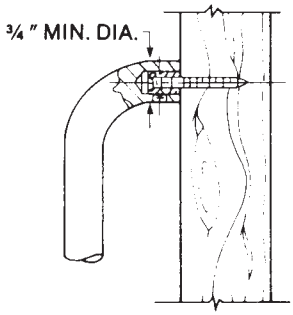
Available only for 8102 and 8103 Pulls.

- (2) Steel screw sleeves; zinc plated.
- (2) 1/4-20 x 1-1/4" steel countersunk trim head machine screw; zinc plated.

Architectural Door Trim

Mounting

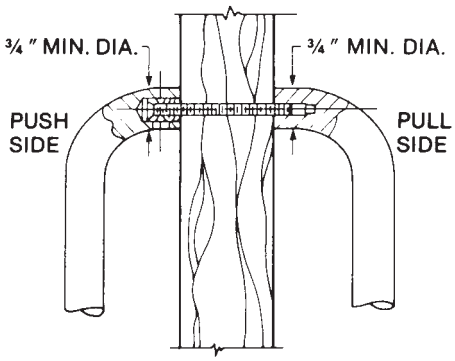
- All mounting hardware is for standard 1-3/4" door.
- Consult Customer Service if other than standard.



Type I
Wood Doors
Concealed Pull Mounting

Available only for 8102 and 8103 Pulls.

- (2) 10 x 1-1/2" No. 10 steel countersunk trim head sheet metal screws; zinc plated.

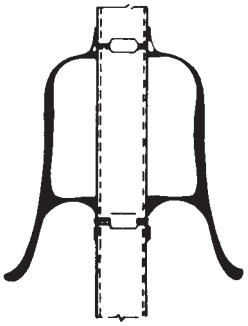


Type J
Back to Back Pull Mounting

Available only for 8102, 8103, 8302 and 8303 Pulls.

- (2) Steel screw sleeves; zinc plated.
- (2) 1/4-20 x 2-3/4" No. 10 steel countersunk trim head machine screws; zinc plated.

Pulls furnished in pairs (PR) unless single (SGL) specified.

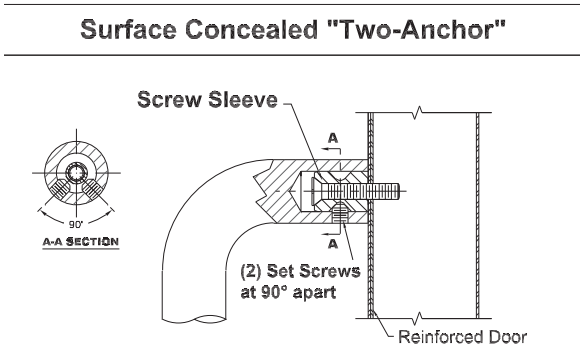


Type K
Back to Back Pull Mounting

Available only for 8121-5 Pulls.

- (4) Steel screw sleeve nuts; steel zinc plated.
- (8) No. 8-32 x 1" brass oval head machine screws; plated to match.

Pulls furnished in pairs (PR).



Type L
Reinforced Hollow Metal Door

Available only for 8103EZ and 8190 Pulls.

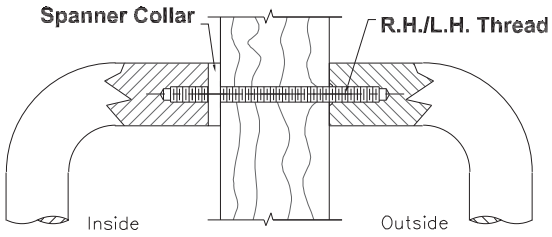
- (2) 1/4-20 x 1-1/4" steel countersunk trim head machine screws with (4) set screws for maximum anchoring force
- (2) Steel screw sleeves; zinc plated.

Architectural Door Trim

Mounting

- All mounting hardware is for standard 1-3/4" door.
- Consult Customer Service if other than standard.

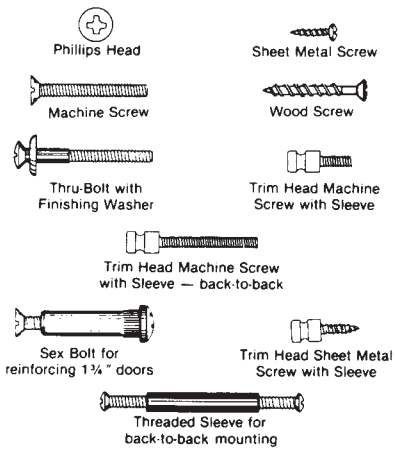
Back-to-Back with Spanner Collar



Type M

Wood or Metal Door

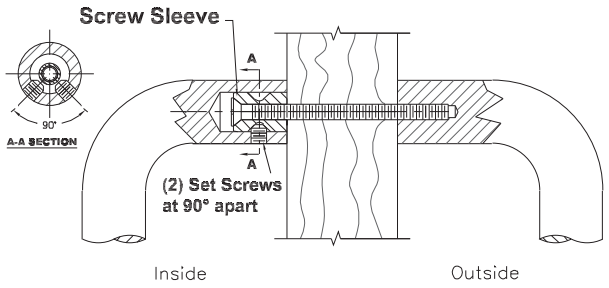
Available only for 8103EZ and 8190 Pulls.
- (2) 3/8-16 x 2-7/8" RH/LH bolts with finish matching spanner collars for tight, durable back-to-back mounting.



Fastener Guide

- Through bolt fasteners are for standard 1-3/4" thick doors.
- For fasteners other than shown contact our Customer Service Department for availability.

Back-to-Back "Two-Anchor"

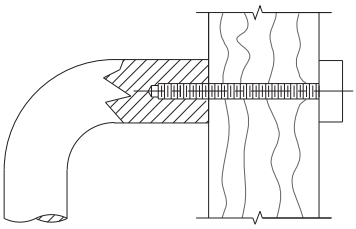


Type N

Wood or Metal Door

Available only for 8103EZ, 8190 and 9100 series Push/Pull Combinations.
- (2) 1/4-20 x 2-3/4" steel countersunk trim head machine screws with (4) set screws for maximum anchoring force.
- (2) Steel screw sleeves; zinc plated.

Decorative Blind Thru - Bolt



Type O

Wood or Metal Door

Available only for 8103EZ, 8190 and 9100 series Push/Pull Combinations.
- (2) 1/4-20 x 2-1/4" blind thru - bolts; plated to match.

Type NS-Standard Push/Pull Mounting

Type N & Standard

Pushbar to Pull

- (1) 1/4-20 X 3"steel countersunk trim head machine screws with (2) set screws.
- (1) steel screw sleeve, zinc plated.

Free End Pushbar & Pull

- (2) 1/4-20 X 2-1/4" brass, oval head mach screws; plated to match.
- (2) No. 14 countersunk washers; plated to match.

Type NO Push/Pull Mounting

Type N & Type O

Pushbar to Pull

- (1) 1/4-20 X 3"steel countersunk trim head machine screws with (2) set screws.
- (1) steel screw sleeve, zinc plated.

Free End Pushbar & Pull

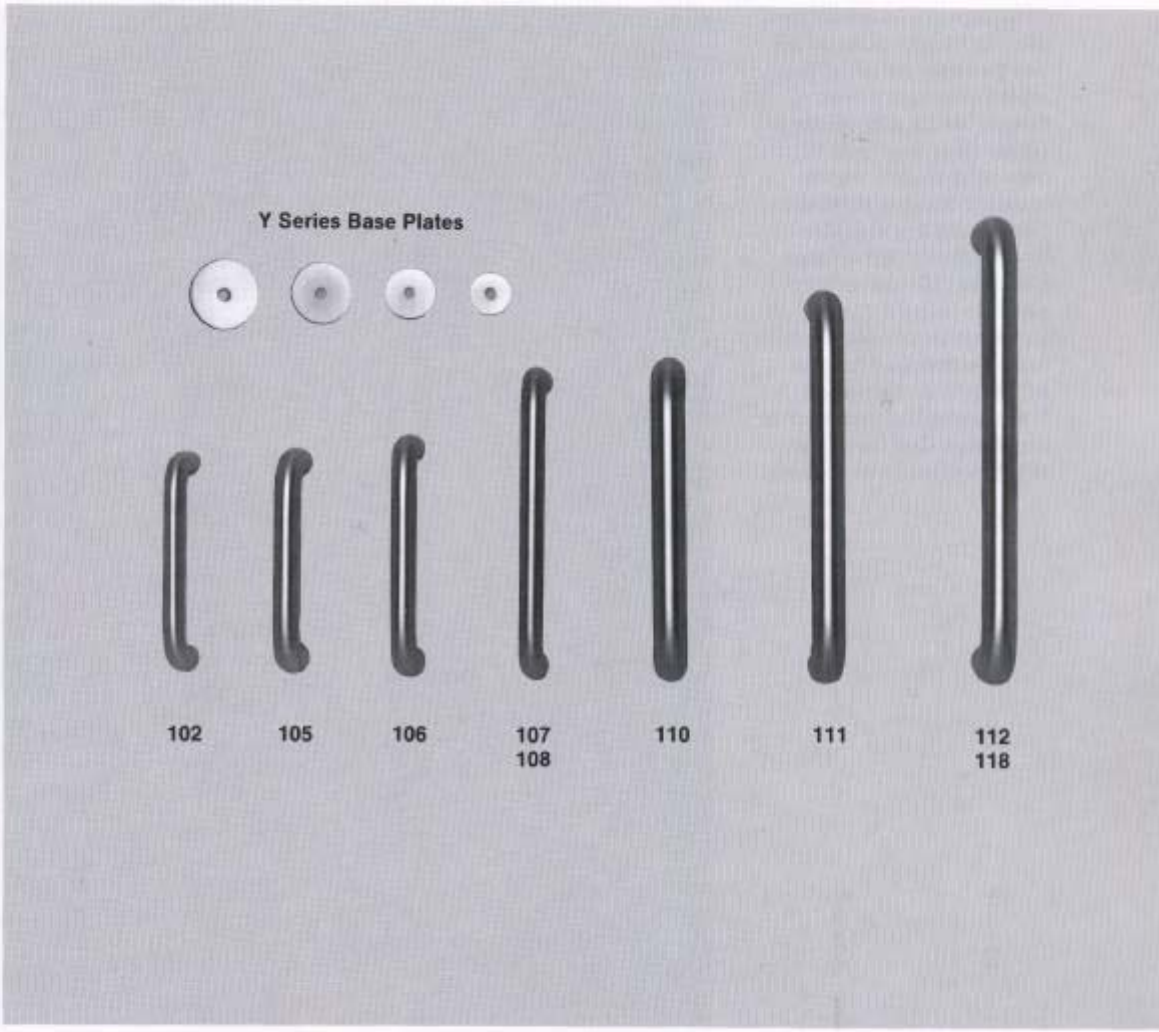
- (2) 1/4-20 X 2-1/4" blind thru-bolts; plated to match.

ROCKWOOD

Door Pulls

These door pulls are fabricated in our factory from bar stock, therefore a variety of modifications may be easily attained. We routinely make door pulls from as short as 5 inches to over 8 feet long. Please let us know your need and we will fill it.

Our "Short Radius Bend" (SRB) is a feature unique to Rockwood's round door pulls. The SRB on our round pulls and push bars makes for a finished look that is functionally as well as asthetically pleasing. Y Series base plates are shown in a variety of sizes, see page B17 for ordering details. Back to back and other mounting options are shown on page A11.



102

105-108

110-118

No.	Material	CTC	Overall	Projection	Clearance	Base	Weight	ANSI
102	⅜" diameter	5½"	6⅛"	2"	1⅜"	⅜"	.8 lbs.	****
105	¾" diameter	5½"	6¼"	2¼"	1½"	¾"	1.1 lbs.	J401
106	¾" diameter	6"	6¾"	2¼"	1½"	¾"	1.2 lbs.	J401
107	¾" diameter	8"	8¾"	2¼"	1½"	¾"	1.4 lbs.	J401
108	¾" diameter	10"	10¾"	2¼"	1½"	¾"	1.6 lbs.	J401
110	1" diameter	8"	9"	3"	2"	1"	2.6 lbs.	J401
111	1" diameter	10"	11"	3"	2"	1"	3.1 lbs.	J401
112	1" diameter	12"	13"	3"	2"	1"	3.5 lbs.	J401
118	1" diameter	18"	19"	3"	2"	1"	4.8 lbs.	J401

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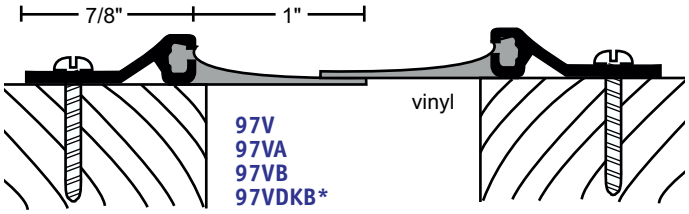
National Guard Products, Inc.
PROTECTION, INSIDE OUT
Toll Free Phone 1-800-647-7874
Toll Free Fax 1-800-255-7874

Astragal/Meeting Stile Gasketing

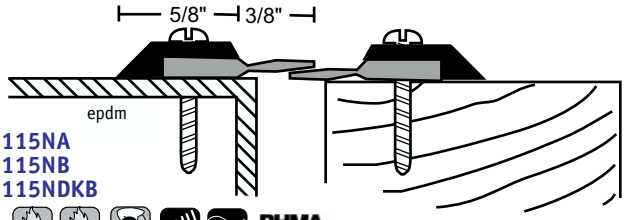
#6 x 3/4" Stainless Steel Sheet Metal Screws furnished.

Fire-rated Astragal Seals cannot replace any astragal required on the door to maintain its fire label. The gap at the latch between fire labeled doors must not exceed 1/8".



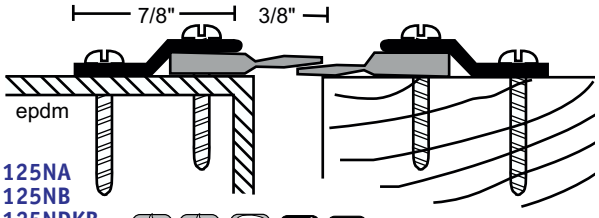
97V
97VA
97VB
97VDKB*

Order as **set** to receive two pieces



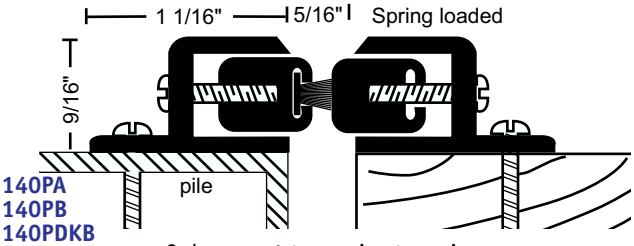
115NA
115NB
115NDKB

Order as **set** to receive two pieces



125NA
125NB
125NDKB

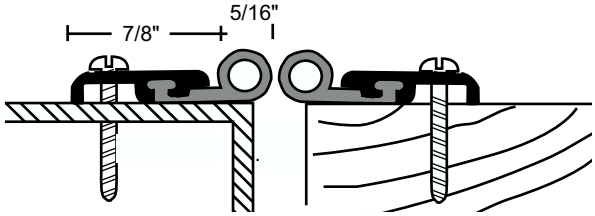
Order as **set** to receive two pieces



140PA
140PB
140PDKB

Order as **set** to receive two pieces

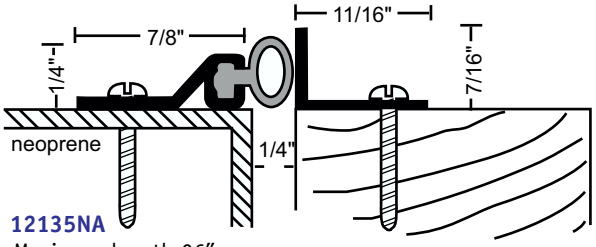
*up to 3 hrs. metal doors, 20 mins. wood doors



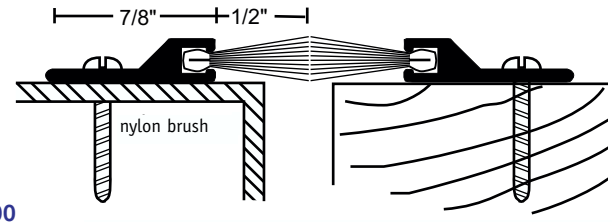
neoprene
137NA
137NB
137NDKB

Order as **set** to receive two pieces

silicone
137SA
137SB
137SDKB

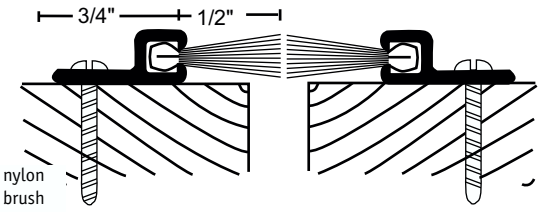


12135NA
Maximum length 96"



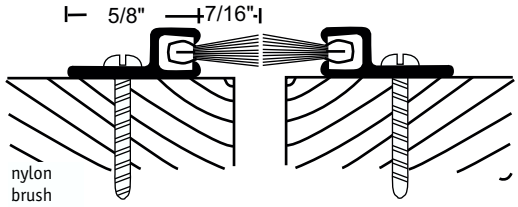
600
600A
600B
600DKB

Order as **set** to receive two pieces



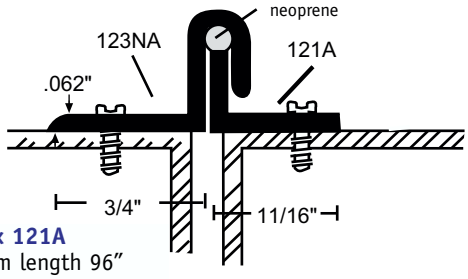
B606A
B606B
B606DKB

Order as **set** to receive two pieces



A605A
A605B
A605DKB

Order as **set** to receive two pieces



123NA x 121A
Maximum length 96"

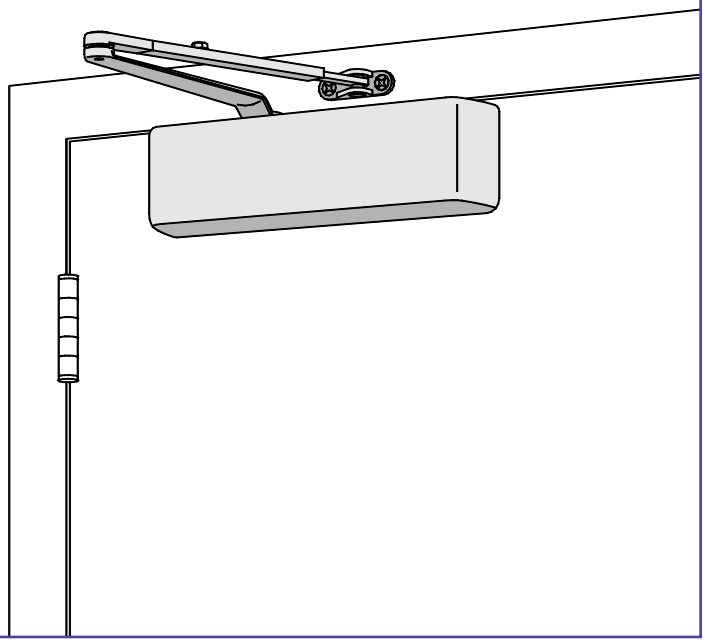
E-mail: ngpinfo@ngpinc.com
www.ngpinc.com

A	- clear	EPDM, pile, silicone, vinyl are gray
B	- gold	exception: * vinyl is black
DKB	- dark bronze	neoprene, brush are black

LCN 4010 SERIES

FEATURES

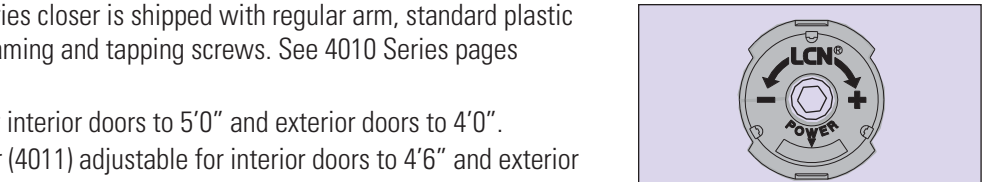
HINGE (PULL) SIDE MOUNT



The 4010 SMOOTHEE® is LCN's best performing heavy duty closer designed specifically for institutional and other rugged high traffic applications.

- **Ten Million Cycles**
- **Cast Iron**
- **Forged Steel Main Arm**
- **Double Heat Treated Steel Pinion**
- **All Weather Fluid**
- **LCN® Fast™ Power Adjust**
- **Fast & Accurate Installation**
- **UL & cUL Listed**

- Standard 4010 series closer is shipped with regular arm, standard plastic cover, and self reaming and tapping screws. See 4010 Series pages 5 & 6 for options.
- Sized cylinders for interior doors to 5'0" and exterior doors to 4'0".
- Non-sized cylinder (4011) adjustable for interior doors to 4'6" and exterior doors to 3'6".
- Closer mounts hinge side, specify right or left swinging door.
- Corner brackets available. See 4010 Series page 6 for options.
- 4011 cylinder meets ADA requirements. See 4010 Series page 7.
- Standard or optional custom powder coat finish.
- Optional plated finish on metal cover, arm and fasteners.
- Optional SRI primer for installations in corrosive conditions is available with powder coat only.
- The 4010 Series is UL and cUL listed with regular or fusible link arms for self-closing doors.
- Tested and certified under ANSI Standard A156.4, grade one.



The 4011 includes the **LCN® FAST™ Power Adjust,** *a revolutionary visual indicator for Spring Power Adjustment.*

MOUNTING					FINISH		COVER			CYLINDER					**ARM FUNCTION						
HINGE(PULL)SIDE	TOP JAMB (PULL)	TOP JAMB (PUSH)	PARALLEL ARM	STOP FACE	POWDER COAT	PLATED	PLASTIC	METAL	DESIGNER METAL	NON-HANDED	NON-SIZED	ACCESSIBILITY	DELAYED ACTION	AVB***	REGULAR(DOUBLE)	STANDARD(SINGLE)	HOLD-OPEN	FUSIBLE LINK	EDA/HEDA	CUSH/HCUSH	SCUSH/SHCUSH
●	○	○	○	○	●	●	●	●	○	○	●	♿	●	○	140°	○	140°	140°	○	○	○

● *Available*
○ *Not available*

♿ *Closer available with less than 5.0 lbs. opening force on 36" door.*
***Maximum opening/hold-open point with standard template.*
**** Advanced Variable Backcheck*

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LCN 4010 SERIES

MOUNTING DETAILS

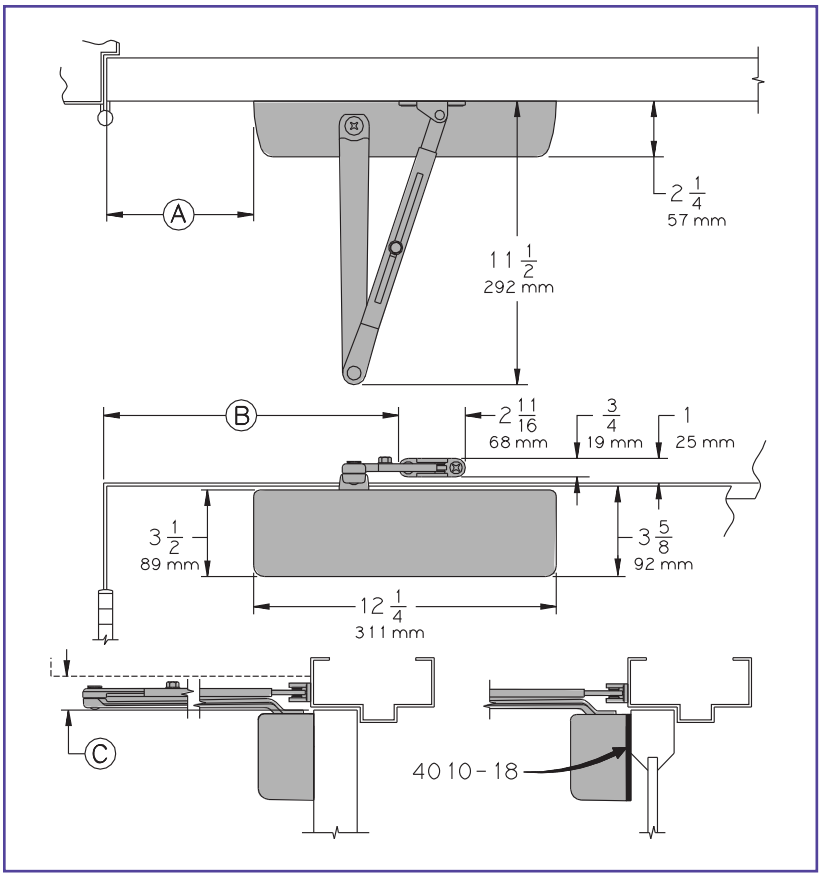
HINGE (PULL) SIDE MOUNTING

MAXIMUM OPENING

Can be templated for 100°,
Ⓐ = 5 15/16" (151 mm)
Ⓑ = 11 15/16" (303 mm)
or 140°.
Ⓐ = 4 3/16" (106 mm)
Ⓑ = 10 3/16" (259 mm)

Hold-open points up to maximum opening with hold-open arm.

Arm Clearance above door.
Regular arm requires Ⓒ = 1 1/16" (27 mm).
Hold-open arm requires Ⓒ = 1 3/8" (35 mm).
Fusible link arm requires Ⓒ = 1 5/8" (41 mm).



- **Butt Hinges** should not exceed 5" (127 mm) in width.
- **Auxiliary Stop** is recommended at hold-open point or where a door cannot swing 140°.
- **Reveal** should not exceed 3/4" (19 mm). Fusible link arm should not exceed 1/8" (3 mm).
- **Top Rail** less than 3 3/4" (95 mm) requires PLATE, 4010-18. Plate requires 2" (51 mm) minimum.
- **Clearance** of 2 1/4" (57 mm) behind door required for 90° installation.
- **Delayed Action** Add suffix "DEL" to selected cylinder (eg. 4014 DEL). Not available with 4016 cylinder. Delays closing from maximum opening to approximately 70°. Delay time adjustable up to approximately 1 minute.
- **Bull Nose Trim** requires SOFFIT SHOE, 4010-65.
- **Corner Bracket** for a door where top jamb or parallel arm mounting cannot be used. Consult factory on all corner bracket mounts.

Options
- Sized or non-sized cylinder.
- Delayed action cylinder.
- Hold-open, H180 (corner bracket only) hold-open, or fusible link arm.
- Metal or lead lined cover.

Special Templates
Customized installation templates or products may be available to solve unusual applications. Contact LCN for assistance.

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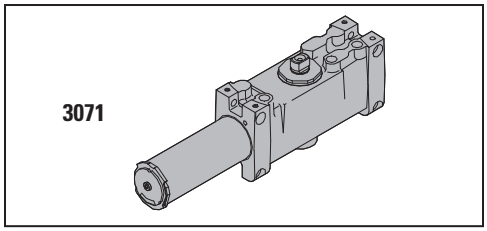
LCN 4010 SERIES

CYLINDERS

CYLINDER, 4010-3071

Standard, handed cast iron cylinder assembly.

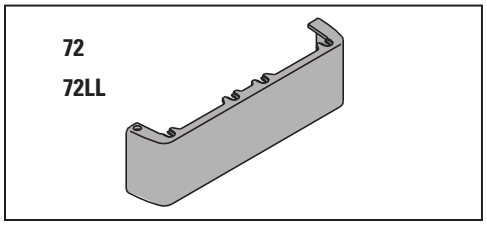
For various applications see "Table of Sizes" on 4010 Series page 7.



COVERS

COVER, 4010-72

Standard, non-handed plastic cover.

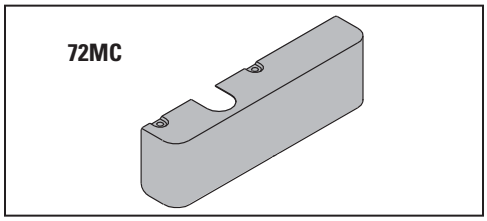


LEAD LINED COVER, 4010-72LL

Optional non-handed plastic cover.

METAL COVER, 4010-72MC

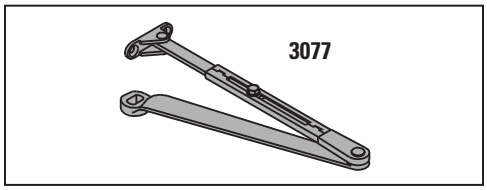
Optional, handed cover. Required for plated finishes and custom powder coat finishes.



ARMS

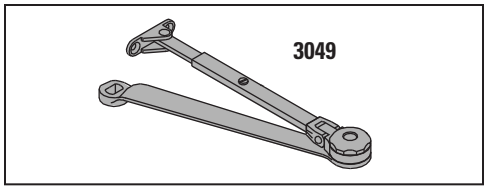
REGULAR ARM, 4010-3077

Non-handed arm.



HOLD-OPEN ARM, 4010-3049

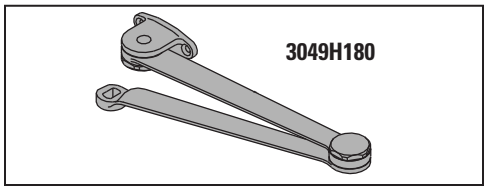
Optional, handed arm provides hold-open function, adjustable at elbow.



HOLD-OPEN H180 ARM, 4010-3049H180

Optional, handed arm provides hold-open function up to 180°, adjustable at shoe.

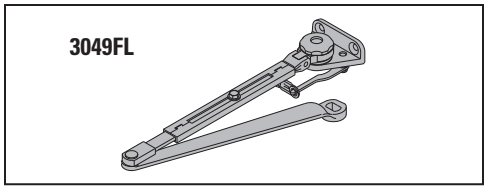
Closer must be mounted on 4010-11 corner bracket.



FUSIBLE LINK ARM, 4010-3049FL

Optional, handed arm releases hold-open function when exposed to temperatures above 165° F.

1/8" (3 mm) maximum reveal. NOTE: Check local codes before specifing FL arms. NOT A LIFE SAFETY PRODUCT!



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LCN 4010 SERIES

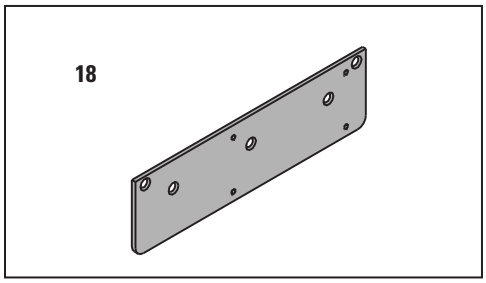
ACCESSORIES

INSTALLATION ACCESSORIES

PLATE, 4010-18

Required where top rail is less than 3 3/4" (95 mm).

Plate requires minimum 2" (51 mm) top rail.



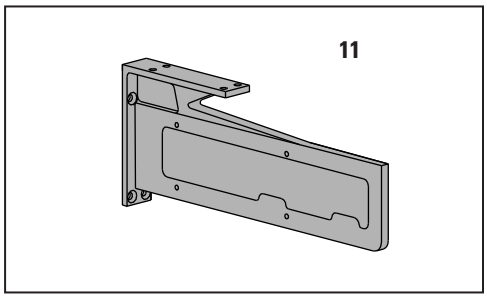
CORNER BRACKET, 4010-11

For doors where top jamb or parallel arm mounted closer can not be used.

Allows 180° opening with regular or H180 hold-open arm.

Projects 5" (127 mm) from stop, 13 11/16" (348 mm) from frame.

Requires opposite hand closer.



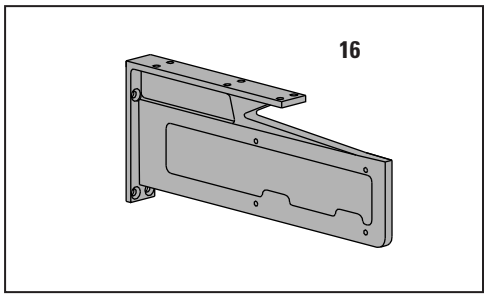
CORNER BRACKET, 4010-16

For doors where top jamb or parallel arm mounted closer can not be used.

Allows 125° opening with regular arm or 100° with hold-open or fusible link arm.

Projects 5" (127 mm) from stop, 12 13/16" (325 mm) from frame.

Requires opposite hand closer.



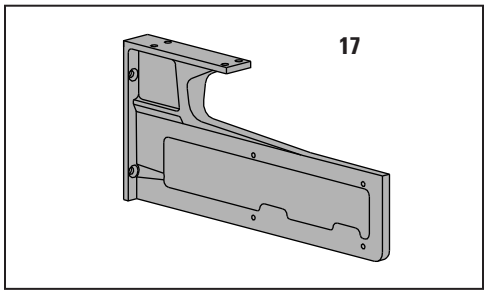
CORNER BRACKET, 4010-17

Allows 110° opening with regular arm.

Designed to lower closer on door for clearance of auxiliary door holders (consult factory).

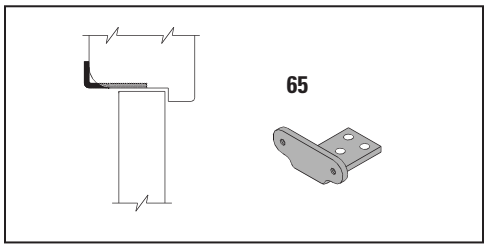
Projects 6 3/8" (162 mm) from stop, 13 11/16" (348 mm) from frame.

Requires opposite hand closer.



SOFFIT SHOE, 4010-65

Adapts hinge side shoe to rounded or bull nose trim.



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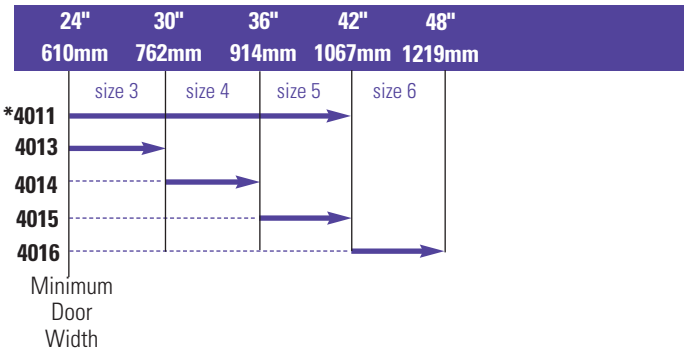
LCN 4010 SERIES

TABLE OF SIZES

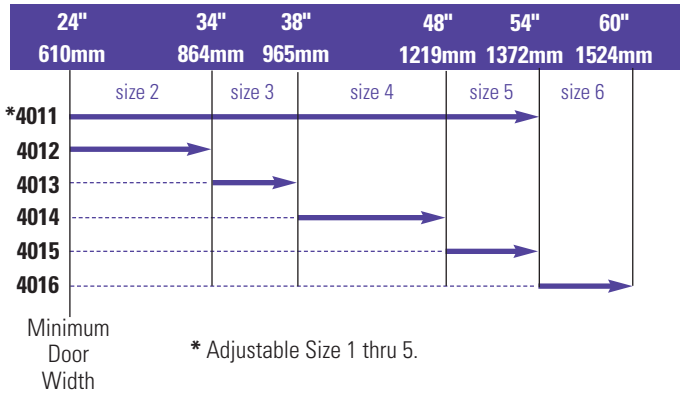
Select closer based on width of door.
The spring power of non-sized 4011 cylinder is adjustable from size 1 through size 5 and is shipped set to size 3.
Sized 4010 series cylinders available in size 2, 3, 4, 5, or 6.
Closing power of all 4010 Series closers may be increased 50%.
Specify next higher size closer where strong drafts exist.
Delayed action not available with 4016 cylinder.

→ Indicates recommended range of door width for closer size.

EXTERIOR (and VESTIBULE) DOOR WIDTH



INTERIOR DOOR WIDTH



***** Adjustable Size 1 thru 5.

REDUCED OPENING FORCE 4010 CLOSERS

CAUTION ! Any manual door closer, including those certified by BHMA to conform to ANSI Standard A156.4, that is selected, installed and adjusted based on ADA or other reduced opening force requirements may not provide sufficient power to reliably close and latch a door.

Refer to POWER OPERATORS section for information on systems that meet reduced opening force requirements without effecting closing power.

	DOOR WIDTH	36"	42"	48"
♿	8.5* lbs.	4011	4011	4011
	5.0* lbs.	4011	4011	4011

** Maximum opening force*

HOW-TO-ORDER 4010 SERIES CLOSERS

1. SELECT CYLINDER SIZE

- ☐ 4011 (adjustable from size 1 to 5)
- ☐ 4012
- ☐ 4013
- ☐ 4014
- ☐ 4015
- ☐ 4016 (DEL not available)

2. SPECIFY HAND

- ☐ RH
- ☐ LH

3. SELECT FINISH

- ☐ Standard Powder Coat _____
  Aluminum, Dark Bronze , Tan, Statuary, Light Bronze, Black, Brass.

Closer will be shipped with:
- STANDARD COVER,
- REGULAR ARM,
- SELF-REAMING and TAPPING SCREWS, unless options listed below are selected.

CLOSER OPTIONS

CYLINDER

- ☐ Delayed Action (DEL)

COVER

- ☐ Lead Lined (LL)
- ☐ Metal (MC)

ARM

- ☐ Hold-Open (H)
- ☐ H180 Hold-Open (H180) (*corner bracket mount only*)
- ☐ Fusible Link, 165°F (FL)

FINISH

- ☐ Custom Powder Coat (RAL) _____
  (handed metal cover required)
- ☐ Plated Finish, US _____
  (handed metal cover required)
- ☐ SRI primer

SCREW PACK

- ☐ TB* & SRT Screw (TBSRT)
- ☐ Wood & Machine Screw (WMS)
- ☐ TB*, Wood & Machine Screw (TBWMS)
- ☐ TORX Machine Screw (TORX)
- ☐ TB* & TORX Machine Screw (TBTRX)
  * Specify door thickness if other than 1 3/4".

INSTALLATION ACCESSORIES

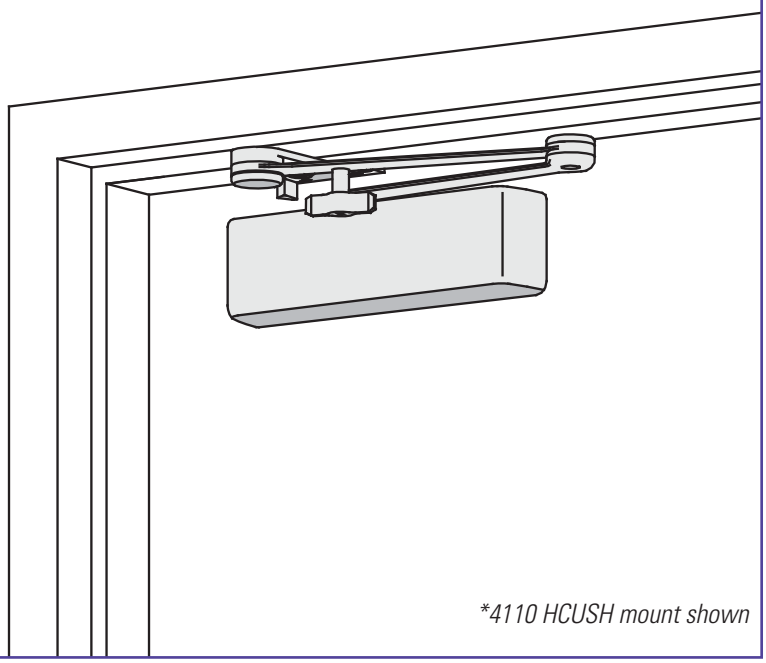
- ☐ Plate, 4010-18
- ☐ Bracket, 4010-11
- ☐ Bracket, 4010-16
- ☐ Bracket, 4010-17
- ☐ Soffit Shoe, 4010-65

SPECIAL TEMPLATE

- ☐ ST- _____

LCN 4110 SERIES

*PARALLEL ARM (PUSH SIDE) MOUNT



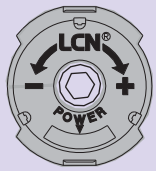
*4110 HCUSH mount shown

The 4110 SMOOTHEE® is LCN's best performing heavy duty closer designed specifically for institutional and other rugged high traffic applications.

FEATURES

- **Ten Million Cycles**
- **Cast Iron**
- **Extra Duty Forged Steel Arm Standard**
- **Double Heat Treated Steel Pinion**
- **All Weather Fluid**
- **LCN® Fast™ Power Adjust**
- **Fast & Accurate Installation**
- **UL & cUL Listed**

- Standard 4110 series closer is shipped with EXTRA DUTY arm, standard plastic cover, 4110-201 FIFTH SCREW SPACER and self reaming and tapping screws. See 4110 Series pages 61 & 62 for options.
- Sized cylinders adjustable for interior doors to 5'0" and exterior doors to 4'0".
- Non-sized cylinder adjustable for interior doors to 4'6" and exterior doors to 3'6".
- Closer mounts parallel arm, specify right or left swinging door.
- 4111 cylinder meets ADA requirements. See 4110 Series page 63.
- Standard or optional custom powder coat finish.
- Optional plated finish on metal cover, arm and fasteners.
- Optional SRI primer for installations in corrosive conditions is available with powder coat only.
- The 4110 Series is UL and cUL listed for self-closing doors without hold-open.
- Tested and certified under ANSI Standard A156.4, grade one.



The 4111 includes the **LCN® FAST™ Power Adjust,** *a revolutionary visual indicator for Spring Power Adjustment.*

MOUNTING					FINISH		COVER			CYLINDER					**ARM FUNCTION							
HINGE(PULL)SIDE	TOP JAMB (PULL)	TOP JAMB (PUSH)	PARALLEL ARM	STOP FACE	POWDER COAT	PLATED	PLASTIC	METAL	DESIGNER METAL	NON-HANDED	NON-SIZED	ACCESSIBILITY	DELAYED ACTION	AVB***	REGULAR(DOUBLE)	STANDARD(SINGLE)	HOLD-OPEN	FUSIBLE LINK	EDA/HEDA	CUSH/HCUSH	SCUSH/SHCUSH	
○	○	○	●	○	●	●	●	●	○	○	●	♿	●	●	○	○	○	180°	180°	110°	110°	

● *Available*
○ *Not available*

♿ *Closer available with less than 5.0 lbs. opening force on 36" door.*
***Maximum opening/hold-open point with standard template.*
**** Advanced Variable Backcheck*

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LCN 4110 SERIES

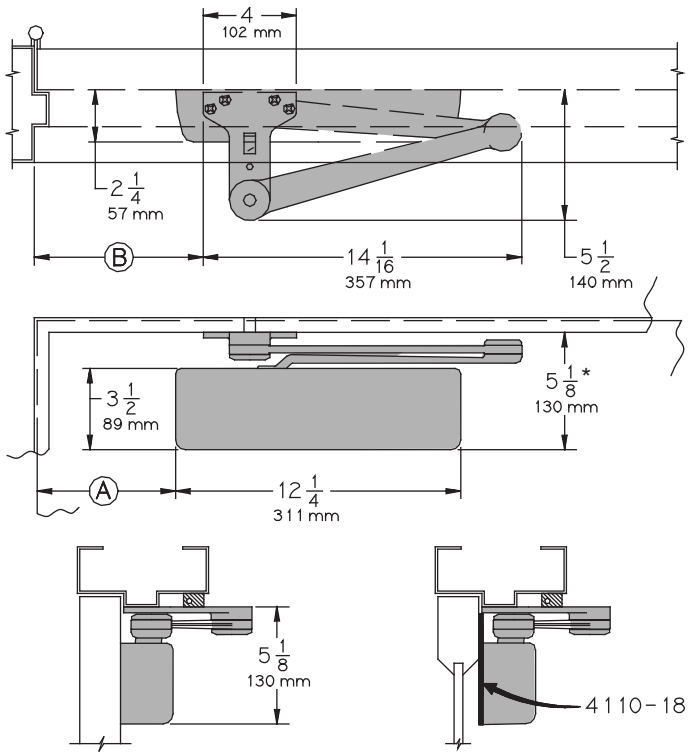
MOUNTING DETAILS

PARALLEL ARM (PUSH SIDE) MOUNTING

MAXIMUM OPENING

EDA or Fusible Link arm can be templated for
100°,
Ⓐ = 5 15/16" (151 mm)
Ⓑ = 7 1/4" (184 mm)
140°,
Ⓐ = 4 7/16" (113 mm)
Ⓑ = 5 3/4" (146 mm)
or 180°.
Ⓐ = 2 15/16" (75 mm)
Ⓑ = 4 1/4" (108 mm)
Hold-open points up to maximum opening with HEDA or Fusible Link arm.

CUSH arm can be templated for maximum opening at
85°,
Ⓐ = 8 5/16" (211 mm)
Ⓑ = 9 5/8" (244 mm)
90°,
Ⓐ = 7 11/16" (195 mm)
Ⓑ = 9" (229 mm)
100°,
Ⓐ = 6 7/16" (164 mm)
Ⓑ = 7 3/4" (197 mm)
or 110°.
Ⓐ = 5 9/16" (141 mm)
Ⓑ = 6 7/8" (175 mm)
Hold-open point at maximum opening with HCUSH arm.
Spring Cush hold-open points are approximately 5° less than templated stop point.



*5 11/16" (144 mm) For Fusible Link Arm applications

Options

- Sized or non-sized cylinder.
- Delayed Action and/or Advanced Variable Backcheck cylinder.
- HEDA, CUSH, HCUSH, SPRING CUSH, SPRING HCUSH or Fusible Link arm.
- Metal or lead lined cover.

Special Templates

Customized installation templates or products may be available to solve unusual applications. Contact LCN for assistance.

- **Butt Hinges** should not exceed 5" (127 mm) in width.
- **Auxiliary Stop** is recommended at hold-open point, where a door cannot swing 180°, or where CUSH-N-STOP arm is not used.
- **Clearance** for EDA, or CUSH shoe is 5 1/2" (140 mm) from door face.
- **Top Rail** less than 5 1/8" (130 mm) measured from stop requires PLATE, 4110-18. Plate requires 2" (51 mm) minimum measured from the stop.
- **Stop Width** minimum 1" (25 mm).
- **Head Frame** flush or rabetted requires 4110-145 arm or PA SHOE ADAPTER, 4110-418, Use CUSH FLUSH PANEL ADAPTER, 4110-419 with CUSH arms.
- **Reveal** less than 2 3/4" (70 mm), use CUSH SHOE SUPPORT, 4110-30 with CUSH arms.
- **Blade Stop Spacer**, 4110-61 required to clear 1/2" (13 mm) blade stop.
- **Cush Arm** requires CUSH SHOE SUPPORT, 4110-30 for fifth screw anchorage with CUSH arms.
- **Delayed Action** Add suffix "DEL" to selected cylinder (eg. 4114 DEL). Not available with 4115 or 4116 cylinder. Delays closing from maximum opening to approximately 70°. Delay time adjustable up to approximately 1 minute.
- **Advanced Variable Backcheck** cylinder starts backcheck at approximately 45° instead of the normal 75°. Add suffix "AVB" to selected cylinder. When combined with Delayed Action consult factory for special template.

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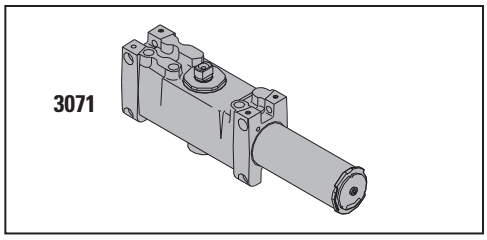
LCN 4110 SERIES

CYLINDERS

CYLINDER, 4110-3071

Standard, handed cast iron cylinder assembly.

For various applications see "Table of Sizes" on 4110 Series page 63.



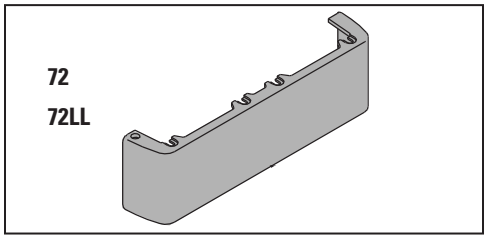
COVERS

COVER, 4110-72

Standard, non-handed plastic cover.

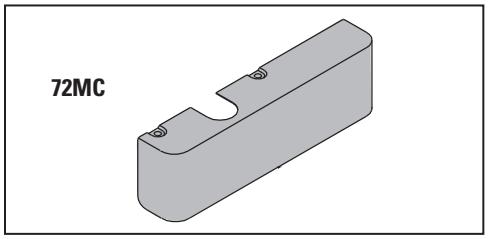
LEAD LINED COVER, 4110-72LL

Optional, non-handed plastic cover.



METAL COVER, 4110-72MC

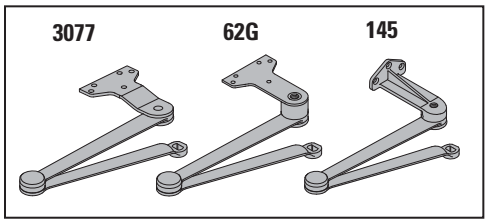
Optional, handed cover. Required for plated finishes and custom powder coat finishes.



ARMS

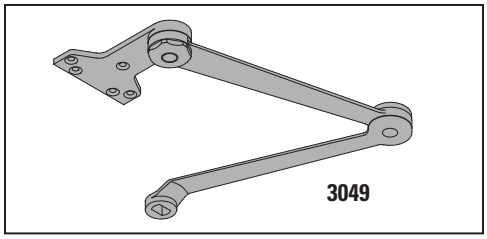
EXTRA DUTY ARM, 4110-3077EDA, 4110-62G, 4110-145

Non-handed parallel arm features forged, solid steel main and forearm for potentially abusive installations.
Optional 4110-62G thick hub shoe for blade stop clearance.
Optional 4110-145 flush transom shoe for single rabetted installations. Optional shoes require special templating.



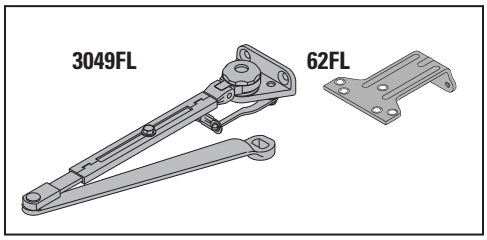
HOLD-OPEN ARM 4110-3049EDA

Optional handed arm provides hold-open function, adjustable at shoe.



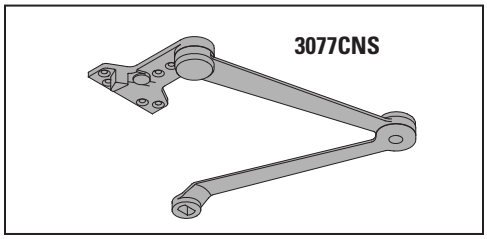
FUSIBLE LINK ARM, 4110-3049FL

Optional, handed arm releases hold-open function adjustable at shoe when exposed to temperatures above 165° F.
NOTE: Check local codes before specifing FL arms. NOT A LIFE SAFETY PRODUCT!



CUSH-N-STOP ARM, 4110-3077CNS

Optional, handed parallel arm features solid forged steel main arm and forearm with built-in stop in soffit shoe.



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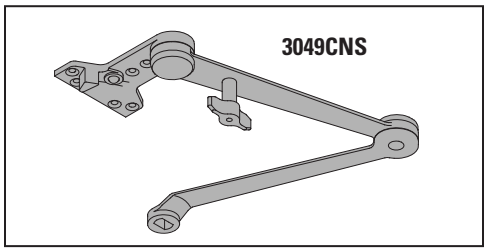
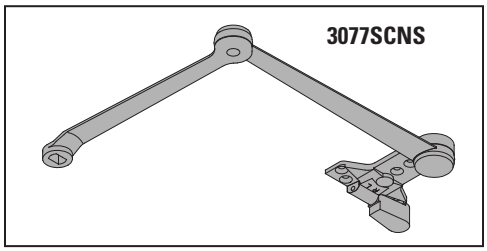
LCN 4110 SERIES

ACCESSORIES

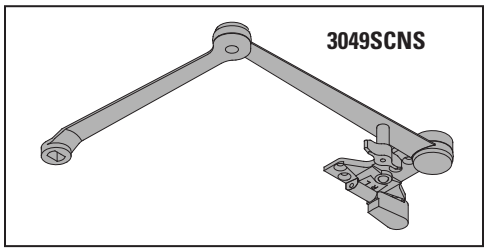
H-CUSH ARM 4110-3049CNS
Optional handed arm provides hold-open function with templated stop/hold-open points.
Handle controls hold-open function.



SPRING CUSH ARM, 4110-3077SCNS
Optional, non-handed parallel arm for abusive applications features solid forged steel main arm and forearm with spring loaded stop in the soffit shoe.

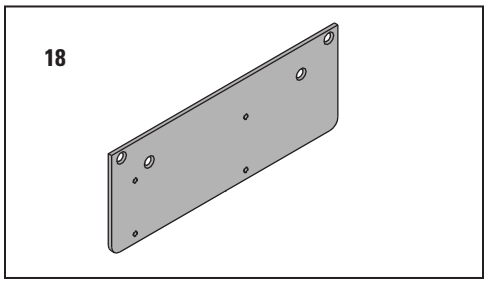


SPRING H-CUSH ARM, 4110-3049SCNS
Optional, non-handed parallel arm for abusive applications features solid forged steel main arm and forearm with spring loaded stop in the soffit shoe. Handle controls hold-open function.



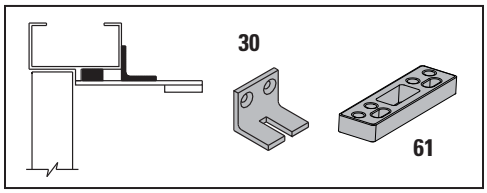
INSTALLATION ACCESSORIES

PLATE, 4110-18
Required for push side mount where top rail is less than 5 1/8" (130 mm), measured from the stop.
Plate requires minimum 2" (51 mm) minimum top rail.
Plate also used with CUSH Arm installations.

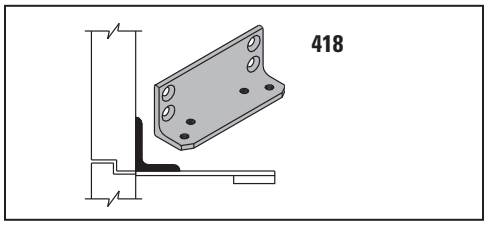


CUSH SHOE SUPPORT, 4110-30
Provides anchorage for fifth screw used with CUSH arm, where reveal is less than 3 1/16" (78 mm).

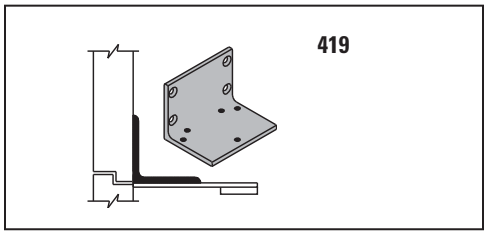
BLADE STOP SPACER, 4110-61
Lowers parallel arm shoe to clear 1/2" (13 mm) blade stop



PA SHOE ADAPTER, 4110-418
Provides horizontal mounting surface for parallel arm shoe on single rabetted or flush frame.



CUSH FLUSH PANEL ADAPTER, 4110-419
Provides horizontal mounting surface for CUSH shoe on single rabetted or flush frame.



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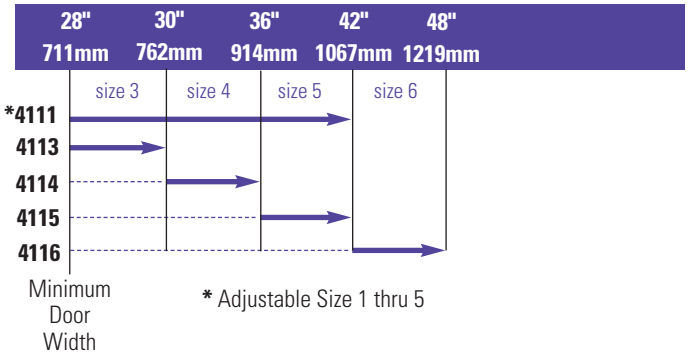
LCN 4110 SERIES

TABLE OF SIZES

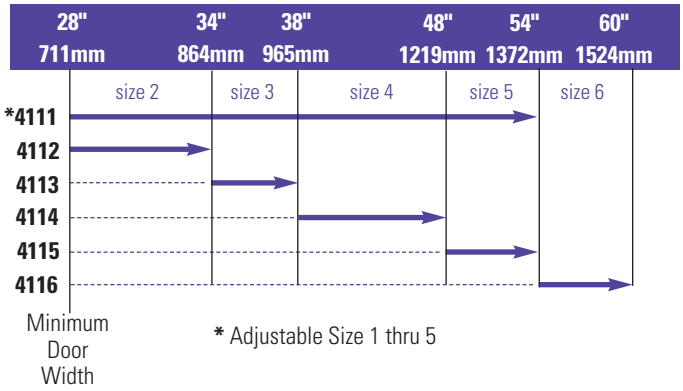
Select closer based on width of door.
The spring power of non-sized 4111 cylinder is adjustable from size 1 through size 5 and is shipped set to size 3.
Sized 4110 series cylinders available in size 2, 3, 4, 5, or 6.
Closing power of all 4110 Series closers can be increased 50%.
Specify next higher size closer where strong drafts exist.
Delayed action not available with 4115 or 4116 cylinder
H - CUSH and SPRING H-CUSH arm not available with 4116 cylinder.

→ Indicates recommended range of door width for closer size

EXTERIOR (and VESTIBULE) DOOR WIDTH



INTERIOR DOOR WIDTH



REDUCED OPENING FORCE 4110 CLOSERS

CAUTION ! Any manual door closer, including those certified by BHMA to conform to ANSI Standard A156.4, that is selected, installed and adjusted based on ADA or other reduced opening force requirements may not provide sufficient power to reliably close and latch a door.

Refer to POWER OPERATORS section for information on systems that meet reduced opening force requirements without effecting closing power.

DOOR WIDTH	36"	42"	48"
8.5* lbs.	4111	4111	4111
5.0* lbs.	4111	4111	4111

** Maximum opening force*

HOW-TO-ORDER 4110 SERIES CLOSERS

1. SELECT CYLINDER SIZE

☐ 4111 (adjustable from size 1 to 5)
☐ 4112
☐ 4113
☐ 4114
☐ 4115 (DEL not available)
☐ 4116 (DEL, SHCUSH or HCUSH arm not available)

2. SPECIFY HAND

☐ RH
☐ LH

3. SELECT FINISH

☐ Standard Powder Coat _____
Aluminum, Dark Bronze , Tan, Statuary, Light Bronze, Black, Brass.

Closer will be shipped with:
- STANDARD COVER,
- FIFTH SCREW SPACER
- EDA ARM,
- SELF-REAMING and TAPPING SCREWS, unless options listed below are selected.

4110 CLOSER OPTIONS

CYLINDER

☐ Delayed Action ((DEL), not available with 4115 or 4116)
☐ Advanced Variable Backcheck (AVB)

COVER

☐ Lead Lined (LL)
☐ Metal (MC)

FINISH

☐ Custom Powder Coat (RAL) _____
(handed metal cover required)
☐ Plated Finish, US _____
(handed metal cover required)
☐ SRI primer

SPECIFY ARM

☐ Hold-Open Extra Duty (HEDA)
☐ Fusible Link,165° F (FL)
☐ Cush-N-Stop (CUSH)
☐ H-Cush-N-Stop (n/a with 4116 cylinder) (HCUSH)
☐ Spring Cush (SCUSH)
☐ Spring H-Cush (n/a with 4116 cylinder) (SHCUSH)

SCREW PACK

☐ TB*, Self-Reaming & Tapping (TBSRT)
☐ Wood & Machine Screw (WMS)
☐ TB*, Wood & Machine Screw (TBWMS)
☐ TORX Machine Screw (TORX)
☐ TB* & TORX Machine Screw (TBTRX)
* Specify door thickness if other than 1 3/4".

INSTALLATION ACCESSORIES

☐ Plate, 4110-18
☐ CUSH Shoe Support, 4110-30
☐ Blade Stop Spacer, 4110-61
☐ PA Shoe Adapter, 4110-418
☐ CUSH Flush Panel Adapter, 4110-419

SPECIAL TEMPLATE

☐ ST- _____

90 Series Surface Overhead Door Holders/Stops

90 Series Heavy-Duty

Glynn-Johnson 90 series holders and stops are the most rugged models available for heavy-duty applications. The channel is surface-mounted to the door, most often with sex bolts, and the jamb bracket is surface mounted to the jamb, requiring minimal door and frame preparation.

These versatile units can be used in conjunction with most surface-applied door closers. The provided templates allow for variable mounting positions, ranging from 85º to 110º Hold-Open/Stop angle. These templates are designed for installation in almost all types of doors, including doors with conventional butt-type hinges or specialty hinges.

Four Models:
- 90H Series Hold-Open Model
- 90S Series Stop-Only Model
- 90F Series Friction Hold-Open Model
- 90SE Series Special Stop-Only Model

Five Sizes:
- Simple
- Standardized
- Each model is available in five sizes

Three Options:
- J—Angle Jamb Bracket
- SHIM—Blade Stop Shim Kits
- SOC—Pin-in-Socket Security Screw Package

Unmatched Convenience:
- Non-Handed
- Improved Compatibility with Door Closers
- Single-Acting Doors
- Interior/Exterior Applications
- Durable
- Easy to Install
- Improved Corrosion Resistance
- Function Conversion Kits Available

Materials and Finishes:
In 300 series Stainless Steel, Brass and Steel substrates, these models are available in the largest selection of finishes in the industry. Stainless Steel models offer the highest resistance to corrosion. Available in the following finishes:

Finish	Description
US3	Polished Brass
US4	Satin Brass
US10	Satin Bronze
US10B	Oil Rubbed Bronze
US32	Polished Stainless Steel
US32D	Satin Stainless Steel
SP4	Powder Coat Brass
SP10	Powder Coat Bronze
SP28	Powder Coat Aluminum
SP313	Powder Coat Dark Bronze
SPBLK	Powder Coat Black
652	Chrome-like Coating

Models

Glynn-Johnson 90 series door holders and stops provide long-lasting protection for doors, frames and hardware. All models incorporate a heavy-duty channel/slide-arm design and offset jamb bracket. This unique design allows for simple field modification of functions, should user requirements change.

90H Series Hold-Open

(Suffix H) Hold-Open models provide a convenient method of holding the door open at a predetermined position for short or long periods of time, permitting an unobstructed traffic flow through the opening. The Hold-Open function can easily be turned on or off by simply rotating the serrated knob on the bottom of the channel. This knob engages the Hold-Open mechanism, allowing the door to be held open at a predetermined position ranging from 85º to 110º. When the knob is flipped over, it acts as a stop and shock absorber.

The tension on the Hold-Open mechanism can be adjusted using a phillips screwdriver to offset air currents or other exterior conditions. The Hold-Open tension adjustment is located on the top of the slider in the channel.

90S Series Stop-Only

(Suffix S) When the Hold-Open function is not a requirement, Stop-Only models provide a reliable method of door control. Stop-Only models provide the same shock-absorbing capability as Hold-Open models. The Stop-Only model may be used on fire doors.

90F Series Friction Hold-Open

(Suffix F) Friction Hold-Open models are ideal for patient room doors, wardrobe and closet doors or similar applications where multiple Hold-Open positions are desired. The friction tension can be adjusted through the top of the channel using an allen wrench. The friction tension adjustment is located on the top of the slider in the channel.

90SE Series Special Stop-Only

(Suffix SE) When Stop-Only models are used in conjunction with single-point, Hold-Only electronic door closers, the Stop-Only function may be ordered without the shock-absorbing mechanism. Used as an auxiliary stop, these models prolong the life of the closer. The stop location is adjusted using an allen wrench on the stop block located in the channel.

Note: Caution should be taken when using this option in other applications, as the elimination of the shock-absorbing spring can put added stress on the door and frame.

Application Information

UL Classification

The 90 series Stop-Only models are classified by Underwriters Laboratories (UL) as Miscellaneous Fire Door Accessories. This classification applies to use on either Hollow Metal Fire Doors or Wood Fire Doors. These units may be used on doors of any rating. As a reminder, the Miscellaneous Fire Door Accessories (GVUX) section is defined by UL as: "Miscellaneous fire door accessories are intended in the individual Listings. The accessories have been investigated to determine that when installed in accordance with the manufacturer's instructions, the accessories do not adversely affect the fire rating of the fire door and/or fire door frames."

Dead-Stop Templating:

Dead-stop templating is recommended for applications where a wall or similar obstruction is placed at an opening angle of 110º or less (i.e., doors that open back-to-back). Dead-stop templating can be applied to Hold-Open, Stop-Only and Friction models. The Dead-Stop position is the point at which the shock-absorbing spring is fully compressed. Therefore, when Dead-Stop Templating is used, the initial degree of opening will be 5º to 7º less than the Dead-Stop opening.

Example: If the holder is templated to a 100º Dead Stop, the door will hold open at an angle between 93º and 95º but no further than 100º

Note: Do not use dead-stop templating on the 90SE Series since there is no shock-absorbing spring.

Environmental Considerations:

Environmental factors should always be considered when specifying overhead holders and stops. Doors that are positioned on a building's exterior or subject to corrosive conditions should be equipped with a holder constructed primarily of stainless steel or brass materials. For interior applications, steel is acceptable, though brass substrates generally provide a more attractive architectural-grade finish.

Function Conversion Kits

- FK90H—Converts a 90F or a 90S unit into a 90H unit. To order specify FK90H.
- FK90F—Converts a 90H or a 90S unit into a 90F unit. To order specify FK90F.
- FK90SE—Converts a 90H, 90F or a 90S unit into a 90SE unit. To order specify FK90SE–Finish.
- No kit is needed to convert a 90H or 90F unit into a 90S unit.

Options

Suffix J (Angle Jamb Bracket):

An angle jamb bracket is available for converting standard models to hinge-side or flush transom mounting. The angle jamb bracket affixes to the standard jamb bracket. If ordered with the unit add suffix J. If needed separately order 90J by finish needed.

Suffix SOC (Pin-in-Socket Security Screws):

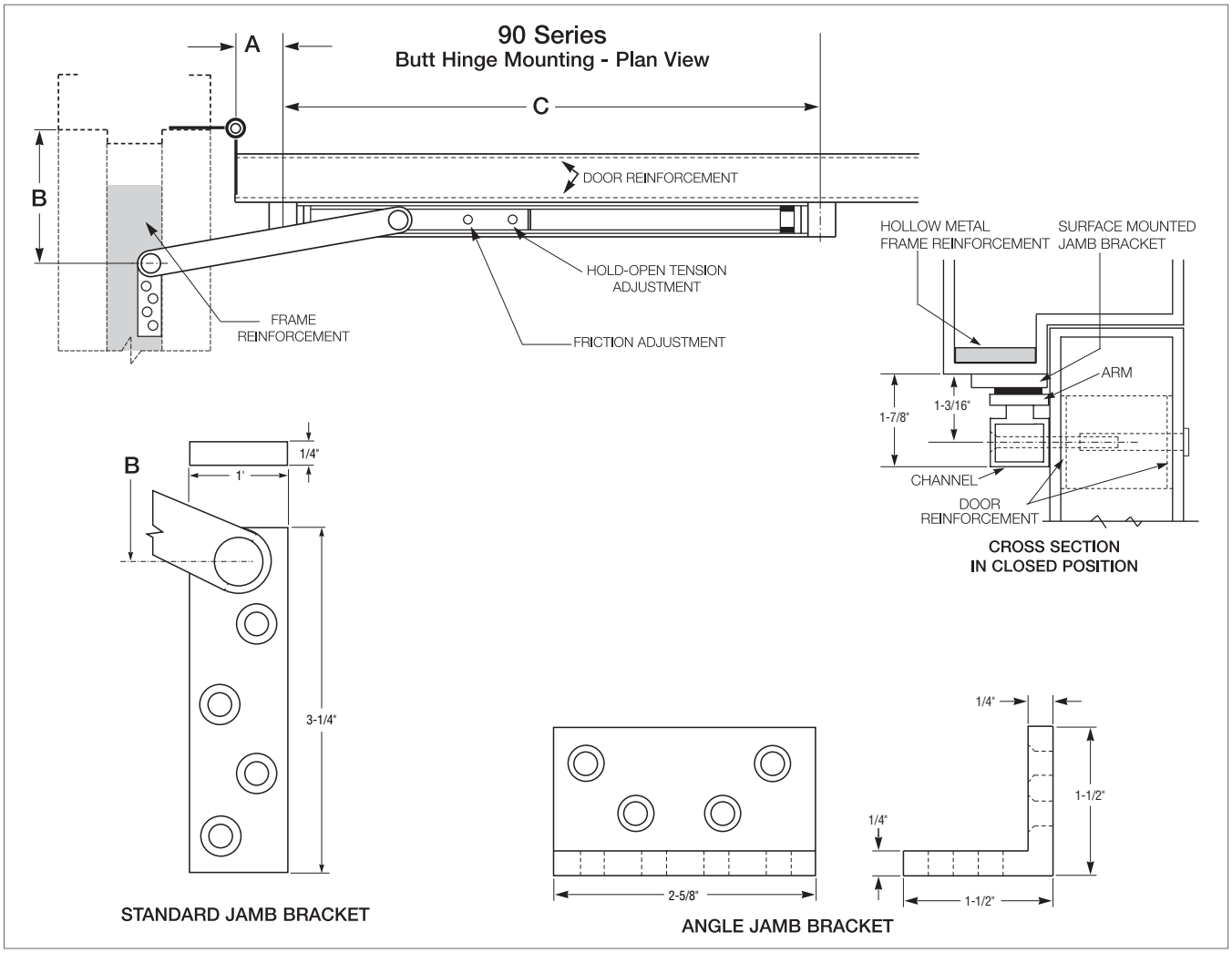
A screw package with pin-in-socket screws for mounting the door bracket and the jamb bracket is provided instead of the standard screw package.

Suffix SHIM (Blade Stop Shims):

Shim kits are available in 3 sizes
90 SHIM1 is a 1/4" Shim Kit
90 SHIM2 is a 1/2" Shim Kit
90 SHIM3 is a 3/4" Shim Kit

If ordered with overhead, add suffix SHIM (1, 2 or 3). If needed separately order 90 SHIM (1, 2 or 3)–Finish.

90 Series Surface Overhead Door Holders/Stops



90 Series Sizing Chart								
BUTTS/OFFSET PIVOTS					**CENTER HUNG**			
SIZE	**DOOR OPENING**	**STOP ONLY**	**HOLD OPEN**	**FRICTION**	**DOOR OPENING**	**STOP ONLY**	**HOLD OPEN**	**FRICTION**
1	-----	-----	-----	-----	-----	----	----	----
2	23-1/16"–27"	902S	902H	902F	27-1/16"–33"	902S	902H	902F
3	27-1/16"–33"	903S	903H	903F	33-1/16"–39"	903S	903H	903F
4	33-1/16"–39"	904S	904H	904F	39-1/16"–45"	904S	904H	904F
5	39-1/16"–45"	905S	905H	905F	45-1/16"–51"	905S	905H	905F
6	45-1/16"–51"	906S	906H	906F	51-1/16"–59"	906S	906H	906F

Note: This chart illustrates the most common types of hinging and door opening sizes. For unusual door details, contact Glynn-Johnson for availability.

BHMA/ANSI, A156.8 & FED. Spec. Cross Reference		
G-J Model	**BHMA***	**FED. Spec.**
902 - 906H	C02511	1161
902 - 906S	C02541	1161A
902 - 906F	C02531	—

** First numeral (0) designates optional material.*

To specify:
Brass material, change 0 to 1 (i.e. C12511)
Stainless Steel material, change 0 to 5 (i.e. C52511)
Steel material, change 0 to 8 (i.e. C82511)

The template information on this page is for reference only and is not intended to serve as an installation template. For complete dimensional information, refer to Glynn-Johnson template book.

How to Order

90 4 H – US32D – J

Overhead Series:
- **90**

Size (Door Opening Using Butts or Offset Pivots):
- **2** (23-1/16"–27")
- **3** (27-1/16"–33")
- **4** (33-1/16"–39")
- **5** (39-1/16"–45")
- **6** (45-1/16"–54")

Function:
- **H** Hold-Open
- **F** Friction Hold-Open
- **S** Stop-Only
- **SE** Special Stop-Only

Finishes:
- **US3** Polished Brass
- **US4** Satin Brass
- **US10** Satin Bronze
- **US10B** Oil Rubbed Bronze
- **US32** Polished Stainless Steel
- **US32D** Satin Stainless Steel
- **SP4** Powder Coat Brass
- **SP10** Powder Coat Bronze
- **SP28** Powder Coat Aluminum
- **SP313** Powder Coat Dark Bronze
- **SPBLK** Powder Coat Black
- **652** Chrome-like Coating

Options:
- **J** Angle Jamb Bracket
- **SHIM** Blade Stop Shims—
  - SHIM1–1/4" Kit
  - SHIM2–1/2" Kit
  - SHIM3–3/4" Kit
- **SOC** Pin-in-Socket Security Screws

Architectural Door Trim

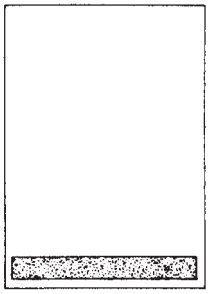
Series 8400 Door Protection Plates

.050" Thickness

Features:

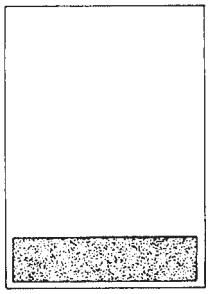
- Door Protection Plates are fabricated from the finest architectural aluminum, brass, and stainless steel, or 1/8" thick clear acrylic plastic or black or brown high impact polyethylene.
- All aluminum, brass, bronze and stainless steel Door Protection Plates meet ANSI A156.6 requirements for .050" thickness.
- Optional Beveling—For beveling of top and two sides of plates suffix with B3E, and for beveling of four sides suffix with B4E.
  Plastic plates are beveled on all four sides as standard.
- Each plate is packaged carefully wrapped in strong kraft paper with #6 x 5/8" oval head, undercut sheet metal screws plated to match, for easy installation on hollow metal, laminate, or wood doors. All plates are packaged in heavy duty corrugated cardboard; larger plates are enclosed in a wooden frame.

- Use No. 8401 Kickplate Gasket Tape as a buffer between brass kickplates and metal doors to help prevent tarnishing which may result from electrolytic oxidation. One package provides enough double-sided adhesive-backed foam tape for the perimeter of an 8" x 34" plate.
- Finishes:
  Brass: B3, B4, B5, B10, B10B (for heights over 24", check with customer serivce)
  Stainless Steel: S32D, S32
  Aluminum: PA28
  Plastic: BLK, BRN, CLR



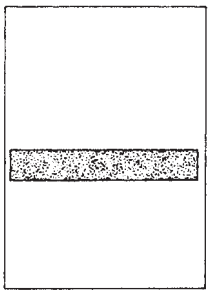
Mop Plates

- Protect the bottom of the pull side of door subject to cleaning and mopping procedures.
- Size Ranges:
  4" to 6" high, 22" to 48" wide



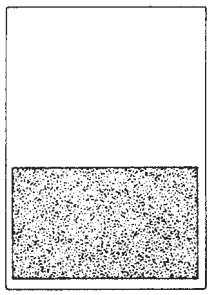
Kick Plates

- Protect the bottom of the push side of doors subject to scuffing from foot traffic.
- Recommended for all doors subject to normal use (especially doors using a closer).
- Size Ranges:
  8" to 24" high, 22" to 48" wide



Stretcher Plates

- Protect doors at specific areas where consistent contact is made by stretchers, service carts or other equipment.
- Usually applied to push side of doors.
- Specify “B4E” Option for beveled edges.
- Size Ranges:
  6" to 8" high, 22" to 48" wide



Armor Plates

- Protect lower half of doors from abuse by hard carts, trucks and rough usage.
- Usually applied to push side of single doors and both sides of double acting doors.
- Size Ranges:
  26" to 48" high, 22" to 48" wide

How to Order

8400 ____ - ____ x ____ - ____

Finish

Height:
4" up to 48" in 1/2" increments
(For brass kick plates over 24", check with customer service.)

Width:
22" up to 48" in 1/2" increments

Options: (Only for metal plates)
B3E for Bevel Top and 2 Edges
B4E for Bevel 4 Edges
CS for Counter Sink Holes
ES for Extra row of Screws

Floor Stops – Dome

FS438 Dome Stop

Features:

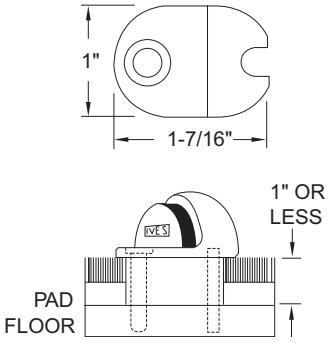
- For doors with threshold or undercut doors.
- Heavy-Duty Cast Dome Stops constructed of brass, bronze or aluminum.
- Gray, non-marring rubber bumper.
- Packed with wood screw and plastic anchor, specify Tampin (TPN) or lead expansion shield (LS), if required.
- Meets ANSI/BHMA 156.6, L12141 for brass or bronze and L32141 for aluminum.
- Finishes: US3, US4, US5, US10, US10B, US14, US15, US15A, US26, US26D, US28.

Product No.	Overall Height	Base Height	Base Diameter
FS438	1-3/8"	9/16"	1-3/4" x 2" Oval

R437 Riser

Features:

- Extruded aluminum, mill finish.
- For conversion of FS438 Dome Stop to carpet installation.
- Packed with wood screws, lead shield and stud. Specify Tampin (TPN) if required.
- Available in 1/4", 3/8", 1/2", 5/8", 3/4" and 1" height.



Product No.	Size
R437	1" x 1-3/8" Oval

How to Order:

FS ___ - ___ - ___ - ____

Model:

438	Dome Stop Only
437	Riser Only
438 x 437	Dome Stop & Riser

Riser Size:

Blank	No riser
1/4	for 1/4"
3/8	for 3/8"
1/2	for 1/2"
5/8	for 5/8"
3/4	for 3/4"
1	for 1"

Finishes:

US3, US4, US5, US10, US10B, US14, US15, US15A, US26, US26D, US28

Mounting:

Blank	Standard
TPN	Tampin
LS	Lead Expansion Shield

Floor Stops

FS18S
FS18L

Features:

- Security Door Stops designed for use in high vandalism areas.
- Molded from flame resistant, resilient material around a heavy-duty stud.
- Once grouted in concrete, leaves no exposed fasteners to be tampered with or removed.
- Ideal for jail or security cell areas where floor mounted stops are required.
- FS18L also ideal for concrete wall applications.
- Finish: Black.

FS18S

FS18L

Product No.	Stop Height	Stop Diameter	Stud Length
FS18S	1-1/2"	2"	2-1/2"
FS18L	3-1/2"	2"	2-1/2"

FS434

Features:

- Burnished wrought steel.
- Soft, resilient gray rubber.
- For undercut doors up to 1-1/2".
- Packed with screws and plastic anchors.
- Finishes: US2C, US10.

Product No.	Overall Height	Base Size
FS434	2-5/8"	1-1/2" W x 2-3/4" L

Wall Bumpers

WS401 CVX & WS402 CVX
WS401 CCV & WS402 CCV

Features:

- Constructed in heavy-duty cast brass or aluminum base.
- Special retainer cup makes rubber tamper resistant.
- The WS401CVX unit is designed with a convex rubber bumper, packed with wood screw and plastic anchor.
- The WS401CCV unit is designed with a concave rubber bumper which avoids damage to locks with projecting buttons, packed with wood screw and plastic anchor.
- The WS402CVX unit is designed with a convex rubber bumper packed with screw and drywall anchor.
- The WS402CCV unit is designed with a concave rubber bumper which avoids damage to locks with projecting buttons and is packed with screw and drywall anchor.
- WS401CVX & WS402CVX meets ANSI/BHMA 156.16 L12101 for brass and L32101 for aluminum.
- WS401CCV & WS402CCV meets ANSI/BHMA 156.16 L12251 for brass and L32251 for aluminum.
- Finishes: US3, US4, US5, US10, US10B, US14, US15, US15A, US26, US26D, US28.

WS401CVX & WS402CVX

WS401CCV & WS402CCV

Product No.	Mounting Hardware	Base Diameter	Base Thickness	Overall Projection
WS401CVX	Wood screw, plastic anchor	2-1/2"	3/8"	1"
WS401CCV	Wood screw, plastic anchor	2-1/2"	3/8"	1"
WS402CVX	Screw, Drywall Anchor	2-1/2"	3/8"	1"
WS402CCV	Screw, Drywall Anchor	2-1/2"	3/8"	1"

WS404CVX

Features:

- Constructed in cast brass.
- Compact size.
- Totally concealed mounting discourages vandalism or tampering.
- Unit furnished with grey convex rubber bumper.
- Packed with sheet metal screw, rawl plug and brad.
- Finishes: US3, US4, US5, US10, US10B, US14, US15, US15A, US26, US26D, US28.

Product No.	Base Diameter	Overall Projection
WS404CVX	1"	17/32"

Floor Stops – Dome

FS436 Dome Stop

Features:

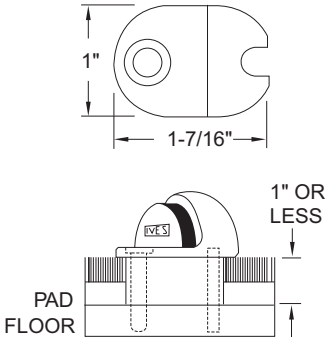
- For doors without threshold.
- Heavy-Duty Cast Dome Stops constructed of brass, bronze or aluminum.
- Gray, non-marring rubber bumper.
- Packed with wood screw and plastic anchor, specify Tampin (TPN) or lead expansion shield (LS), if required.
- Meets ANSI/BHMA 156.6, L12141 for brass or bronze and L32141 for aluminum.
- Finishes: US3, US4, US5, US10, US10B, US14, US15, US15A, US26, US26D and US28.

Product No.	Overall Height	Base Height	Base Diameter
FS436	1"	3/16"	1-3/4" x 2" Oval

R435 Riser

Features:

- Extruded aluminum, mill finish.
- For conversion of FS436 Dome Stop to carpet installation.
- Packed with wood screws, lead shield and stud. Specify Tampin (TPN) if required.
- Available in 1/4", 3/8", 1/2", 5/8", 3/4" and 1" height.



Product No.	Size
R435	1" x 1-3/8" Oval

How to Order:

FS ___ - ___ - ___ - ___

Model:

436	Dome Stop Only
435	Riser Only
436 x 435	Dome Stop & Riser

Riser Size:

Blank	No riser
1/4	for 1/4"
3/8	for 3/8"
1/2	for 1/2"
5/8	for 5/8"
3/4	for 3/4"
1	for 1"

Finishes:

US3, US4, US5, US10, US10B, US14, US15, US15A, US26, US26D, US28

Mounting:

Blank	Standard
TPN	Tampin
LS	Lead Expansion Shield

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PROTECTION, INSIDE OUT

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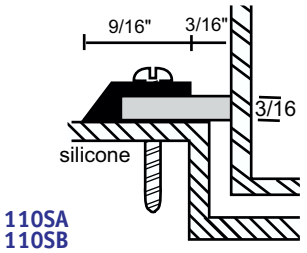
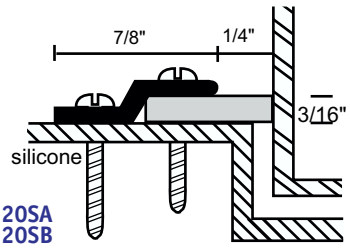
Toll Free Fax 1-800-255-7874

All products this page.

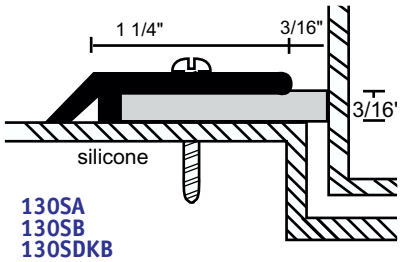
#6 x 3/4" Stainless Steel Sheet Metal Screws furnished.



110SA
110SB
110SDKB



120SA
120SB
120SDKB



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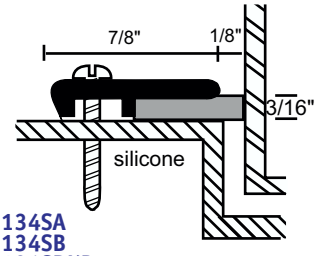

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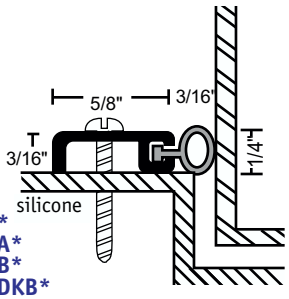
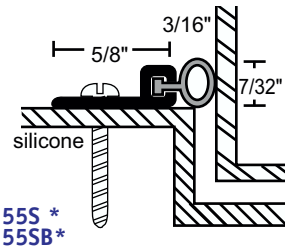
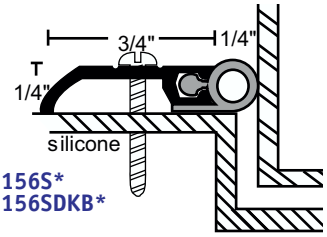
134SB
134SDKB



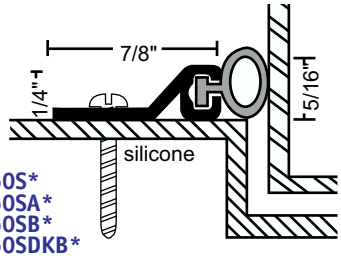
152S*
152SA*
152SB*
152SDKB*



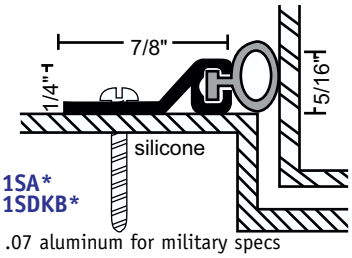
155S *
155SB*
155SDKB*



156S*
156SDKB*

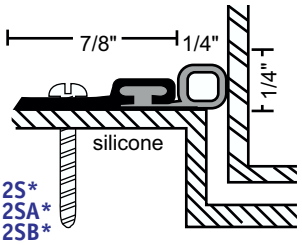


160S*
160SA*
160SB*
160SDKB*

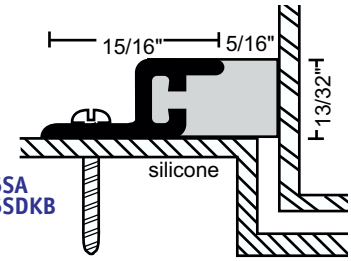


161SA*
161SDKB*

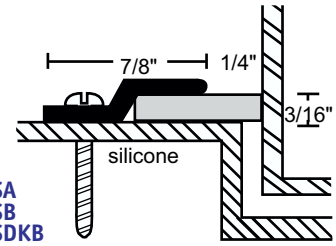
.07 aluminum for military specs



162S*
162SA*
162SB*
162SDKB*



165SA
165SDKB



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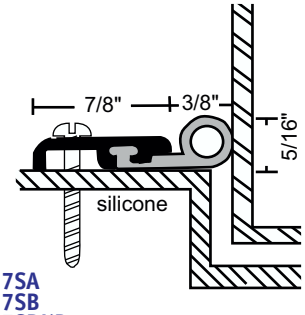
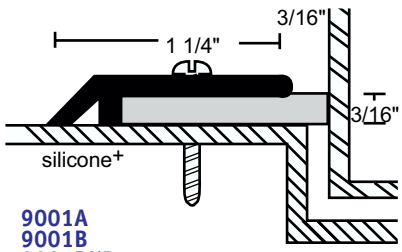
127SB
127SDKB



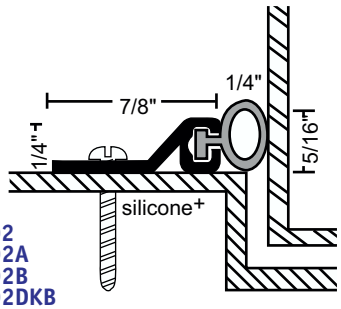
137SA
137SB
137SDKB

A - clear
B - gold
DKB - dark bronze
silicone is gray
(exception: *silicone is black)

SILICONE PLUS- Specially formulated to withstand greater temperature extremes while providing maximum protection against air infiltration. Silicone Plus gasket material is tan.



9001A
9001B
9001DKB



9002
9002A
9002B
9002DKB

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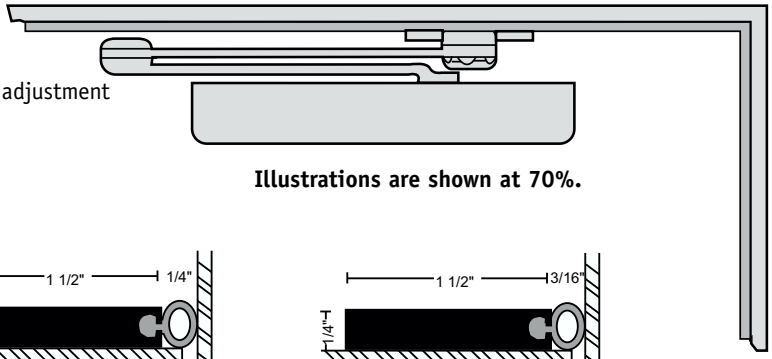
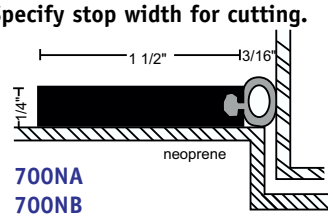
With 700 Series:

* No break in seal
* Head not drilled
* Side sections are furnished with slotted holes for adjustment
* Comes with self drilling #8 (Tek type) screws.
* Bracket or closer and/or hold open device to be attached to frame through weatherstrip section.
* **May be cut to fit narrow frame stops. Specify stop width for cutting.**



Illustrations are shown at 70%.



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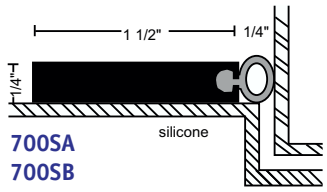
700NDKB



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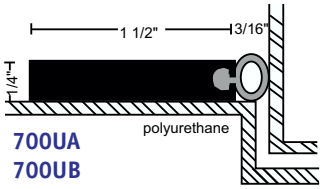

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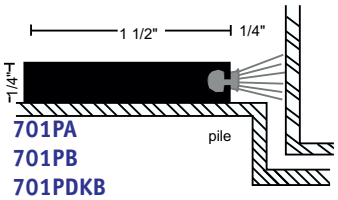

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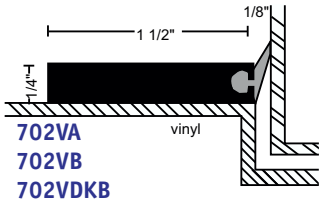

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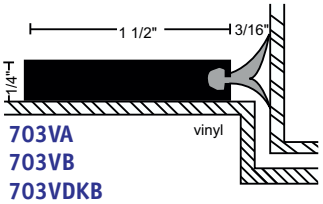

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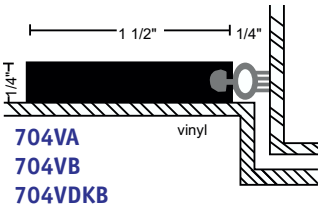

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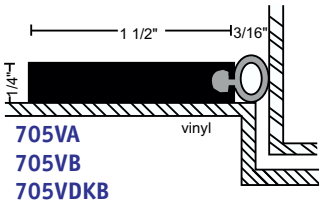

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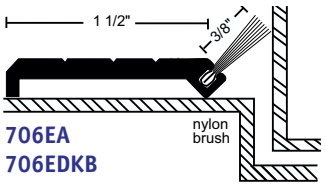

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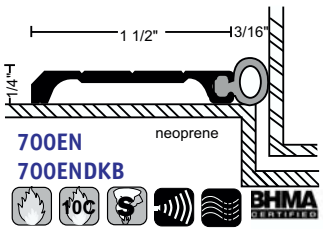

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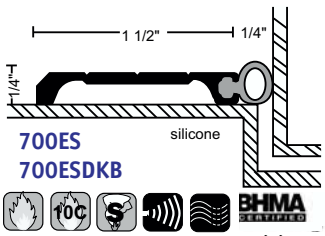

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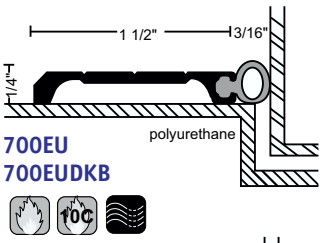

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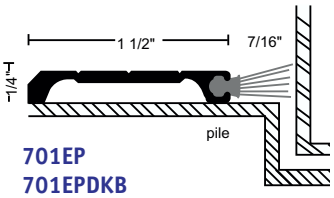

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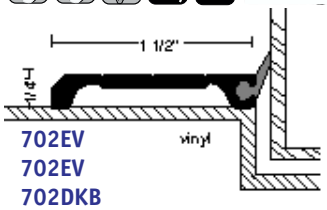
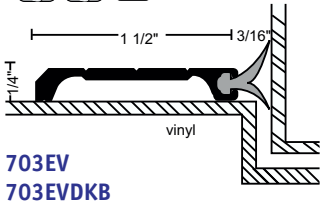
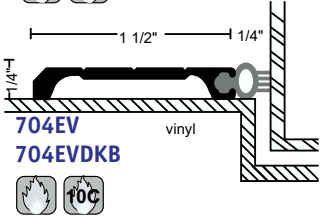


702EV
702EV
702DKB



703EV
703EVDKB

A - clear
B - gold
DKB - dark bronze
vinyl & pile are gray
neoprene, silicone, polyurethane, brush are black



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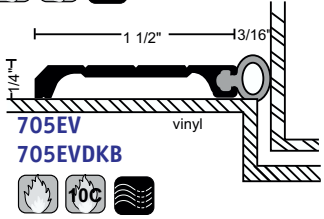
704EVDKB



705EV
705EVDKB

See page 59 for our Premium Grade Allseal® Seals for use with parallel arm closers.

E-mail: ngpinfo@ngpinc.com www.ngpinc.com

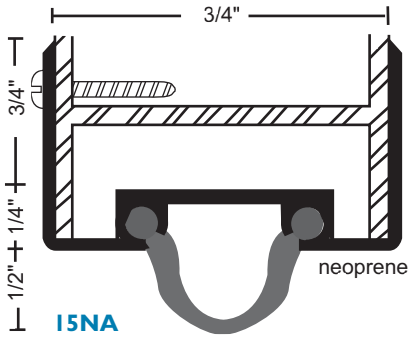
National Guard Products, Inc.
The products you count on. The people you trust.
Phone: 800-647-7874
Fax: 800-255-7874
www.ngp.com

Neoprene Door Shoes

#6 x 3/4"Stainless Steel SMS furnished.
Screw holes slotted for adjustment.

A - clear
B - gold
DKB - dark bronze
no suffix - mill
neoprene is black

All products this page



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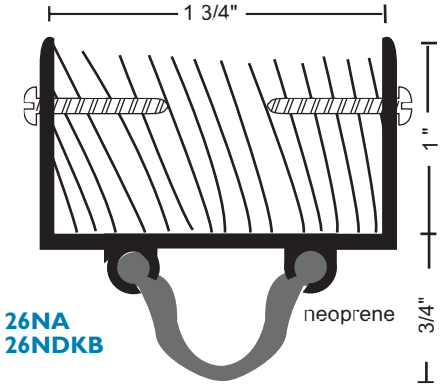
15NDKB



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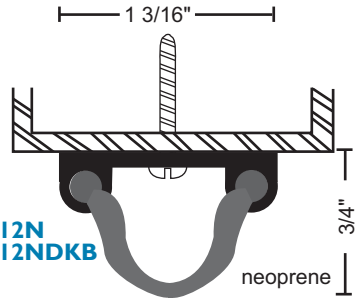

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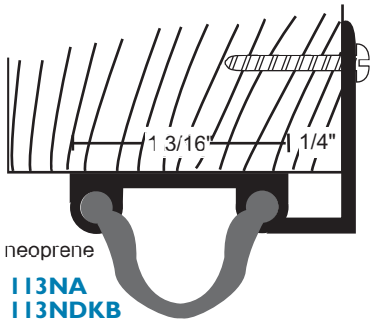
112NDKB



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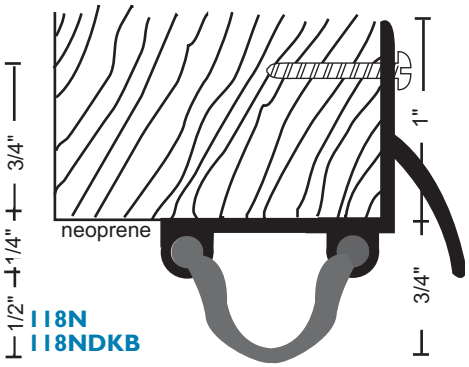

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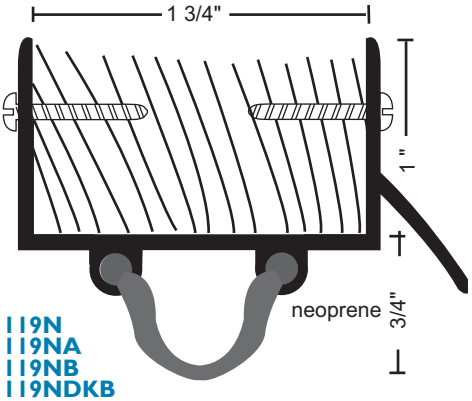
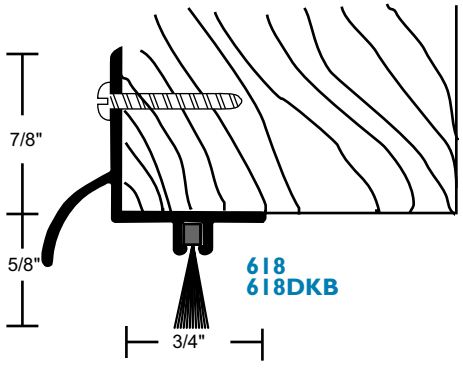


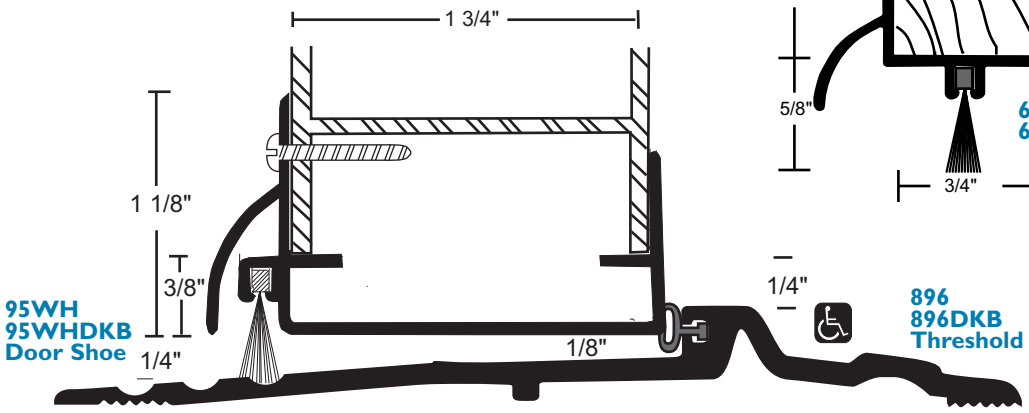
119N
119NA
119NB
119NDKB

Nylon Brush Door Shoes

#6 x 3/4" stainless steel SMS furnished
screw holes slotted for adjustment.



618
618DKB



95WH
95WHDKB
Door Shoe

896
896DKB
Threshold

Designed for use on standard 3/4" undercut door used with NGP 896 ADA compliant threshold as shown

Brush is gray with mill finish metal; black with DKB metal

National Guard Products, Inc.
PROTECTION, INSIDE OUT

Toll Free Phone 1-800-647-7874
Toll Free Fax 1-800-255-7874

Threshold Assembly Parts

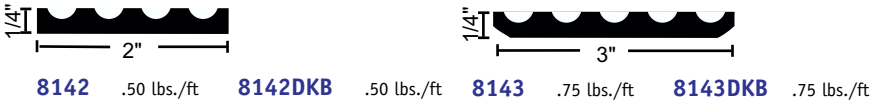
Assembly parts allow you to choose from various height and/or width components to build custom thresholds to meet special job requirements.

Select the proper height edge parts. Select the appropriate center plate to obtain the width needed. Two or more plates may be butted together to make various widths. Support the center plates with bar stock supports at joints and additional support for wider assemblies.

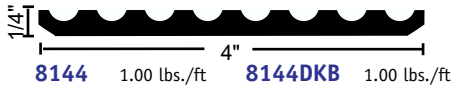
Assembly plates may be used fluted or smooth side up. Slip resistant finish (SIA) can be applied to all components.

Assembly parts may be furnished separately for field assembly or welded into one piece units in our fabrication shop. They are supplied undrilled unless a template is provided. Ripping and beveling options are available. All custom fabricated assemblies have a tolerance of +/- 1/16".

All thresholds this page.



8142 .50 lbs./ft 8142DKB .50 lbs./ft 8143 .75 lbs./ft 8143DKB .75 lbs./ft



8144 1.00 lbs./ft 8144DKB 1.00 lbs./ft

8145 1.20 lbs./ft 8145DKB 1.20 lbs./ft

8146 1.50 lbs./ft 8146DKB 1.50 lbs./ft

8147 1.70 lbs./ft 8147DKB 1.70 lbs./ft

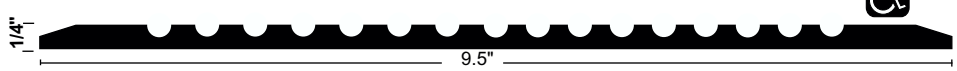
8148 2.00 lbs./ft 8148DKB 2.00 lbs./ft

8149 2.20 lbs./ft 8149DKB 2.20 lbs./ft

8150 2.40 lbs./ft 8150DKB 2.40 lbs./ft

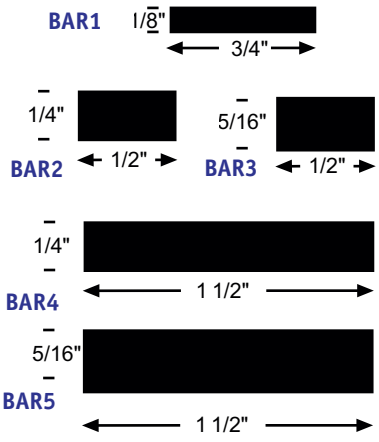
8163 .75 lbs./ft 8163DKB .75 lbs./ft 8164 1.00 lbs./ft 8164DKB 1.00 lbs./ft

8167 1.76 lbs./ft 8167DKB 1.76 lbs./ft



8170 2.33 lbs./ft 8170DKB 2.33 lbs./ft

Bar Stock
full size details



illustrations shown at 50%

Thresholds are aluminum mill finish
DKB indicates aluminum with dark bronze finish.

E-mail: ngpinfo@ngpinc.com www.ngpinc.com

Door Silencers

SR64

Features:

- For use on metal frames featuring pneumatic design that, once installed, forms an air pocket to absorb shock and reduce noise of door closing.
- Tamper-proof once installed on the frame.
- Proper installation also eliminates door rattle and provides constant tension for door latches or locks.
- Packed in bags of 100. Grey also available in bulk pack of 2500.
- Each bag has an installation tool included.
- Meets ANSI/BHMA 156.16, L03011.
- Finish: grey is standard. Black optional.

Product No.	Diameter	Thickness
SR64	1/2"	1/8"

SR65

Features:

- For use on wood frames, also feature pneumatic design to cushion shock and absorb noise.
- To prevent removal, a small brad should be driven into stop strip and through stem of silencer, as shown in the detail.
- Packed in bags of 100.
- Meets ANSI/BHMA 156.16, L03021
- Finish: grey.

Product No.	Height	Width	Thickness
SR64	3/4"	3/8"	1/8"

SR66

Features:

- Self Adhesive Rubber Silencers.
- Economical installation requires no drilling of frames.
- Packed in sheets of 100.
- Finishes: brown, grey, white.

Product No.	Diameter	Thickness
SR66	1/2"	1/8"

Electrical Accessories

Power Supplies

SERIES PS873

The series PS873 power supply is designed to operate a wide variety of electrical products. EL panics require 871-2 PCB minimum. The regulated output power is field selectable for either 24VDC @ 2 ampere or 12VDC @ 4 ampere. Standard input 120VAC @ 1.0 ampere or 240VAC @ 0.5 ampere available. Enclosure is 10" high x 12½" wide x 5" deep *(254mm x 323mm x 127mm)*, gray with a hinged cover and constructed of heavy 19 gauge steel. Five ½" x ¾" *(13mm x 19mm)* knockout holes are provided for conduit connection. Terminal block will accept up to 12 gauge wire.

The PS873 can be ordered with three standard options: Key lock secures the cover to eliminate tampering and provides safety; Battery backup provides two hours backup power at full load during a A.C. power failure. Batteries will automatically recharge when failed power is restored. Fire Alarm provides input for a normally closed fire alarm contact. When the fire alarm contact is "open", power to locks or other component is removed. Restoring power is field selectable for automatic or manual.

Eight standard configurations:

PS873	Standard
PS873K	With keylock
PS873B	With battery
PS873BK	With battery and keylock
PS873FA	With fire alarm
PS873K-FA	With keylock and fire alarm
PS873B-FA	With battery and fire alarm
PS873BK-FA	With battery, keylock and fire alarm

The series PS873 is available with several optional circuit cards to provide system flexibility. The power supply will accept one or a combination of any two cards.

Factory or Field Installed Circuit Cards:

871-2, Two Zone controller provides two inputs and two outputs. Will operate one or two EL exit devices. Use suffix "-2" for factory installed, example PS873-2.

873-AL, Alarm function monitors 1 or 2 zones and provides alarm output, upon detecting a door in the open position. Delayed alarming is selectable from 5 to 75 seconds. Use suffix "-AL" for factory installed, example PS873-AL

873-AO, Auto Operator function coordinates the release of one or two locks and signals an auto-operator to open a door. Signaling the auto operator can be performed in two methods; by receiving a signal from a monitoring switch that the lock is unlatched, or upon expiration of a time delay triggered by a "RX" type input switch. Use suffix "-AO" for factory installed, example PS873-AO

873-SI, Security/Safety Interlock provide interlock function for two zones. When combined with a second 873-SI card, the inter-locking of groups are available in two, three or four zones. Safety interlock is available, consult factory for additional information. Use suffix "-SI" for factory installed, example PS873-SI

873-4TD, Four Zone controller with Time Delay provides four inputs and four outputs with time delay. Time delay is field selectable from 0 to 75 seconds, in intervals of 5 seconds. Will operate up to 4 EL devices. Use suffix "-4TD" for factory installed, example PS873-4TD

873-AC, Access Control provides supervision of one zone using an electromagnetic lock. Input signals required are: access control contact, motion detector contact, and motion detector override contact. FA, Fire Alarm option is required. Use suffix "-AC" for factory installed, example PS873-AC

Factory Installed Only Circuit Card

873-DE, Delayed Egress provides 15 second delay release from pushbar activation to electro-magnetic lock release. Ideal function for use with Locknetics electromagnetic locks, will operate two zones simultaneously. To operate two separate zones, a second 873-DE card is required. UL listed component, when used as part of a Von Duprin delayed egress system. Use suffix "- DE", example, PS873-DE.

Note: "DE" cards CANNOT be combined with any other optional cards.

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Electrical Accessories

Power Supplies
PS861 Power Supply

Standard
UL Listed
Class 2, Power Supply
UL1012
UL1310

The series PS861 power supply is designed for electric locking or monitoring on single or double door applications. The output power is field selectable for either 24 VDC @ 1 ampere or 12 VDC @ 2 ampere. Standard input 120 VAC @ 0.6 ampere and 240 VAC @ 3.0 ampere available. The terminal block will accept up to 14 gauge stranded wire.

The gray enclosure is 10" x 10" x 4" *(254mm x 254mm x 102mm)*, has a hinged cover, and is constructed of heavy 19 gauge steel. Six ½" *(13mm)* knockout holes are provided for conduit connection.

Options include keylock cover or Battery Backup. The pair of batteries, which are sealed lead acid battery packs, will provide back-up power for three hours at full load or seven hours at half load. Batteries will automatically recharge when failed power is restored.

Four Models:

PS861	Standard supply
PS861K	Standard supply with keylock cover
PS861B	Battery backup
PS861FA	Fire Alarm
PS861BK	Battery backup and keylock cover
PS861BKFA	Battery backup and keylock cover with FA board (24VDC only)

PS9 Power Supply

The PS9 is an AC power supply that provides 9 VDC power to operate the ALK alarm kit. The unit will power one or two alarm kits. Included is a 9-volt sealed battery that provides backup power in case of an AC power failure.

Electrical Power Transfer — EPT
Pneumatic Transfer – PNT

Electric Power Transfer provides a means of transferring electrical power from a door frame to the edge of a swinging door. The units are completely concealed when the door is in the closed position, and are ideally suite for installations involving abuse or heavy traffic.

Two models are available; EPT-2, two 18 gauge wires and EPT-10, ten 24 gauge wires. The EPT-2 and EPT-10 are U/L listed as "miscellaneous door accessory".

Pneumatic Controls

PNT-1 is available for pneumatic latch retraction exit devices. Appearance and dimensions are identical to EPT models.

UL Listed for use on firedoors

Door applications:
up to 5" butt hinges – 180° swing,
5 ½" butt hinges – 130° swing,
6" butt hinges – 110° swing,
¾" butt offset pivots 180° swing.

Not for use with swing clear hinges or center-hung pivots.

Finishes

SP28 (sprayed aluminum)

SP313 (sprayed duranodic).

Dimensions

Housing	9" x 1 ¼" x 1 ⅝" *(229mm x 32mm x 38mm)*
EPT-2	Two 18 gauge wires, Up to 2 AMPS @ 24VDC, with a 16 AMPS Maximum Surge
EPT-10	Ten 24 gauge wires, Up to 1 AMPS @ 24VDC, with a 16 AMPS Maximum Surge
PNT-1	5⁄32" Tubing

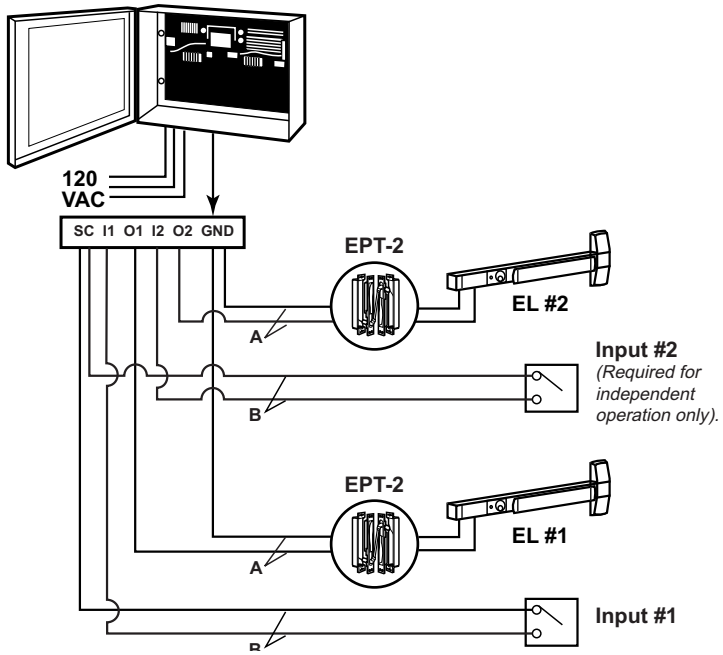
To order, specify:

1. EPT-2 ,EPT-10 or PNT-1.
2. Finish, SP28 or SP313.

VON DUPRIN® Additional Information

WIRE SIZE SELECTION

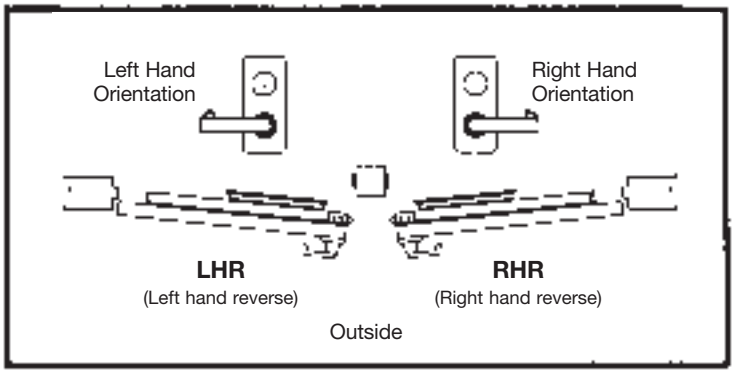
	Current requirement at 24 VDC			
	0–.5 Amp	.5–1 Amp	1–2 Amp	2–3 Amp
0-100 *(0-30)*	18	18	18	18
100-200 *(30-61)*	18	18	18	16
200-300 *(61-91)*	18	18	16	14
300-450 *(91-137)*	18	16	14	12
450-600 *(137-183)*	18	16	12	NR
600-900 *(183-274)*	16	14	NR	NR
900-1.200 *(274-366)*	14	12	NR	NR



WIRE SIZE SELECTION	EL Device w/EPT or Door Loop
0-100 *ft*	14 gauge
0-200 *ft*	12 gauge

WIRE SIZE SELECTION	EL Device w/Electric Hinge/Pivot
0-150 *ft*	12 gauge
0-75 *ft*	14 gauge

HANDING OF DOORS



LOCKNETICS®

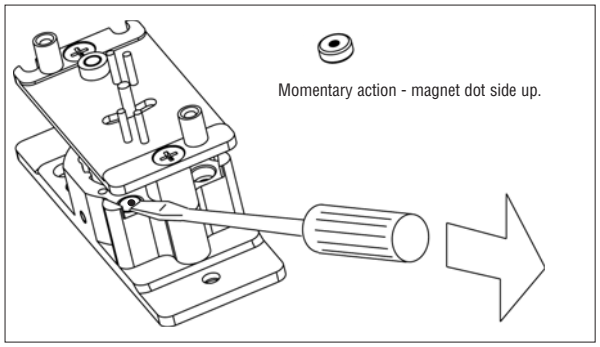
Select Options

L2	Two LEDs green and red
NS	Narrow Stile
ATS	Anti-Tamper Switch
HDP	Heavy Duty Plate 1/4˝ thick cast zinc (standard 626 Satin Chrome Finish)
WP	Weather Resistant Cover (not available with 1-1/4˝ cylinder)
CYL	1-1/4˝ Schlage Everest Mortise Cylinder & 1/8˝ spacer ring (keyed different)
CYL-KA	1-1/4˝ Schlage Everest Mortise Cylinder & 1/8˝ spacer ring (keyed alike)

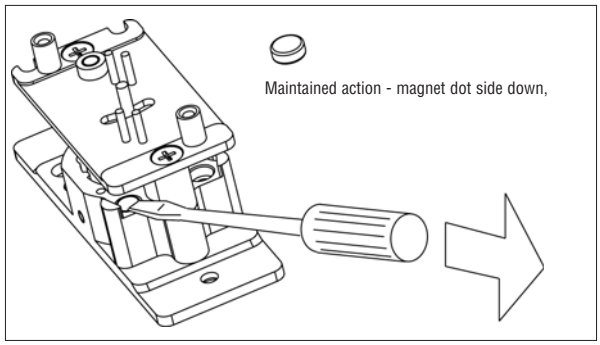
650 Series Keyswitch operate with either a 1-1/8˝ or 1-1/4˝ cylinder having a straight type cam. 1-1/4˝ cylinders require a 1/8˝ blocking/spacer ring (included with the CYL and CYL-KA options)

New **Innovative magnetic spring technology allows installers to configure models in seconds**

Momentary Action



Maintained Action



640-750 Series Cross Reference to NEW 650 Series Keyswitches

640 Series	750 Series	New 650 Series
643-04/644-04	753-04/754-04	**653-04/653-04-NS**
643-05/644-05	753-05/754-05	**653-05/653-05-NS**
643-14/644-14	753-14/754-14	**653-14/653-14-NS**
643-15/64-15	753-15/754-15	**653-15/653-15-NS**
643-1414/644-1414		**653-1414/653-1414-NS**
643-1415/644-1415		**653-1415/653-1415-NS**
643-1515/644-1515		**653-1515/653-1515-NS**
643-041/644-041		**653-041/653-041-NS**
643-0404/644-0404		**653-0404/653-0404-NS**
643-0405/644-0405		**653-0405/653-0405-NS**
643-141/644-141		**653-141/653-141-NS**
643-0505/644-0505		**653-0505/653-0505-NS**
DA645 Discontinued		

IR Security & Safety®
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LOCKNETICS®

New 650 Series Heavy Duty Keyswitch

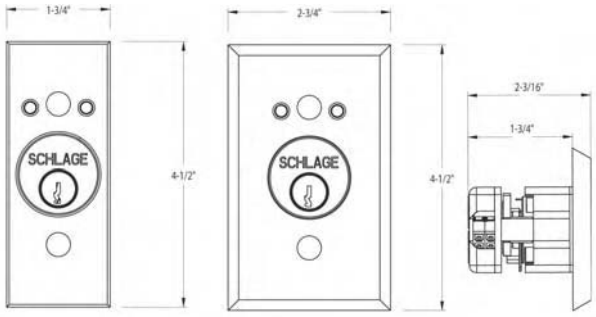
Locknetics 650 Series Keyswitches utilize an innovative magnetic spring design which allows installers to configure both clockwise and counterclockwise key turn direction, as well as, momentary or maintained action in seconds. Single gang and narrow stiles are available with numerous options which include: Heavy Duty Plate, Weather Resistant Cover (single gang size only), 2 LED lights - green/red, Anti-Tamper Switch and Schlage Everest Cylinder. In addition to the standard (626) Satin Chrome finish there are six additional architectural finishes to choose from. The 650 series replaces the 640 and 750 series keyswitches previously offered from Locknetics.

653 (Single Gang)

653-NS (Narrow Stile)

Select Keyswitch

653-04	SPDT maintained single direction
653-05	SPDT momentary single direction
653-14	DPDT maintained single direction
653-15	DPDT momentary single direction
653-1414	(2) DPDT maintained bi-direction
653-1415	DPDT momentary x DPDT momentary
653-1515	(2) DPDT momentary bi-position
653-041	SPDT maintained x key remove one position
653-0404	(2) SPDT maintained bi-direction
653-0405	SPDT maintained x SPDT momentary
653-141	DPDT maintained x key remove one position
653-0505	(2) SPDT momentary bi-direction



Narrow Stile Single Gang

Specifications: 5 AMP @ 250VAC, dual voltage, SPDT contacts

Select Special Finish - Includes Heavy Duty Plate (HDP)

SF-625	Bright Chrome
SF-626	Satin Chrome (standard)
SF-612	Satin Bronze
SF-613	Oil Rubbed Bronze
SF-605	Bright Brass
SF-1	White Powder Coat
SF-2	Black Powder Coat

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