SAN JOSÉ • EVERGREEN COMMUNITY COLLEGE DISTRICT

San José • Evergreen Community College District
4750 San Felipe Road
San José, CA 95135

JUNE 2014

District Standards + Campus Guidelines Handbook Team

Architecture
HMC Architects

Construction Manager
Gilbane Inc.

Acoustical Consultant
Charles M. Salter Associates, Inc.

Door Hardware Consultant
Opening Consultants, Inc.

Audio Visual + Information Technology Consultant
Smith, Fause & McDonald Inc.

Elevator Consultant
Lerch Bates Inc.

Irrigation Consultant
Sweeny & Associates, Inc.

Landscape Architecture + Exterior Lighting Consultants
Joni L. Janecki & Associates, Inc.
Meyer + Silberberg Land Architects

Interior Lighting Consultant
Interface Engineering

Mechanical/Electrical/Plumbing/Fire Consultant
Salas O'Brien Engineers

Signage + Wayfinding Consultant
Impact Design Associates (IDA)
Ross Luthin Creative

Waterproofing Consultant
Allana Buick & Bers, Inc.

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TERMS + DEFINITIONS

AOR
Architect of Record

BAAQMD
Bay Area Air Quality Management District

BOT
Board of Trustees

CA/OR
Construction Administrator/Owner Representative

CTE
Career Technical Education

CTSS
Campus technology support and services

DBB
Design-bid-built

DSA
Division of the State Architect

EIR
Environmental Impact Report

FP+D
Facilities Planning + Development

FTS
Faculty-to-Student

GC
General Contractor

IOR
Inspector of Records

PG&E
Pacific Gas & Electric

SEWUP
Statewide Educational Wrap Up Program

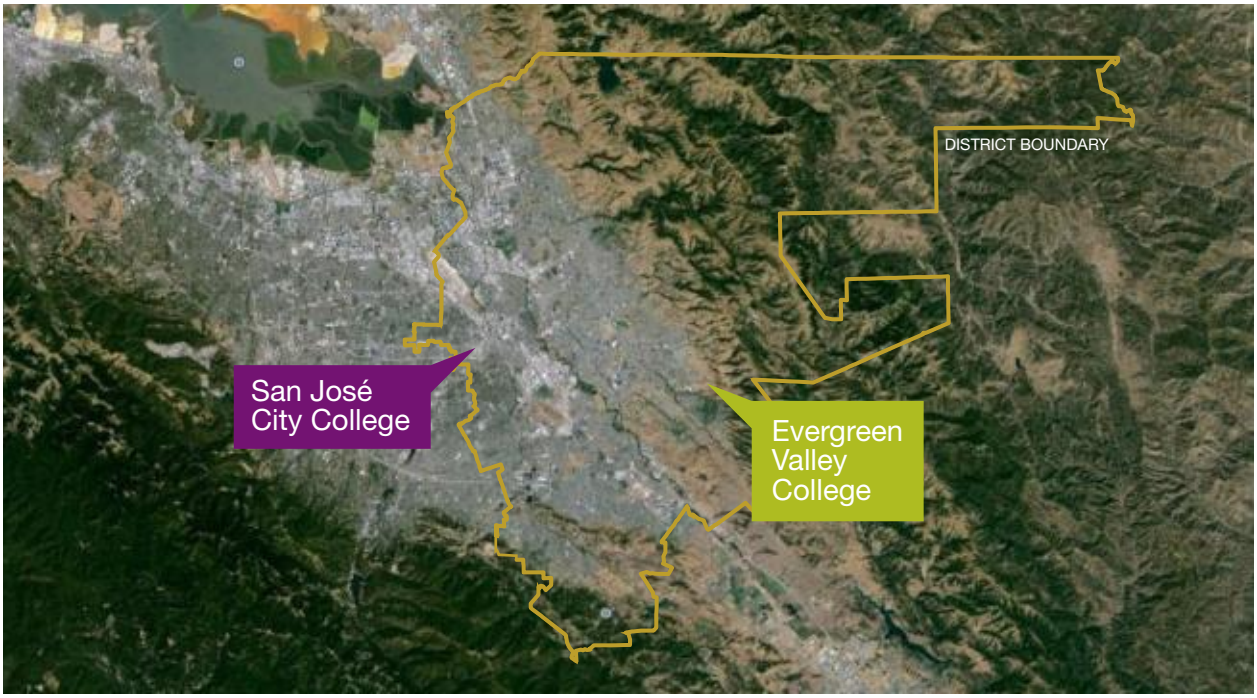
"A shared governance process took place to introduce design standards to various councils, committees, and senates from each college of EVC and SJCC. The links for proposed standards were given, comments were requested, several comments were incorporated, and all were discussed with the appropriate groups."

The District Standards were presented and/or discussed with the following members of the shared governance process on the respective dates:

EVC - *College Council* (03/24/14, 05/12/14), *College Safety & Facilities Committee* (02/19/14, 03/05/14, 03/19/14, 05/14/14), *College Technology Committee* (03/19/14, 04/02/14, 04/16/14, 05/07/14)
Academic Senate (04/01/2014, 05/06/2014)

SJCC - *College Planning Committee* (12/06/2013, 02/21/2014, 02/07/2014), *Facilities Committee* (10/28/2013 & 11/11/2013), *Safety Committee* (TBD), *Academic Senate* (TBD), CTSS (TBD)

OVERVIEW



INTRODUCTION

Every project in the San José • Evergreen Community College District (SJECCD) will address the guidelines and standards presented in this handbook. In addition, the guidelines set forth in this document should therefore be checked periodically to ensure they remain relevant. Setting standards for particular areas of interest and District concerns, the handbook guidelines are not exhaustive, but intended to work in conjunction with applicable building codes and regulations. It is expected that standards of care and best practices be applied to each particular discipline.

San José • Evergreen Community College District understands and encourages sustainability as an integral thinking process which cannot be isolated and should be applied to each and every discipline by each and every stakeholder. All new building projects shall achieve a minimum high performance rating of Silver. The adjacent icon is therefore used throughout the handbook to highlight key opportunities for sustainable measures.

PART A

HANDBOOK PURPOSE + USE

HANDBOOK PURPOSE + USE PART A

The purpose of this handbook is to establish the big picture vision for the San José • Evergreen Community College District by identifying a clear direction for its physical evolution and establishing a road map to the future. This document seeks to both provide boundaries ensuring cohesive campus identities while supporting creative expression and innovative design solutions unique to individual project programmatic and site characteristics at each campus. This handbook will serve as a reference for architects, engineers, consultants, graphic designers, district and college representatives, and others to inform decisions and design directions during the duration of the implementation of the Facilities Master Plans at each college and site within the District.

PERFORMANCE STANDARDS AND GUIDELINES (SECTIONS 1 THROUGH 9):

The first part of this handbook is an integrated document that clarifies the natural, built, and social environments intended to support San José • Evergreen Community College District's academic mission. The adoption of these standards and guidelines will provide a clear and integrated framework within which future decisions about development of the District can be effectively made.

PRESCRIPTIVE STANDARDS (SECTION 10):

The second part of this handbook describes the pragmatic aspects of capital improvements and implementation of the Facilities Master Plans (FMP) at each college and site. The design of engineered systems will respond to standards set forth in this handbook with the objective of ensuring compatible infrastructure components working together in easily maintainable configurations. The specifications set forth address product, system, and/or manufacturer criteria specific to San José • Evergreen Community College District.

The District has, by Board Resolution dated February 11, 2014, in accordance with CA Public Contract Code Section 3400, established a list of products as District Standards. See Section 7 for details.

PART B

PROJECT PROCESS

INTRODUCTION

The objective of this project process outline is to inform project teams and stakeholders of the complete implementation process and milestones for design and construction work at San José • Evergreen Community College District. From programming, through design, construction and occupancy, this section provides a procedural basis and facilitates a mutual understanding of expectations and requirements for all projects within the District.

The following pages breakdown each step into its critical components.

STEPS

GENERAL DESCRIPTION OF ROLES

These are the primary team members and stakeholders who are involved in the process:

I. Board of Trustees	• Provides objective oversight of the District's management. • Approval is required for all major capital plans and policy decisions affecting the District. • Sets policy and acts upon Chancellor's recommendations.
II. Executive Cabinet	• Composed of Chancellor, Vice Chancellors, College Presidents, and selected administrators. • Reviews project designs as determined by the District. • Approves composition of Programming Group.
III. District Council	• Serves as a forum where District's various constituencies can participate in assisting the District's chancellor to make decisions regarding District's future and its current priorities.
IV. EVC utilizes the Institutional Effective Committee (IEC) or equivelant for SJCC & District	• These committees develop a plan, obtain student feedback, submits plan to District Council and Academic Senate for approval.
V. Facilities Planning + Development (FP+D)	• Oversees all major Capital construction projects within the District. • Maintains communication with the State Chancellor's office and consultants to ensure the projects conform to State and local statute and planning.
VI. College Advocate	• Represents Collge & Programs • Interested that it maintains a consistency with the collge as a whole.
VI. Program Manager	• Acts as "Owner's Representative" and intermediary between Project Team and General Contractors. • Answers to FP&D Associate Vice Chancellor. Provides interdisciplinary coordination reviews of design documents at key milestones. • Oversees the implementation of the bond program.

VII. Construction Manager (Project-by-Project)	• Consultant manages bidding and construction process for Design-Bid-Build Delivery Method. • For Alternative Delivery Methods, such as CM at Risk, Lease-Leaseback, the construction Contractor performs the role of Construction Manager.
VIII. Project Committee/ Programming Group	• Reviews project, provides input and review comments for individual building projects. Tipically representatives of user group. • Provides guidance during programming and design. • Receives information of changes to the projects and updates.
IX. Project Design Team	• Led by Architect under contract with the District. • Or led by Engineer for project with small design scope. • Includes other design consultants contracted to Architect.
X. Independent District Consultants (as needed)	• Furniture, Fixtures, and Equipment (FF&E), EIR, Land Survey, Hazardous Materials, Geotech, Arborist, Security, Traffic, Biologist, Water Flow

I. PROJECT DEFINITION

IN ORDER OF REVIEW

A PRIMARY ENTITIES INVOLVED

1. Facilities Planning + Development
2. Construction Administrator/Owner Representative
3. Master Plan Architect
4. Executive Cabinet
5. Chancellor
6. Board of Trustees

DURING DEVELOPMENT OF THE FACILITIES MASTER PLAN

B SITE

C SCOPE

G SCHEDULE + SEQUENCE

1. Considerations
   - a. Available funding
   - b. District and college priorities (operations/ physical condition)
   - c. Program continuity
   - d. Swing space need and availability
   - e. Critical operational periods
   - f. Dependencies
   - g. Necessary predecessors
   - h. Projects dependent upon completion

H EDUCATIONAL MASTER PLAN COORDINATION

D SIZE

1. Contract Value
2. Faculty-to-Student (FTS)
3. Engineering Type
4. Required Seating

E PROGRAMS

1. Basic Skills
2. Curriculum
3. General Transfer
4. Career Technical Education (CTE)
5. Economic Development
6. Library Requirements
7. Space Utilization

F BUDGET

1. Source of Funding
   - a. Local Bond
   - b. State
   - c. Grants
   - d. Other (i.e. philanthropists)

II. PRE-DESIGN

DEVELOPED BY MASTER PLAN ARCHITECT TO A CALIFORNIA COMMUNITY COLLEGE CHANCELLOR'S OFFICE (CCCCO) FINAL PROJECT PROPOSAL (FPP) LEVEL

A DEVELOP PROJECT PARAMETERS

1. Site Considerations
   - a. Location of service utilities
   - b. Determine project boundaries
2. Outline of Spaces
   - a. Develop level of detail required for Fusion 5-year Construction Planequal to JCAF 31
3. Basis of Building Systems Design
4. Budget
   - a. Develop level of detail required for Fusion 5-year Construction Planequal to JCAF 31
5. Construction Schedule
   - a. Develop level of detail required for Fusion 5-year Construction Planequal to JCAF 31

B DEFINE PROJECT DELIVERY METHOD

1. Design, Bid, Build
   - a. General contractor
2. Design Build
   - a. Architect - GC Contractor Entity
3. Lease - Lease Back Design Assist
4. CM at Risk
5. Multi-prime

C DETERMINE USE OF OWNER CONTROLLED INSURANCE PROGRAM (OCIP)

1. Statewide Educational Wrap Up Program (SEWUP)
   - a. SEWUP Joint Power Authority (JPA) will provide the OCIP on behalf of the owner

D COLLEGE SITE INFORMATION

1. Soils Report
2. Site Survey
3. Tree Survey
4. Water Flow
5. Environmental Impact Report (EIR)
6. ADA Plan

E SELECTION OF PROGRAMMING GROUP

1. Responsible Group Member makes recommendations
2. Vice President's approval required
3. Cabinet Informed vs. Cabinet Approval

F DEFINE PROJECT PARTICIPANTS

1. Executive Cabinet
   a. Membership
      - Distict
        a. Chancellor
        b. Vice Chancellors
        c. President
      - College
        a. Presidents
        b. Vice Presidents
2. SPE
   a. Membership
      a. Vice Presidents
      b. Deans
      c. FP+D Associate Vice Chancellor
      d. President of the Academic Senate
      e. Student Member
3. Project Committee
   a. Membership
      a. Master Plan Architect
      b. FP+D Director of Construction
      c. Vice President of Administrative Services
      d. Major Stakeholder Vice President
      e. Major Stakeholder Manager (Dean or Director)
      f. Designated Faculty + Staff
4. Programming Group
   a. Membership
      a. Master Plan Architect (facilitator)
      b. Representatives of Major Groups of Building Users
      c. Information + Technology Representative
      d. Campus Police Representative (security)
      e. CTSS
      f. Media Services Representative (AV)
      g. Maintenance + Operations Representative
      h. FP+D Director of Construction

G DETERMINE OTHER AGENCY INVOLVEMENT

1. Bay Area Air Quality Management District (BAAQMD)
2. Santa Clara County Fire Department
3. Division of the State Architect (DSA)
4. California Department of Fish & Game
5. Santa Clara County Public Health Department
6. South Bay Water Recycling
7. Pacific Gas & Electric (PG&E)

III. SELECTION OF PROJECT ARCHITECT

WITH PRIOR EXPERIENCE PERFORMING DESIGN OF SIMILAR DSA STRUCTURES OF SIMILAR SIZE WITH SUSTAINABLE FEATURES

A SOLICIT FOR INDIVIDUAL PROJECTS OR FOR AN 'ON-CALL' POOL

1. CA/OR to solicit RF request from firms and compile responses
2. Solicit for individual projects **OR** for an "on call" pool

B REVIEW + RANK SUBMISSIONS

1. Establishing ranking criteria
   - a. Determined by specific project requirements
2. Selection Committee
   - a. District Fiscal Services Representative
   - b. Project Sponsor (individual project)
   - c. "On call" pool
   - d. Deans
   - e. Or as appropriate
3. Select top three firms for interview

C INTERVIEW TOP RANKED FIRM(S)

1. Interview information sheet
   - a. Interview panel membership
   - b. Date and time location
   - c. Agenda
   - d. Instructions to interviewees
2. Interview panel participants
   - a. District Fiscal Services
   - b. VP of Administrative Services (optional)
   - c. Representatives of the relevant Division
     - a. Academic building:
       - Dean
       - Two faculty
       - One classified staff
     - b. Other project types:
       - Composition of the interview group will include primary stakeholders
3. Check firm references
4. Committee selects firm to recommend award contract

D CONTRACT DEVELOPMENT + APPROVAL

1. Conducted by CA/OR + FP+D Associate Vice Chancellor

2. Considerations
   - a. District's Standard Architectural Agreement
     - a. Scope of Services
       - Architectural
       - Engineering
       - Consulting
       - Programming
       - Construction Management
       - Inspector of Record
       - Testing and Inspections
       - Construction
     - b. Fee basis
     - c. Mandatory site walk with design team
     - d. Fee Structure
       - Basic services
       - Specialty consultants
       - Fee basis
         - Fixed
         - Percentage
         - Hourly not to exceed
         - Additional Services
     - e. Invoicing + Billing percentages
     - f. Deliverables
     - g. Schedule

3. Board Recommendation
   - a. FP+D Associate Vice Chancellor will prepare board agenda item recommending entering into an agreement
     - a. Executive Cabinet
     - b. Board of Trustees
   - b. Contract Approvals

IV. DESIGN

A PROGRAMMING/SCHEMATIC DESIGN

1. Gather info
2. Review as-built conditions
3. Coordinate with District Standards and Campus Guidelines Handbook
4. Coordinate fire lanes and hydrants
5. Consult with utility providers
6. Reviews
   - a. EIR
   - b. As Built Documents
   - c. Existing Reports
7. Photographic Documentation
8. Accessible Path
9. Geotech Reports
   - a. Hire Geotech of Record
   - b. Seismic
   - c. Geologic
   - d. Geo Hazard
10. Cross Connection Survey
11. Reviews
    - a. Design Committee
    - b. Campus Police
    - c. Information Systems
    - d. Master Plan Architect
    - e. Media Services
    - f. Peer Review Engineering
    - g. Maintenance & Operations
    - h. CA/OR
    - i. Programming Group
    - j. Maintenance
    - k. Custodial
    - l. Grounds
12. Start DSA Collaborative Process (if available)
13. Client Approvals
    - a. Committee
    - b. President
    - c. Board of Trustees
14. Register Project with USGBC (fee), procure check thru Board
15. Charter
    - a. Internal
    - b. Document
    - c. Memoralizing progressor project and next steps
    - d. Define Expectations
16. Insert Estimates/ Reconciliation/Value Engineering To Address Budget

B DESIGN DEVELOPMENT PHASE

1. Define delivery method/bidding strategy
2. Reviews
   - a. Design Committee
   - b. Campus Police
   - c. Information Systems
   - d. Master Plan Architect
   - e. Media Services
   - f. Peer Review Engineering
   - g. Maintenance & Operations
   - h. CA/OR
   - i. Programming Group
3. Client Approvals
   - a. Committee
   - b. President
   - c. Board of Trustees
4. LEED Charrette
5. Insert Estimates/ Reconciliation/Value Engineering To Address Budget

C CONSTRUCTION DOCUMENTS PHASE

1. Reviews
   - a. Design Committee
   - b. Campus Police
   - c. Information Systems
   - d. Master Plan Architect
   - e. Media Services
   - f. Peer Review Engineering
   - g. Maintenance & Operations
   - h. CA/OR
   - i. Programming Group
2. Client Approvals
   - a. Committee
   - b. President
   - c. Board of Trustees
3. Insert Estimates/ Reconciliation/Value Engineering To Address Budget

V. EXTERNAL APPROVALS

A DIVISION OF THE STATE ARCHITECT

1. Structural (SSS)
2. Fire Life Safety (FLS)
3. Access Compliance (ACS)
4. California Geologic Survey (CGS)
5. CALGreen Code
6. California Energy Code (CEC)

B OTHER AGENCIES

1. City of San Jose Fire Marshal
2. County Department of Health Services
3. Department of Toxic Substance Control
4. EVC - South Bay Water for Recycled Water
5. BAAQMD - Demolition/ Asbestos/Generators

STATE FUNDED PROJECTS ONLY

C CHANCELLOR'S OFFICE (CCCCO)

1. Space Utilization
2. Approvals
   - a. Release of funds
     - Preliminary plans
     - Working drawings
     - Release of equipment funds
   - b. Approval of working drawings + proceed to bid
     - Owner Controlled Insurance Program to be included in construction amount
   - c. Request for bid approval

D INVOLVED PARTIES

1. Project Architect
2. CA/OR
3. FP+D
4. Master Plan Architect (as needed)

VI. ACTIVITIES DURING DSA PLANCHECK

PROJECT SPECIFIC

A PREPARE PROJECT SPECIFIC STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

1. Coordinate with campus wide SWPPP

B STATE WATER RESOURCE CONTROL BOARD

C LOGISTICS

1. Coordinate with FP+D
2. Coordinate with Contractor (if applicable)

D PRE-QUALIFICATION OF CONTRACTOR

1. At the discretion of the District
2. Depending on DBB delivery
   a. Consider prequalifying specific trades.
   b. Review Final Maintenance, Custodial, grounds, IT & Locksmith (door hardware)

G RECEIVE DSA BACKCHECK

1. Address DSA
2. Constructability
3. IDC comments
4. Resubmit
5. DSA Approval

DISTRICT PROCURE IOR & T&I

1. Firm need T&I sheet (DSA-103) Preliminary
2. Need Contractor Construction Schedule

CONTRACTOR RECRUITMENT

1. Coordinate with master contractor list
2. Follow PCC advertizing & solicitation procedures
3. Outreach

BIDDING STRATEGIES

1. Coordinate with furniture installation
   a. Add language to bid documents regarding coordination of furniture and data sub-contractor
2. Alternates
3. Allowances
4. Unit Prices

VII. PROCUREMENT

A INVOLVED PARTIES

1. Fisical Services
2. Facilities Planning + Development
3. Contruction Administrator/Owner Representative
4. Project Architect
5. Vice President of Administrative Services
6. President
7. SPE
8. Executive Cabinet
9. Chancellor
10. Board of Trustees
11. Outreach
10. Building Trades

B ADVERTISEMENT

1. Follow legal requirement
2. Invoice adverse advertising

C JOB WALK

1. After second advertisement
2. Invite Architect, Facilities, etc.
3. EIR made available before job walk

G GC BID RECOMMENDATION

1. Bid Protest
2. DBB Lowest responsible bidder

a. Outreach
b. Building Trades

H BOT APPROVAL TO AWARD BID

see page 19 of gilbane comments

D BID QUESTIONS + ADDENDA

1. Submit to DSA
2. Receive Approval
3. BQ's to Program Manager, copy to Fiscal Services
4. Last add 72 Hours prior to Bid opening

E BID OPENING

1. Fiscal Services Sealed ENV.

F BID REVIEW

1. Building Trade Council Notification
2. GC Submit Sub Agreement to be bound

I CONTRACT EXECUTION

J NOTICE TO PROCEED

1. Copy to DSA on category 1 + 2 projects
2. Submit IOR info to DSA
3. Add District Reps to collaborator box
4. DSA 102 - Contract info

K PRE-CON CONFERENCE

1. Attendees
   - a. General Contractor
   - b. Program Manager
   - c. Police
   - d. Sponsor
   - e. Subs
   - f. Building Trades

VIII. CONSTRUCTION

A GROUNDBREAKING CEREMONY

1. Set up
   - a. Podium / Sound System
   - b. Banner
   - c. Shovels
   - d. Picture
2. Project Information
3. Public Notice
4. Invite

B MOBILIZATION

1. Campus notification of changes
2. Parking Requirements
   - a. Disabled Access
   - b. Staff
3. Roadway + walkway closures
4. San José • Evergreen Community College District public information signs
5. Webcam

C CONSTRUCTION PHASE

1. Managed by FP+D and CA/OR
   - a. Weekly Meetings
   - b. Submittal Registry
   - c. Monthly Pay apps
   - d. MBWBE reports
   - e. Waste Diversion Reports
   - f. SWPPP reporting
   - g. DSA
   - h. Co's need DSA Approval

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IX. COMPLETION OF THE WORK

A INVOLVED PARTIES

1. FP+D
2. IOR
3. CA/OR
4. Architect of Record (AOR)
5. Contractor
6. Commissioning Agent (Third party as required)
7. USGBC
8. South Bay Water

B DETERMINATION OF SUBSTANTIAL COMPLETION

1. Stage in the progress of The Work when work is complete and in accordance with the Contract Documents so the District can occupy or use The Work for its intended purpose
2. Determined by the AOR and Project Inspector upon request by the Contractor

C JOINT INSPECTION OF WORK

1. Commences upon achievement of Substantial Completion of the Work
2. All involved parties participate in inspection

D JOINT PREPARATION OF THE "PUNCH LIST"

1. "Punch List" is prepared by AOR
   a. Comprehensive list of items of The Work to be corrected or completed by the Contractor
   b. The exclusion of, or failure to include, any item on the Punch List shall not alter or limit the obligation of the Contractor to complete or correct any portion of The Work in accordance with the Contract Documents

E TIME FOR COMPLETING "PUNCH LIST" ITEMS

1. Established jointly by FP+D, CA/OR, the AOR, and the Contractor

F COMPLETION OF "PUNCH LIST" ITEMS

1. Contractor to complete all Punch List items within the time established

G FINAL ACCEPTANCE

1. Contract has been fully performed by the Contractor

1. 2. Determined by the Architect, CA/OR, and Project Inspector upon request by the Contractor

H FURNITURE PROCESS

1. Survey existing

2. Establish Save/Pitch

3. Procure new furniture

3. Procure moving

X. OCCUPANCY

A GRAND OPENING

1. District to coordinate
2. Set up
   a. Podium / Sound System
   b. Banner
   c. Shovels
   d. Picture
3. Project Information
4. Public Notice
5. Invite

B POST OCCUPANCY EVALUATION

1. FP+D and assigned District staff to conduct analysis
2. LEED, if applicable

C SPACE INVENTORY UPDATE

1. FP+D to coordinate
2. AOR to prepare simplified floor plans reflecting as-built conditions and room numbering
   a. AutoCAD or Revit files
   b. Spreadsheet listing room numbers, names, and ASF

XI. PROJECT CLOSEOUT

A DSA

1. AOR to submit forms list for Closeout with Certification

B O & M MANUALS

C WARRANTIES

1. Per warranty registry

D TRAINING

1. Video

E AS-BUILT DRAWINGS

F NOC DISTRICT FILES

PART C

FURNITURE, FIXTURES, + EQUIPMENT (FF+E) PROCEDURES

FURNITURE, FIXTURES, + EQUIPMENT (FF+E) PROCEDURES PART C

INTRODUCTION

Text

see page 28 of gilbane comments

PART C FURNITURE, FIXTURES, + EQUIPMENT (FF+E) PROCEDURES

A INTERIOR DESIGNER TO SPACE PLAN WITH ARCHITECTS

1. Coordinate during schematic design
   - a. Electrical locations and requirements
   - b. Telecom locations and requirements
   - c. Backing requirements
   - d. Accessibility guidelines

B INTERIOR DESIGNER/ PROCUREMENT TEAM/ USER MEETINGS

1. Coordinate during design development
2. Furniture requirement discussions
   - a. Specific needs
   - b. Accessibility requirements
   - c. Ergonomic requirements
3. Determine furniture dealer
   - a. Supports interior designer efforts

C INTERIOR DESIGNER TO WORK WITH BUILDING COLOR PALETTE

1. Coordinate during design development
2. Select appropriate fabric and furniture type
3. Documentation + specification of furniture package
   - a. Interior designer develops framework
   - b. Furniture dealer develops specifications
4. Prepare final furniture package
   - a. Deliver to CA/OR
5. Prepare final sample boards
   - a. Deliver to CA/OR

D FURNITURE SCHEDULE/ SPECIFICATIONS

1. Coordinate during design development
   - a. FP+D
   - b. Architect
   - c. User Group
2. Furniture dealer prepares final specifications
   - a. Interior Designer reviews + distributes for approval
3. Approval of furniture package
   - a. FP+D
   - b. Architect
   - c. User Group

E FURNITURE ACQUISITION

1. Contracted through design firm
   - a. FP+D + *CA/OR* team may opt to do bidding
2. Purchasing may utilize Leveraged Procurement Agreement (LPA)
   - a. LPA to include discount structures available to school districts and higher education institutions
   - b. CMAS, FCCC, GSA, NJPA, TCPN, US Communities, etc.

F AWARD OF FURNITURE CONTRACT

1. Board of Trustees

G DISTRICT ISSUES PURCHASE ORDER

H OVERSEE FURNITURE INSTALLATION

1. Contracted with interior designer
   - a. Data sub-contractor to test and certify cabling and connections
   - b. Furniture punch list
   - c. Invoices to be submitted to FP+D or *CA/OR* for auditing purposes

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END OF SECTION 1

2 CAMPUS DESIGN GUIDELINES


SJCC - CIRCA 1993


EVC - CIRCA 2000

INTRODUCTION

The design guidelines consist of principles and strategies to be incorporated into the design process, to yield wholistic campuses sensitive to universal and environmental design solutions. They aim towards the same goal: human health, well-being, and quality of life.

These principles should be primary considerations and intentionally integrated into every project. Circulation systems, material choices, furniture systems, space layouts, and all other elements should reflect the discussed principles so all students, faculty, staff, and visitors of all backgrounds and characteristics feel welcomed, comfortable, and unrestricted.

CONTENTS

PART A

UNIVERSAL DESIGN (UD) GUIDELINES

INTRODUCTION

Universal Design (UD) refers to designs that accommodate the widest range of potential users in all educational products and environments.

The basic concept of UD is that people's mobility and accessibility are largely determined by the built environment. It shifts from the individual to community; rather than assuming that people must accommodate the built environment; it assumes that the built environment should accommodate users of all characteristics and abilities. Design standards must go beyond an "average person" or they will fail to accommodate the diversity of potential users. In alignment with the District's *Diversity Initiative*, UD assumes comfortable use for individuals with an array of characteristics, including; gender, race and ethnicity, age, stature, physical abilities and disabilities, visual and auditory limitations, height, and learning styles. This in turn, creates a sense of comfort and belonging to a community.

Not only does UD support and complement the Americans with Disabilities Act (ADA), it also goes beyond it, in that it is performance based rather than prescriptive with minimal compliances. Design approach to any facility should be comprehensive and should address holistic usability issues. To yield seamless mobility options, considerations should be given to all possible obstacles that may exist in buildings, transport systems, paths of travel, and roads.

UNIVERSAL INSTRUCTIONAL DESIGN

Traditionally, students with disabilities or other limitations were singled out by being required to provide documentation to prove that they are in need of special accommodations. Whether it was entering through the back of the building due to non-accessible front entries, or having to take tests in a separate location, or requesting volunteer note-takers reinforces the stigma of disabled students being different from other students. This takes away from the student's primary role of learning, and places unnecessary psychological burden.

Providing individualized accommodations for students meets legal access requirements, however discourages productive equal learning. Universal Design makes education and all it's facilities accessible to all with no extra accommodations or adjustments necessary for those with special needs. It levels the playing field so all the students can have a sense of belonging, and it retains graduating rates of students with disabilities.

UNIVERSAL DESIGN (UD) GUIDELINES PART A

COMMITMENT

Full accessibility within and between all buildings and open spaces continues to be a guiding principle for all planned development at San José • Evergreen Community College District. Development of construction plans for development projects within the district must incorporate all relevant elements of the Americans with Disabilities Act for the project area. In addition to compliance with all regulations regarding disability accessibility, construction planning should incorporate principles of Universal Design to create barrier free access and design elements that ease use for all individuals.

GOALS

- Design environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.
- Implement a long-term plan for effective upgrade of accessibility compliance throughout the campus and conduct scheduled maintenance of all access features.
- Provide barrier free access path of travel for all major connective open spaces.
- Provide learning and work spaces that promote safe, equitable and universally accessible conditions that facilitate participation regardless of physical abilities.
- Utilize the “Principles of Universal Design” [North Carolina State University, The Center for Universal Design] to guide construction/development of all aspects of the campus environment. Accessibility should not be an additional or secondary consideration, but rather integrated into the main design of any project.
- Design environments that are welcoming, comfortable, accessible, attractive, and functional. Specific considerations should be made for climate, entrances and routes of travel, furniture and fixtures, information resources and technology, and safety.

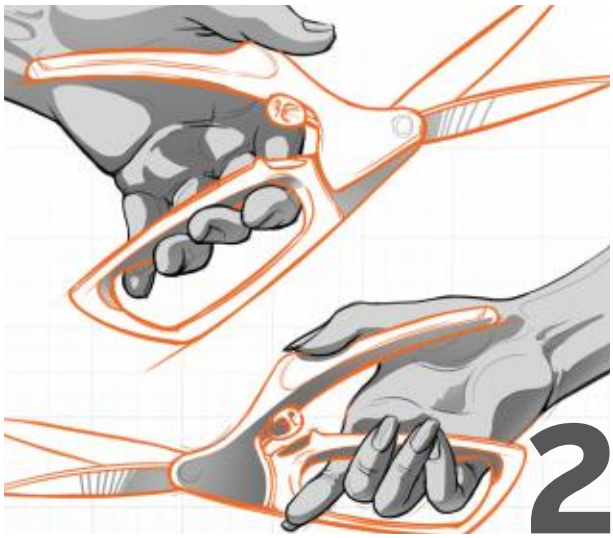
THE PRINCIPLES OF UNIVERSAL DESIGN

SIZE + SPACE FOR APPROACH + USE

The design is useful and marketable to people with diverse abilities.

1a. Provide the same means of use for all users: identical whenever possible; equivalent when not.
1b. Avoid segregating or stigmatizing any users.
1c. Provisions for privacy, security, and safety should be equally available to all users.
1d. Make the design appealing to all users.

FLEXIBILITY IN USE



The design accommodates a wide range of individual preferences and abilities.

2a. Provide choice in methods of use.
2b. Accommodate right-handed or left-handed access and use.
2c. Facilitate the user's accuracy and precision.
2d. Provide adaptability to the user's pace.

SIMPLE + INTUITIVE USE

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or education level.

3a. Eliminate unnecessary complexity.
3b. Be consistent with user expectations and intuition.
3c. Accommodate a wide range of literacy and language skills.
3d. Arrange information consistent with its importance.
3e. Provide effective prompting and feedback during and after task completion.

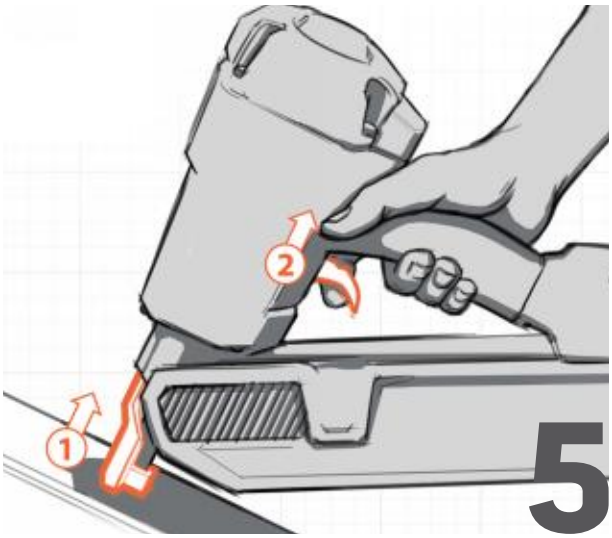
PERCEPTIBLE INFORMATION

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

4a. Use different modes for redundant presentation of essential information.
4b. Provide adequate contrast between essential information and its surroundings.
4c. Maximize "legibility" of essential information.
4d. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
4e. Provide compatibility with a variety of techniques used by people with sensory limitations.

THE PRINCIPLES OF UNIVERSAL DESIGN (CONTINUED)

TOLERANCE FOR ERROR



The design minimizes hazards and the adverse consequences of accidental or unintended actions.

5a. Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
5b. Provide warnings of hazards and errors.
5c. Provide fail safe features.
5d. Discourage unconscious action in tasks that require vigilance.

LOW PHYSICAL EFFORT

The design can be used efficiently and comfortably and with a minimum of fatigue.

6a. Allow user to maintain a neutral body position.
6b. Use reasonable operating forces.
6c. Minimize repetitive actions.
6d. Minimize sustained physical effort.

SIZE + SPACE FOR APPROACH + USE

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

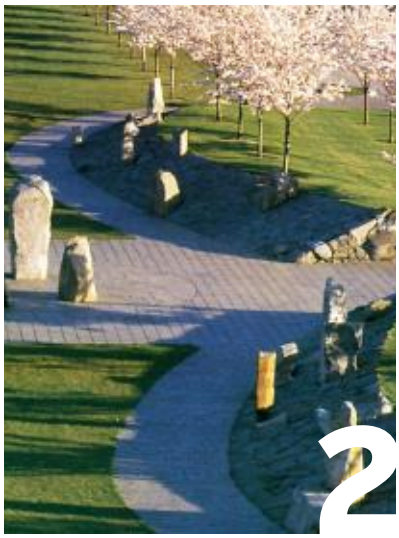
7a. Provide a clear line of sight to important elements for any seated or standing user.
7b. Make reach to all components comfortable for any seated or standing user.
7c. Accommodate variations in hand and grip size.
7d. Provide adequate space for the use of assistive for personal assistance.

IMPORTANT CONSIDERATIONS

PARKING

- Ensure that the number of accessible parking stalls and drop-offs meet current ratios. Consider whether ratios should be adjusted to facilitate equitable access to high use facilities.
- Placement of parking dispensers, emergency phones and other parking lot resources are at accessible heights and free of any barriers.
- A bumper or curb should be located to prevent encroachment of cars over adjacent walkways.

SIDEWALKS + PAVING



- Provide accessible routes of travel to/from parking and buildings.
- Provide the same means of use for all users whenever possible.
- Increased walkway widths and smooth walking surfaces improve convenience for all users.

CURB CUTS

- A bumper or curb should be provided and located to prevent encroachment of cars over the required width of adjacent walkways.
- Provide curb cuts and ramps at sidewalk intersections or routes of travel.
- Curb ramps are important for people in wheelchairs as well as people with handcarts, strollers, scooters, walkers, crutches, etc.

FURNISHINGS + SEATING

- Provide a clear line of sight to important elements for any seated or standing user.
- Avoid segregating or stigmatizing any users.
- Consider height appropriate furniture and casework.
- Provide height adjustable furniture where appropriate.
- Provide mobile furnishings that can easily be rearranged for different learning objectives and groupings.

SIGNAGE

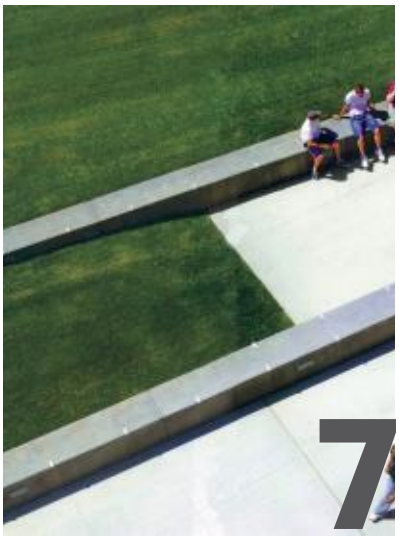
- Provide visible directional signage indicating direction of accessible path at decision points.
- Directional signs should be large with have high contrast print.
- Arrange information consistent with its importance.

THRESHOLDS + BUILDING ENTRY + DOORS + CIRCULATION

- All building entries shall be universally accessible.
- Doors to be automatically operated; either through motion sensors or by a push of a button.
- Circulation and corridors to be wide and clear of obstacles.
- Provide sufficient space that enhances flexibility in use and accommodates wheelchair turning radius in elevators, classrooms, offices, public spaces, and corridors.

IMPORTANT CONSIDERATIONS (CONTINUED)

RAMPS



- Modify the landscape so that it creates an attractive, natural, on-grade access to the main or primary entrance of a building in lieu of building ramps, if possible.

DRINKING FOUNTAINS

- Provide accessible dual-height drinking fountains along accessible paths of travel with clear signage.

TOILET ROOMS

- Locate accessible toilet rooms along accessible paths of travel with clear signage.
- Consider locating Family Restrooms within facilities to address the needs of parents with children who need assistance and individuals with a disability who require assistance.
- Consider fixtures that are easily accessible, understandable, and operable.

INFORMATION TECHNOLOGY

- Incorporate hardware and software products that are usable by a broad audience.
- The design of output and display should maximize the number of people who can comfortably hear and see the information presented.
- Controls should be easy to reach, operate, and understand through labeling.
- Assistive Listening Technology should be incorporated in all instructional spaces.

INSTRUCTION

- Curriculum should reflect an awareness of the unique nature of each learner and the need to address differences.
- Multiple means of representation gives learners various ways to acquire information and knowledge.
- Multiple means of action, expression, and engagement provides learners alternative means for demonstrating what they know, tap into their interests, and increase motivation.

STUDENT SERVICES

- Planning, Policies, and Evaluation should address diverse issues.
- Physical environments and products should be accessible, comfortable, safe, and welcoming.
- Staff should be prepared to work with all students.
- Publications and website content should be easily accessible.
- Events should be accessible to all potential participants.

IMPLEMENTATION

UD can be implemented in all planning or design processes to new facilities, or as a special process to existing facilities. Facility managers have a unique place in implementing UD, since it will ultimately make their duties easier and reduce liability issues.

STRATEGIES FOR IMPLEMENTATION

- Realize that UD is a mind-set and will ultimately increase the value of the facilities.
- Enlist the support of professional organizations to help provide educational tools to designers, decision makers, and managers.
- Establish District and Campus level of UD standards.
- Realize that guidelines can be tailored to specific environments.
- Use the most current guidelines and standards.
- Obtain feedback from users with special needs.
- Consider UD objectives at all design stages of buildings, landscaping, circulation, transport, physical spaces, informational technology, instruction, and student services.
- Realize that incorporating UD to existing facilities does not mean a major renovation, yet can be done incrementally in an inclusive way of thinking about users when making even minor updates or repairs by asking, “does this change meet the principles of Universal Design?”
- Prevent barriers from users or community by providing educational tools for design.
- Consider “marketing” the UD commitment and features, as it is the “right thing to do”, similar to the green building movement and the LEED rating system (discussed in the following section.)

RESOURCES + REFERENCES

Center for Universal Design at NC State University
www.design.ncsu.edu/cud

Universal Design Newsletter
www.UniversalDesign.com

National Center on Universal Design for Learning
www.udlcenter.org

Curriculum Transformation & Disability: Implementing Universal Design in Higher Education
Jeanne L. Higbee, Editor. 2003. Center for Research on Developmental Education and Urban Literacy, General College, University of Minneapolis, MN.

Universal Design in Education: Principles & Applications
Sheryl Burgstahler, Ph.D. 2005. DI-IT, University of Washington College of Engineering.

Best Practices for Universal Design
Sacramento Transportation & Air Quality Collaborative, October 2005. Bicycle & Pedestrian Facility Design Best Practices.

PART B

SUSTAINABLE DESIGN GUIDELINES

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

- Brundtland Report, United Nations, 1987

INTRODUCTION

San José • Evergreen Community College District has a long term commitment to environmental, economic, and social sustainability through the implementation of sustainable design principles in campus planning efforts.

- Buildings shall be designed to include the green building measures specified as mandatory in the current CALGreen code and Title 24 of the California Code of Regulations. Where feasible and appropriate, the District will direct design consultants to pursue LEED certification.
- Building design should employ sustainable design practices that are successfully expressed as integral aspects of the building design.
- Buildings should demonstrate how passive sustainable strategies can be successfully employed and how high performance environments may be achieved.
- Whether in the orientation of the building, building geometry, material selection, or architectural features such as deep roof overhangs, building design should celebrate the use of renewable resources and of passive systems which promote occupant health and comfort by providing access to natural daylighting and fresh air.

IMPORTANT CONSIDERATIONS

PLANNING + DESIGN

- Planning, design and development methods should include environmentally responsible site selection, building design, building siting and development.
- This will protect, restore and enhance the environmental quality of the site and respect the integrity of adjacent campus buildings.

ENERGY EFFICIENCY

- All systems on campuses should be compatible operate efficiently, thus optimizing energy use and performance.
- Strategies such as the “right-sizing” of building mechanical systems and the design of tighter building envelopes can help to achieve campus wide energy efficiency.

WATER EFFICIENCY + CONSERVATION

- Achieve water efficiency and conservation through efficient use of water indoors, outdoors and in waste water conveyance.
- By employing a variety of water-wise strategies, limited water resources may be conserved and safeguarded.
- Landscape management best practices, such as drought-tolerant native plants, aid in water conservation and protection of local watersheds.

MATERIAL CONSERVATION + RESOURCE EFFICIENCY

- Achieve material conservation and resource efficiency through protection of buildings from exterior moisture, construction waste diversion, employment of techniques to reduce pollution through recycling of materials and building commissioning or testing and adjusting.

ENVIRONMENTAL QUALITY

- Reducing the quantity of air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of a building's contractors, installers, occupants and neighbors.
- This section also addresses acoustics and sound control.

ENERGY SELF-SUFFICIENCY/ INDEPENDENCE

- Reduce energy capacity requirements from electric grid by utilizing available economically feasible technology such as wind, solar, and biomass for on-site energy generation.

IMPORTANT CONSIDERATIONS (CONTINUED)

TRANSPORTATION

- Provide on-site vehicle charging stations to encourage existing and future electric or hybrid vehicle owners.
- Provide a substantial prominent bike lockable rack areas to encourage students, faculty, and staff to ride instead of drive.
- Engage local public transportation agencies to consider stops near the Colleges, to encourage students, faculty, and staff to ride instead of drive.

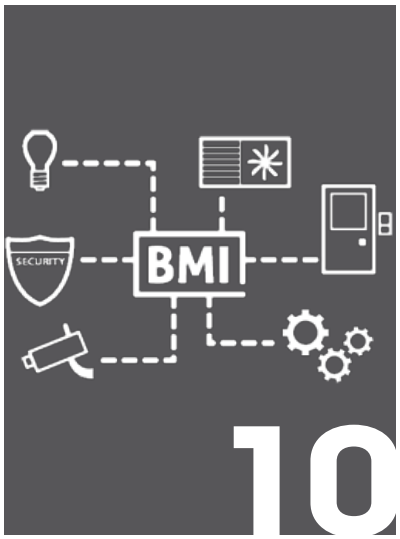
LIFE CYCLE COST + TOTAL COST OF OWNERSHIP (TCO)

- Understanding all of the hard and soft costs expended over the life of an item can bring awareness of any hidden costs associated with additive maintenance and replacement.
- Wise FF&E selections can increase productivity, effectiveness, learning outcomes, pride and retention to users.
- FF&E should have an average lifespan of 30 years and should reduce TCO since it demands less involvement from M&O, IT, and facilities staff.

DAYLIGHTING

- Maximize daylighting in all spaces to maximize natural energy and minimize the use of indoor lighting.
- Daylight Harvesting is a method by which daylight sensors detect the presence of sun light available in a space, and adjusts the lights automatically throughout the day. Systems for daylight harvesting should be considered for energy management and savings.

OPERATIONS + FACILITIES



- Seek to operate and maintain a computerized energy management system to provide centralized reporting and control of campus energy related activities.
- Scheduling of building or facility use should be optimized to maximize and consolidate usage to conserve energy and resources.

EDUCATION

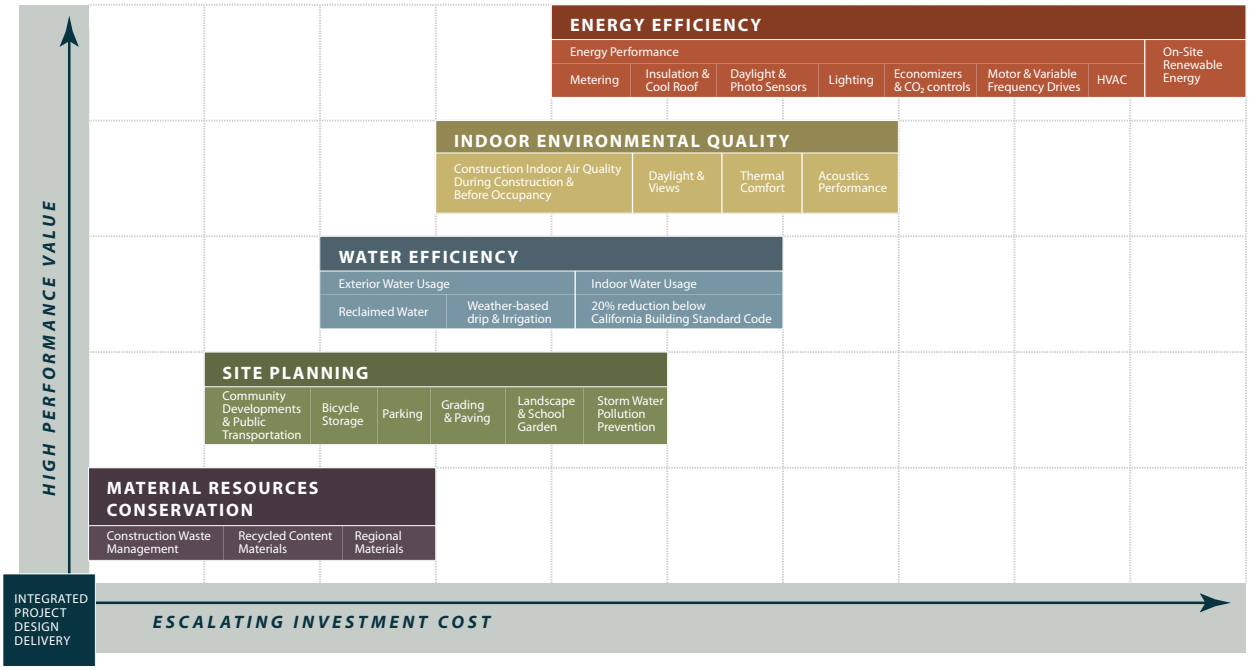
- Educating the student body, faculty, and staff about sustainability and the District's goals will bring awareness of the macro and micro ways each individuals can contribute to the community as a whole for a sustainable future.
- This can be done through workshops or through displays that display information on a College's energy use, water conservation, recycling volumes etc.

IMPLEMENTATION

Sustainable design can be implemented at a District and College level to existing and new facilities on a project by project basis, as well as policies to shape environmentally sensitive habits. Garnering interest from the college community will ultimately lead to a more sustainable environment and community.

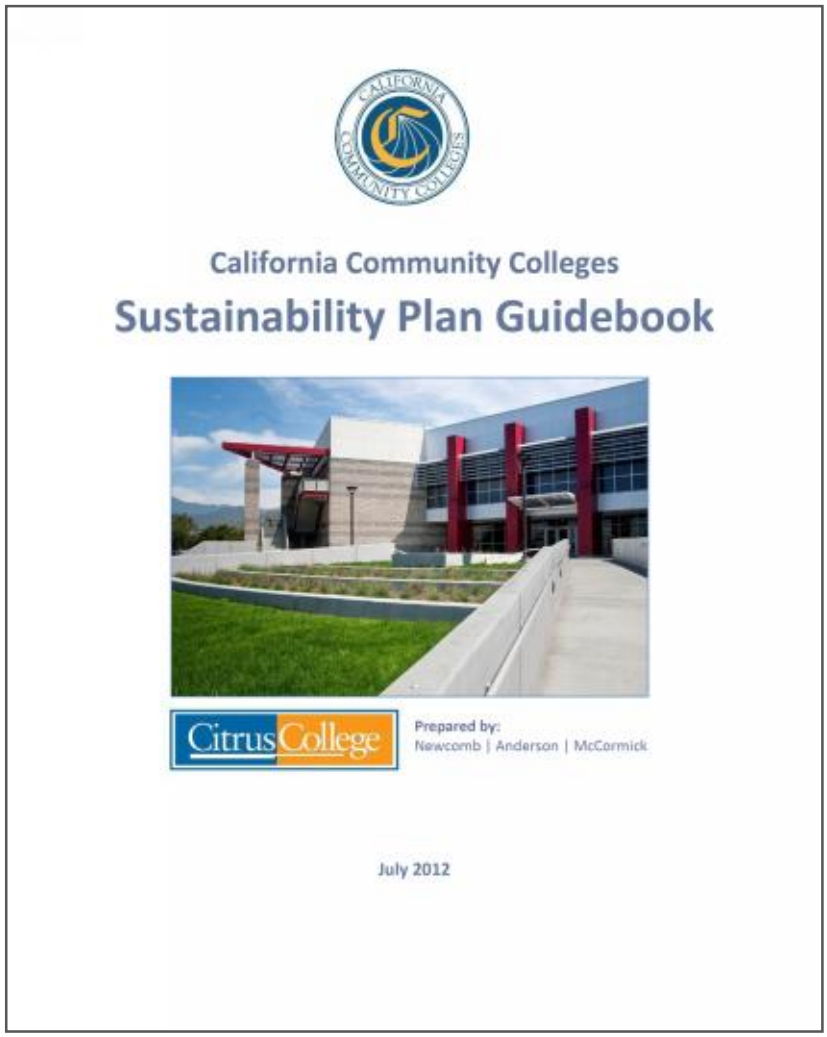
STRATEGIES FOR IMPLEMENTATION

- Form a steering committee from District and College leadership to develop an energy and sustainability plan to provide campuses with a strategic direction for both the short and long terms.
- Establish goals in all areas of instruction, operations, construction, facilities, energy conservation, energy production, water conservation, and environmental integrity. Reference the California Community Colleges Board of Governors *Energy and Sustainability Policy* to help establish goals.
- Engage the community in sustainable workshops to educate and get input from individuals who are primarily affected by the facilities.
- Incorporate sustainable measures in all new buildings, additions, and renovations.



RESOURCES + REFERENCES

Utilize the CCC Sustainable Plan Guidebook for a detailed outline of implementing sustainable designs within the District's Colleges. Cover image below.



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END OF SECTION 2

SECTION 2

EVERGREEN VALLEY COLLEGE

PART A

EXISTING CONDITIONS

Note: This drawing was taken from the 2025 Facilities Master Plan dated November 29, 2011. Design teams are responsible for verifying existing campus conditions.

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PART B

FACILITIES MASTER PLAN

Note: This drawing was taken from the 2025 Facilities Master Plan dated November 29, 2011. Design teams are responsible for verifying existing campus conditions.

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The Evergreen Valley College 2011 Master Plan is a model that is based on the College's Educational Master Plan and addresses the current and projected needs through the year 2025. This Master Plan presents an overall picture of the future development on campus and includes recommendations for renovations and replacements of facilities, as well as campus-wide site improvements.

GOALS:

FUNCTIONAL

- Create an out-of-class environment that is conducive to a comprehensive collegiate experience for students.
- Provide a place (Student Center) where students can easily connect/collaborate with each other.
- Cluster related instructional areas.
- Create flexible, interdisciplinary facilities.

PROGRAMMATIC

- Right-size the campus to address program needs.
- Maximize functional space.
- Eliminate non-functional space.
- Improve efficiency/utilization of facilities.
- Address program needs for students (instructional) and faculty (offices).
- Replace oldest and most aged facilities.
- Renovate existing facilities.
- Provide additions to facilities in need of instructional spaces.

SITE

- Enhance campus landscaping to be related to its surrounding landscape and hillside topography.
- Provide outdoor rooms to make experiences between classrooms supportive of the experiences inside the classrooms.

WAYFINDING

- Delineate clear, inviting campus entry points.
- Develop clear and safe vehicular movement and well-defined drop off areas.
- Improve campus wayfinding.
- Develop pedestrian circulation and connections throughout campus.
- Construct new buildings that create a sense of destination, arrival, and orientation with immediate and distant landscapes.
- Improve visibility of the campus to the community.

SUSTAINABILITY

- Incorporate green (sustainable) design elements into the campus.
- Repair and replace for energy efficiency.
- Reduce the campus's ecological footprint in a fiscally- and socially-responsible way.
- Incorporate sustainable measures in all new buildings, additions and renovations.
- Encourage the use of sustainable measures for repairs, maintenance and upgrades on site.

FINANCIAL POSITIONING

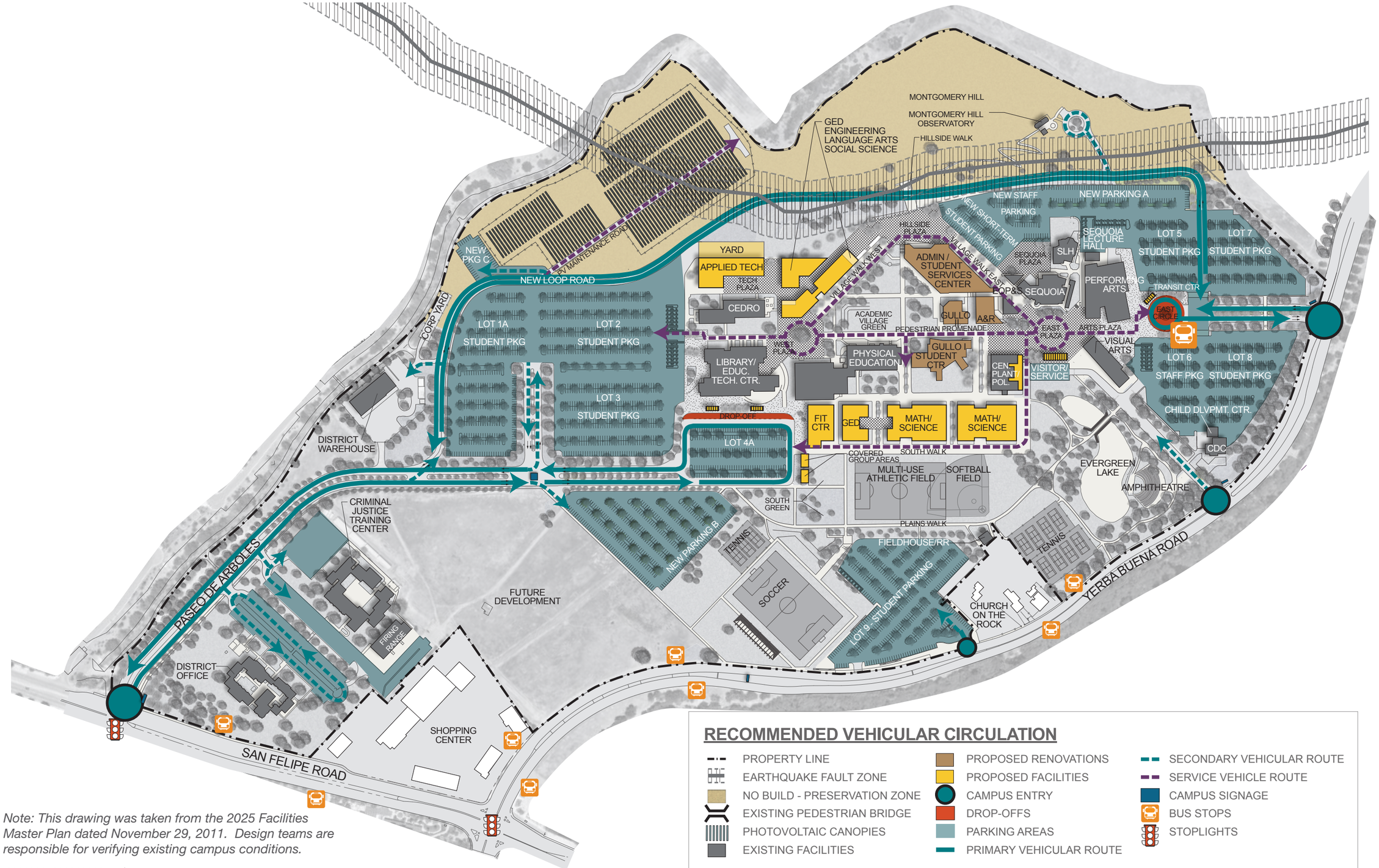
- Position District to maximize state and local funding.

IMPLEMENTATION:

- Refer to the Evergreen Valley College 2011 Facilities Master Plan for details.

PART C

VEHICULAR CIRCULATION MASTER PLAN



RECOMMENDED VEHICULAR CIRCULATION

- PROPERTY LINE
- EARTHQUAKE FAULT ZONE
- NO BUILD - PRESERVATION ZONE
- EXISTING PEDESTRIAN BRIDGE
- PHOTOVOLTAIC CANOPIES
- EXISTING FACILITIES
- PROPOSED RENOVATIONS
- PROPOSED FACILITIES
- CAMPUS ENTRY
- DROP-OFFS
- PARKING AREAS
- PRIMARY VEHICULAR ROUTE
- SECONDARY VEHICULAR ROUTE
- SERVICE VEHICLE ROUTE
- CAMPUS SIGNAGE
- BUS STOPS
- STOPLIGHTS

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VEHICULAR CIRCULATION MASTER PLAN PART C

The Evergreen Valley College campus is framed by two major boulevards and the northern hillside. Campus vehicular circulation is disconnected and requires leaving the campus, traversing either San Felipe or Yerba Buena Road and reentering the campus on the other side. The vehicular circulation concept provides for three clear entries to the campus from both main thoroughfares and a main internal vehicular connection between campus areas. Once within the campus, safety and ease of mobility, parking, and access to building destinations are the major goals. Motorized vehicles are permitted along the edges of the campus. The center of the campus is primarily designated as a pedestrian zone, but allows for service and emergency vehicle access as necessary.

GOALS:

- Identify three main entry drives with widened roadways, signage, landscape planting, and roadway concepts.
- Create an internal vehicular connection between campus areas.
- Minimize conflicts between vehicular routes and pedestrian pathways.
- Encourage use of public transportation by both students and the community.
- Increase parking on west side of campus.

IMPLEMENTATION:

POINTS OF ACCESS

Vehicles shall access the campus from surrounding streets at points on the west, south, and east sides.

- San Felipe Road:
  Develop the existing west campus entry from San Felipe Road as a major entrance onto a widened Paseo De Arboles.
- West Road:
  Create a south campus entry from Yerba Buena Road as a major entrance leading to parking lots 1, 2, 3 & 4.
- Yerba Buena Road:
  Develop the existing east campus entry from Yerba Buena Road as a major entrance to a new East Circle to function as the campus transit center.
- Drop-off:
  Locate new drop-off zones along the south side of the Library, the new East Circle, and along the proposed Loop Road.

TRAFFIC ROUTES

- Construct a new Loop Road adjacent to the hillside to become the main internal vehicular connection between campus areas.
- Convert road along Evergreen Lake to pedestrian-only path into the core of the campus.

PARKING

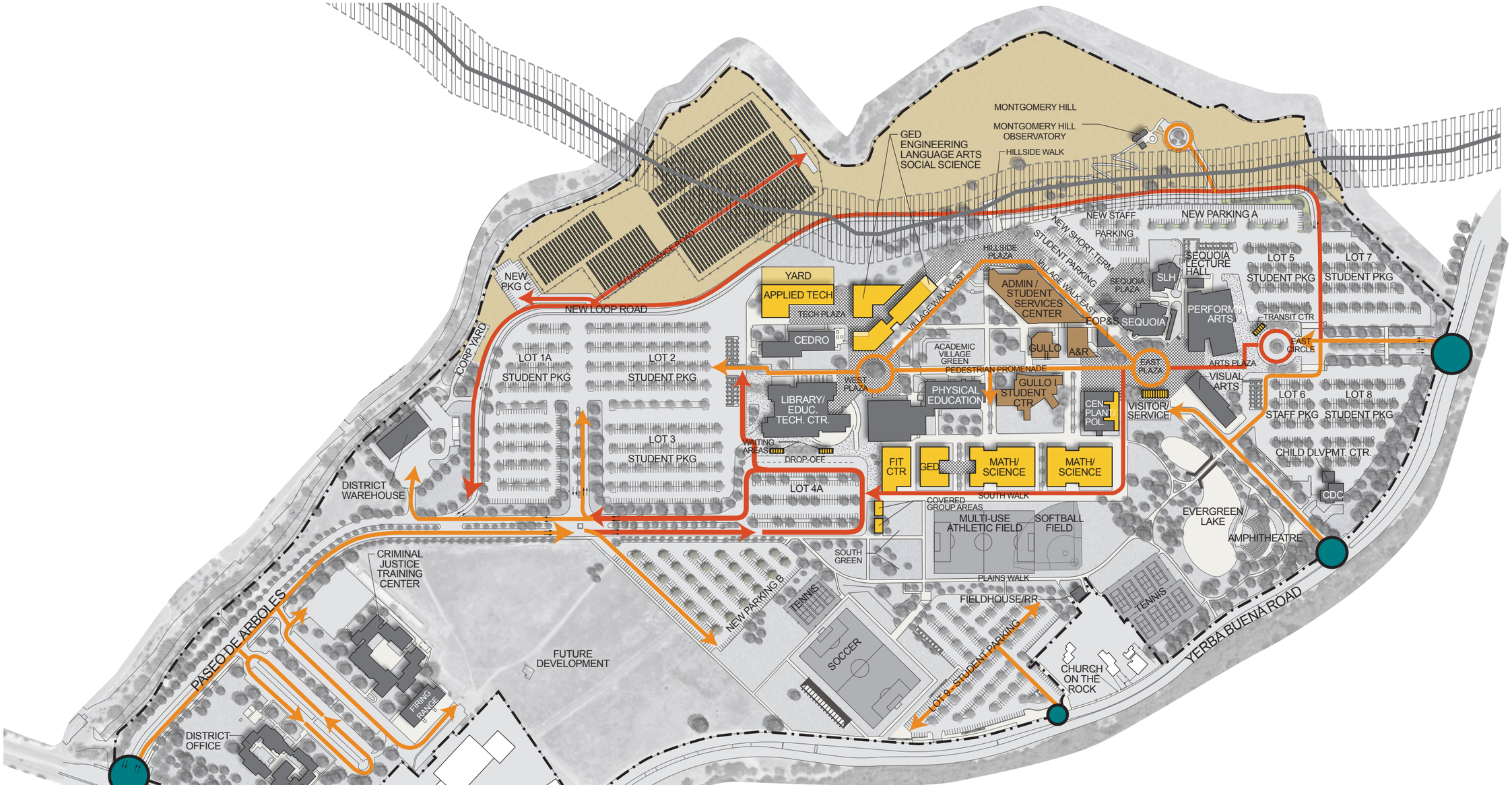
- Develop new parking lots B and C on the west side of campus.

LOADING DOCKS

- Locate and orient to provide the least visual impact on the campus.

PART D

EMERGENCY VEHICLE ACCESS MASTER PLAN



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RECOMMENDED EMERGENCY VEHICULAR ACCESS

- PROPERTY LINE
- EARTHQUAKE FAULT ZONE
- NO BUILD - PRESERVATION ZONE
- EXISTING PEDESTRIAN BRIDGE
- PHOTOVOLTAIC CANOPIES
- EXISTING FACILITIES
- PROPOSED RENOVATIONS
- PROPOSED FACILITIES
- CAMPUS ENTRY
- EXISTING EMERGENCY VEHICULAR ACCESS ROUTE
- PROPOSED EMERGENCY VEHICULAR ACCESS ROUTE

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EMERGENCY VEHICLE ACCESS MASTER PLAN PART D

The Emergency Vehicle Access Master Plan shows access roads throughout the campus. This plan is a compilation of past and present fire access plans from the various construction projects that have occurred on the campus. This Emergency Vehicle Access Master Plan should be updated with each future construction project. Each updated Emergency Access Master Plan shall be submitted to the Local Fire Authority, Santa Clara County Fire Department, and the Division of State Architect (DSA) for review and approval. Refer to the Santa Clara County Fire Department approved "Existing Fire Water Access Plan" drawing dated Month ##, #### for details.

GOALS:

- Provide accessibility to each campus building.
- Ensure efficient and safe passage.
- Adhere to all minimum clearance and width requirements of both state and local fire departments.

IMPLEMENTATION:

FOCUS

- Emergency vehicle access focuses on public service entities:
    - Campus Security
    - Local Fire Department
    - Ambulance
    - Other Emergency Response groups

SITE

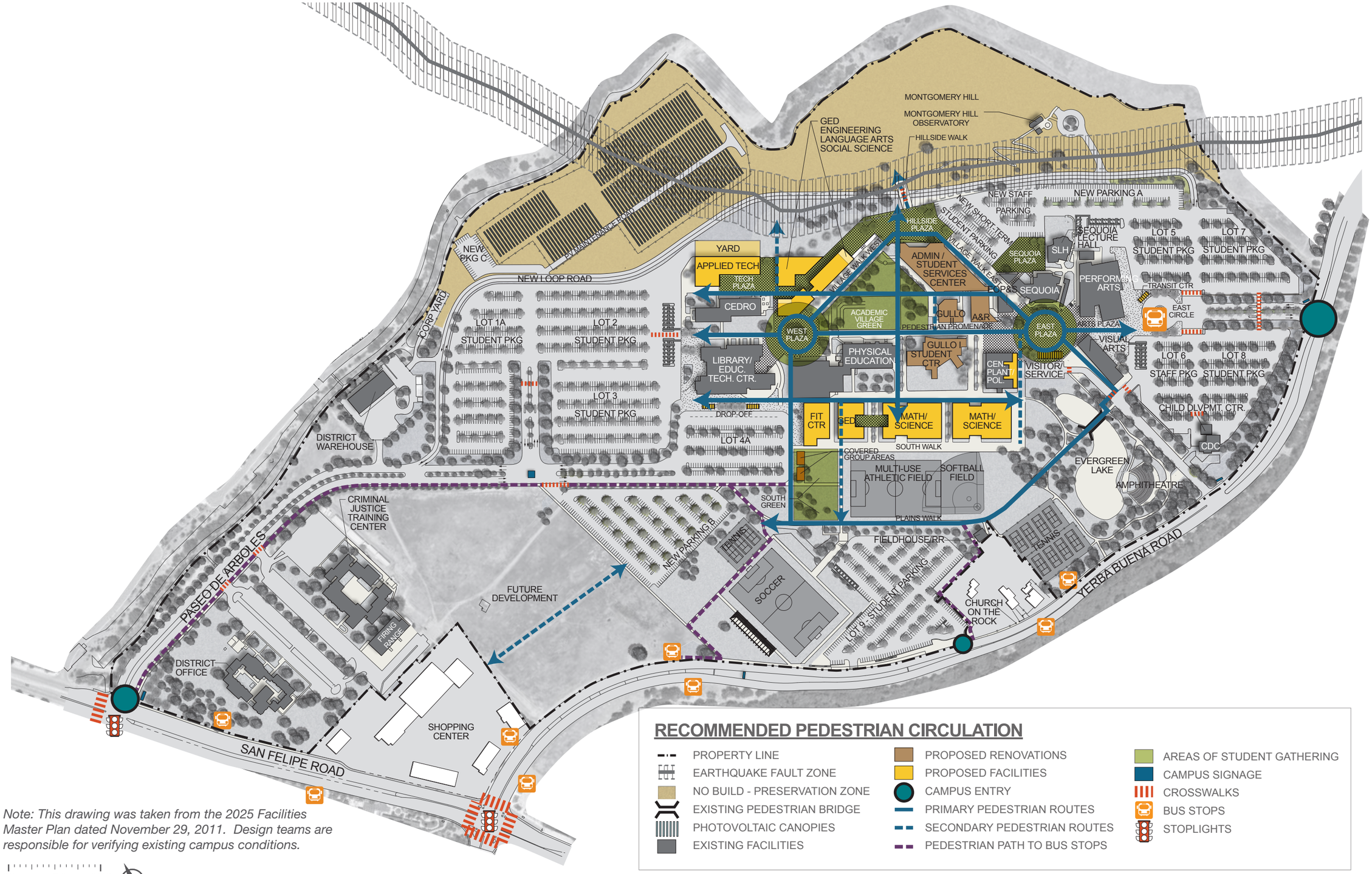
- The site layout provides for emergency vehicle access around the perimeter of the site and through the main pedestrian thoroughfares.

ROUTES

- Shared pedestrian and emergency vehicle routes should be constructed and designed to both meet the campus site aesthetics and the requirements of all the emergency response groups.

PART E

PEDESTRIAN CIRCULATION MASTER PLAN



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SCALE: 1" = 330'-0"

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PEDESTRIAN CIRCULATION MASTER PLAN PART E

The pedestrian circulation concept for Evergreen Valley College primarily focuses on the designated pedestrian zone at the center of the campus. Primary pedestrian circulation is defined by three spines - the Pedestrian Promenade, the Village Walk West, and the Village Walk East. Together these spines connect and define the core or "academic Village" of the campus. They act as edges to major open spaces and they create opportunities to create specialty gardens and outdoor plazas. Additionally, the Lake Walk links the main campus to the amphitheater and the lake area, the Hillside Walk links the campus to the adjacent preserved "Hillside", and the Fitness Walk and Plains Walk define the southern edges of the campus. All the circulation routes improve efficiency and ease of use, while enhancing the user experience with view corridors, signage, lighting and landscape.

GOALS:

- Remove vehicular traffic from the interior campus and pedestrian spines.
- Enhance connections from parking areas to main destinations.
- Provide clear path from visitor parking lot into campus.
- Develop campus connections to public transit stops.
- Improve signage for pedestrians throughout the campus.
- Provide open view corridors along the spines to connect the "Hillside", Evergreen Lake, and "Plains".

IMPLEMENTATION:

GATEWAYS

- Pedestrian gateways are outdoor portals that attract visitors from parking and bus drop-offs to the network of pathways.

MAJOR PATHWAYS

- Major pathways provide cross-campus access between gateways. Major routes are oriented on north-south and east-west axes.
- They lead pedestrians to the Student Services Center, Activities Center and other primary destinations.

SECONDARY PATHWAYS

- Secondary pathways provide access from the campus perimeter to gateways and major pathways.

PART F

ACCESSIBILITY MASTER PLAN

ACCESSIBILITY MASTER PLAN PART F

Full accessibility from all buildings and open spaces continues to be a guiding principle for all development at Evergreen Valley College. The Accessibility Master Plan should be updated with each future construction project and evaluated to identify and resolve access issues. Evergreen Valley College continues to perform self-evaluation and all proposed pedestrian path systems will accommodate the physically challenged by providing barrier free access in all major connective open spaces. Refer to the #### Evergreen Valley College Campus Accessibility Compliance Report for details.

GOALS:

- Design environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.
- Implement a long-term plan for effective upgrade of accessibility compliance throughout the campus and conduct scheduled maintenance of all access features.
- Promote safe, equitable and universally accessible conditions for the greater student body.
- Utilize the "Principles of Universal Design" [North Carolina State University, The Center for Universal Design] to guide construction/development of all aspects of the campus environment. Accessibility should not be an additional or secondary consideration, but rather integrated into the main design of any project.

IMPLEMENTATION:

PARKING

- Ensure that the number of accessible parking stalls and drop-offs meet current ratios.
- Avoid siting parking ticket dispenser such that they are a barrier.

SIDEWALKS / PAVING

- Provide accessible routes of travel to/from parking and buildings.
- Provide the same means of use for all users whenever possible.

CURB CUTS

- A bumper or curb should be provided and located to prevent encroachment of cars over the required width of adjacent walkways.

SEATING

- Provide a clear line of sight to important elements for any seated or standing user.
- Avoid segregating or stigmatizing any users.

SIGNAGE

- Provide directional signage indicating direction of accessible path at decision points.
- Arrange information consistent with its importance.

THRESHOLDS / BUILDING ENTRY / DOORS

- All building entries shall be universally accessible.

RAMPS

- Modify the landscape so that it creates an attractive, natural, on-grade access to the main or primary entrance of a building in lieu of building ramps, if possible.

DRINKING FOUNTAINS

- Provide accessible dual-height drinking fountains and hydration stations along accessible paths of travel with clear signage.

TOILET ROOMS

- Locate accessible toilet rooms along accessible paths of travel with clear signage.

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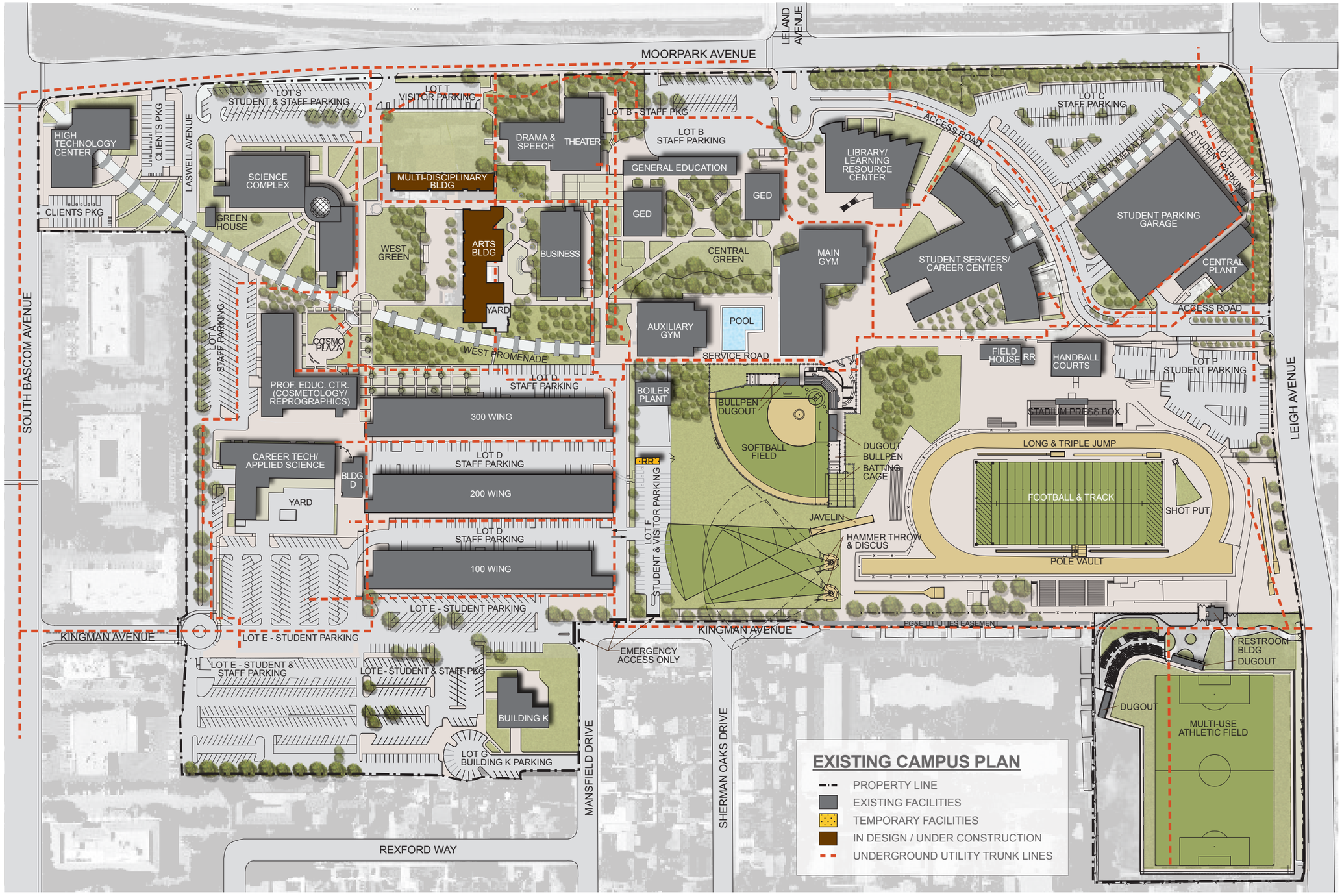
END OF SECTION 2 - EVERGREEN VALLEY COLLEGE

SECTION 2

SAN JOSÉ CITY COLLEGE

PART A

EXISTING CONDITIONS



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SCALE: 1" = 180'-0"

Note: This drawing was taken from the 2025 Facilities Master Plan dated November 29, 2011. Design teams are responsible for verifying existing campus conditions.

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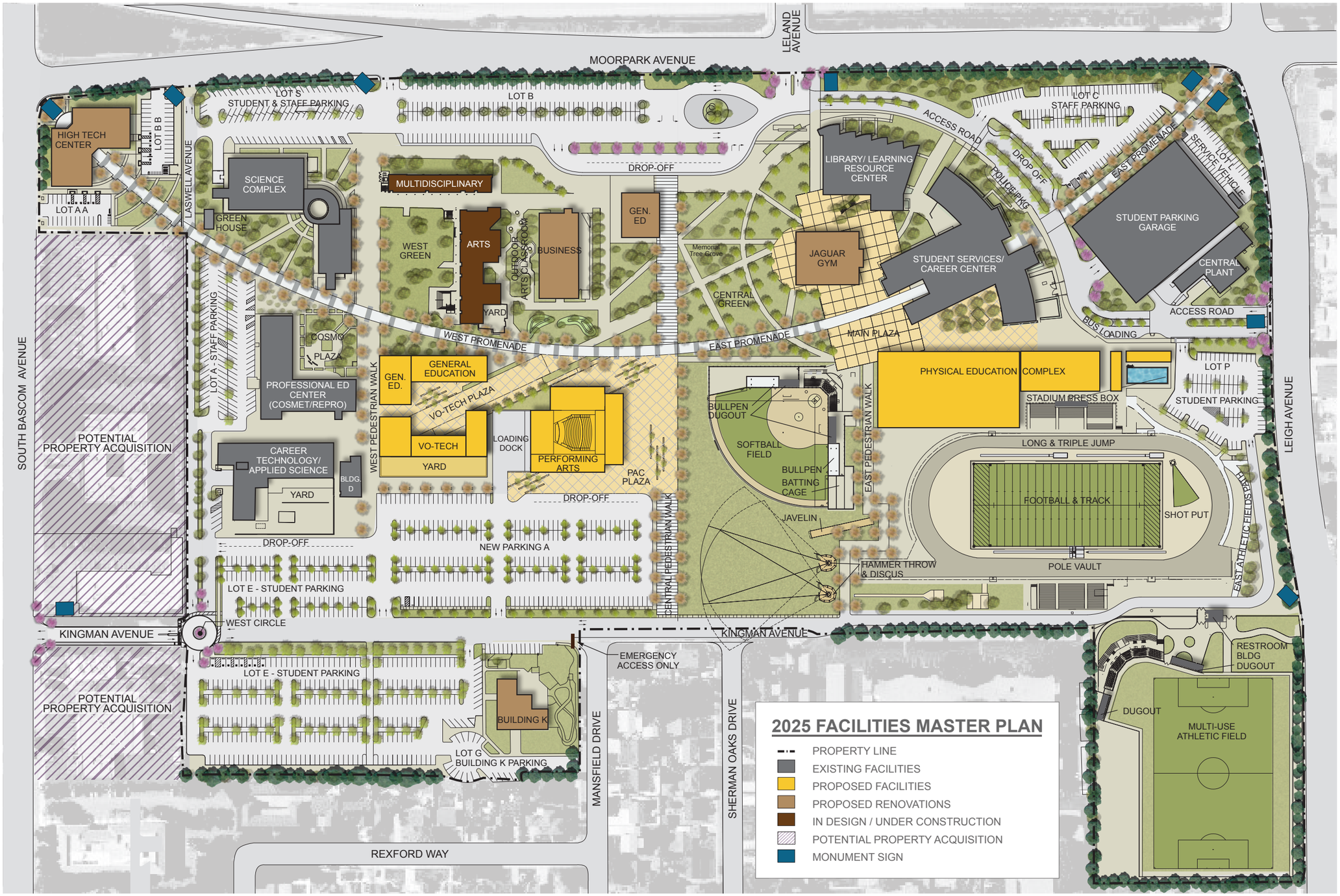
PART B

FACILITIES MASTER PLAN



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SCALE: 1" = 180'-0"

Note: This drawing was taken from the 2025 Facilities Master Plan dated November 29, 2011. Design teams are responsible for verifying existing campus conditions.

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The San José City College 2011 Master Plan is a model that is based on the College's Educational Master Plan and addresses the current and projected needs through the year 2020. This Master Plan presents an overall picture of the future development on campus and includes recommendations for renovations and replacements of facilities, as well as campus-wide site improvements.

GOALS:

FUNCTIONAL

- Consolidate related programs.
- Develop a one-stop-shop.
- Cluster related instructional areas.
- Create flexible, interdisciplinary facilities.
- Create integrated multi-disciplinary outdoor classroom spaces.

PROGRAMMATIC

- Align the projected space inventory with state guidelines.
- Maximize functional space.
- Eliminate non-functional space.
- Improve efficiency/utilization of facilities.
- Address program needs for students (instructional) and faculty (offices).
- Replace oldest and most aged facilities with new.
- Renovate existing facilities.
- Provide additions to facilities in need of instructional spaces.
- Reorganize athletic fields to use available land efficiently.

SITE

- Preserve existing mature landscape
- Enhance campus with sustaining landscape for future generations
- Repair and improve pedestrian pathways.
- Provide additional parking.

WAYFINDING

- Improve visibility of the campus to the community. Establish strong identities at the corners of Bascom/Moorpark and Moorpark/Leigh Avenues.
- Define campus edges, entries, and pathways.
- Develop clear, defined pedestrian routes and connections with structured plantings and accent landscape.
- Develop campus entries to welcome and direct people to parking and destinations.
- Complete the east-west promenade defined as the primary pedestrian route through the campus.

SUSTAINABILITY

- Incorporate green (sustainable) design elements into the campus.
- Repair and replace for energy efficiency.
- Create an ecologically sound environment.
- Incorporate sustainable measures in all new buildings, additions and renovations.
- Encourage the use of sustainable measures for repairs, maintenance and upgrades on site.

FINANCIAL POSITIONING

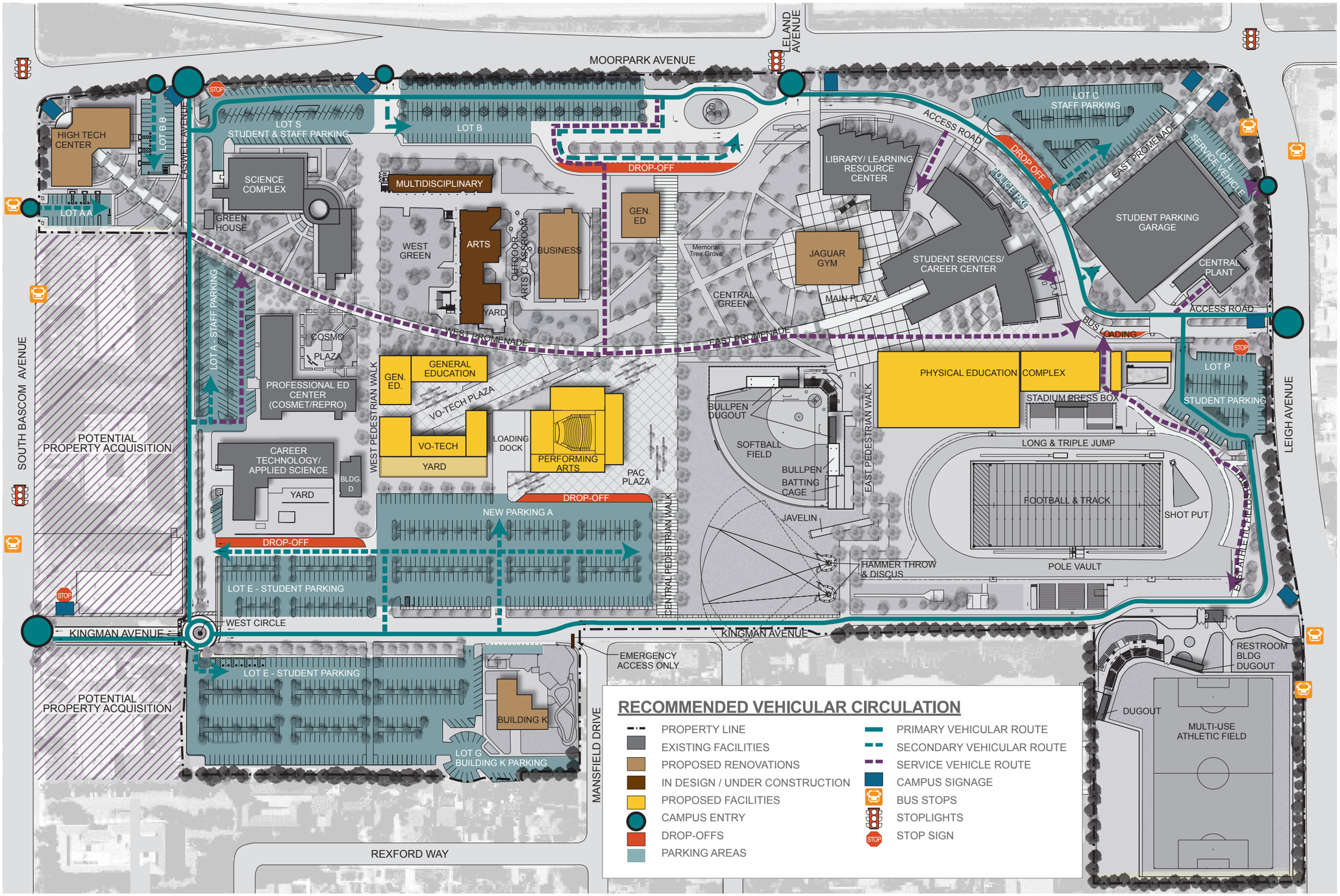
- Position District to maximize state and local funding.

IMPLEMENTATION:

- Refer to the San José City College 2010 Facilities Master Plan for details.

PART C

VEHICULAR CIRCULATION MASTER PLAN



Note: This drawing was taken from the 2025 Facilities Master Plan dated November 29, 2011. Design teams are responsible for verifying existing campus conditions.

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VEHICULAR CIRCULATION MASTER PLAN PART C

The San José City College campus is framed by three major boulevards. The vehicular circulation concept provides for clear entries to the campus from each of the main thoroughfares. Once within the campus, safety and ease of mobility, parking, and access to building destinations are the major goals. Motorized vehicles are permitted along the edges of the campus. The center of the campus is primarily designated as a pedestrian zone, but allows for service and emergency vehicle access as necessary.

GOALS:

- Create a "front door" with better directional signage and drop-off zones.
- Emphasize entries from Leigh, Moorpark, and South Bascom Avenues.
- Create internal circulation loop on the north side of campus.
- Minimize conflicts between vehicular routes and pedestrian pathways.
- Increase and distribute parking more evenly between west and east sides of campus.

IMPLEMENTATION:

POINTS OF ACCESS

Vehicles access the campus from surrounding streets at points on the west, north, and east sides.

- South Bascom Avenue:
  Develop the existing west campus entry as a major entrance leading to parking lot E and the proposed Vocational Technology Building, Performing Arts Center, and Plaza.
- Moorpark Avenue:
  Widen the existing north campus entry and develop a more prominent entry and new drop-off in front of the General Education Building.
- Leigh Avenue:
  Develop the existing east campus entry as a major entrance to the Student Services Center.
- Drop-off:
  Locate a new drop-off in front of the Student Services Center on both sides of the road to accommodate visitors entering from Moorpark and Leigh Avenues. Provide visitor and community parking at a reconfigured Parking Lot B.
- Secondary Entrances:
  Add campus entry signs to secondary entrances to lead general traffic to parking near destinations (Parking Lots AA, BB, B, and L).

TRAFFIC ROUTES

- General traffic routes are located almost entirely on the perimeter of the campus and provide two-way circulation to most parking areas.
- Construct a new road connecting Parking Lot B to Parking Lot S to create an internal circulation loop on the north side of campus.
- Orient service routes with wide major pathways.

PARKING

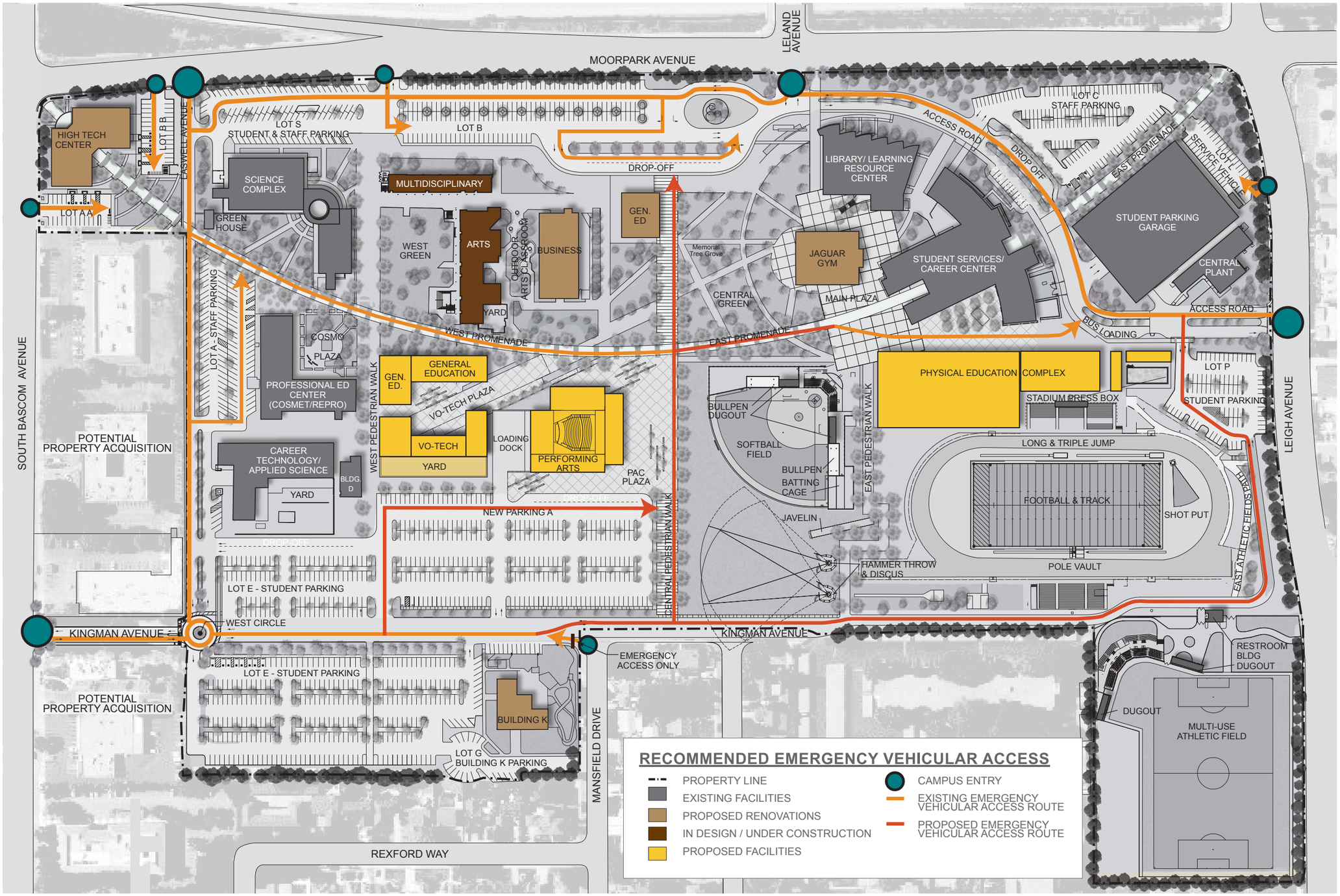
- Reconfigure Parking Lots B, C, E, P, and S to improve layout and efficiency.

LOADING DOCKS

- Locate and orient to provide the least visual impact on the campus.

PART D

EMERGENCY VEHICLE ACCESS MASTER PLAN



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SCALE: 1" = 180'-0"

Note: This drawing was taken from the 2025 Facilities Master Plan dated November 29, 2011. Design teams are responsible for verifying existing campus conditions.

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EMERGENCY VEHICLE ACCESS MASTER PLAN PART D

The Emergency Vehicle Access Master Plan shows access roads throughout the campus. This plan is a compilation of past and present fire access plans from the various construction projects that have occurred on the campus. This Emergency Vehicle Access Master Plan should be updated with each future construction project. Each updated Emergency Access Master Plan shall be submitted to the Local Fire Authority, Santa Clara County Fire Department, and the Division of State Architect (DSA) for review and approval. Refer to the Santa Clara County Fire Department approved "Existing Fire Water Access Plan" drawing dated Month ##, #### for details.

GOALS:

- Provide accessibility to each campus building.
- Ensure efficient and safe passage.
- Adhere to all minimum clearance and width requirements of both state and local fire departments.

IMPLEMENTATION:

FOCUS

- Emergency vehicle access focuses on public service entities:
    - Campus Security
    - Local Fire Department
    - Ambulance
    - Other Emergency Response groups

SITE

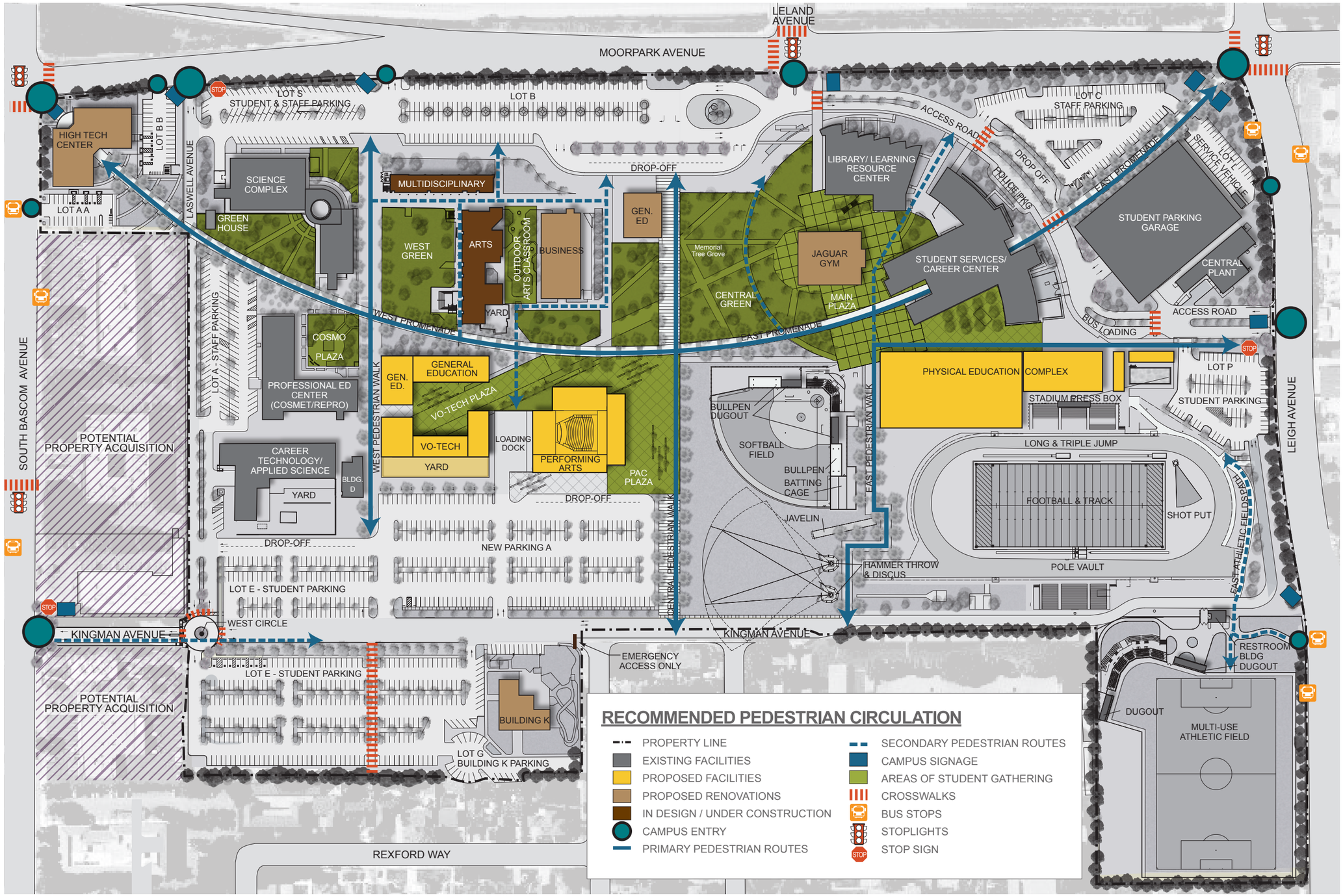
- The site layout provides for emergency vehicle access around the perimeter of the site and through the main pedestrian thoroughfares.

ROUTES

- Shared pedestrian and emergency vehicle routes should be constructed and designed to both meet the campus site aesthetics and the requirements of all the emergency response groups.

PART E

PEDESTRIAN CIRCULATION MASTER PLAN



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SCALE: 1" = 180'-0"

Note: This drawing was taken from the 2025 Facilities Master Plan dated November 29, 2011. Design teams are responsible for verifying existing campus conditions.

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PEDESTRIAN CIRCULATION MASTER PLAN PART E

The pedestrian circulation concept for San José City College focuses on the curved pedestrian Promenade that was developed as part of the *1999 Educational & Facilities Master Plan*. The Promenade ends at the two major intersections of Bascom/Moorpark and Moorpark/Leigh Avenues and assist in wayfinding and student orientation. Two primary north-south pathways - the West Pedestrian Walk and the East Pedestrian Walk - intersect the Promenade and connect the core of the SJCC Campus. Together, these spines act as edges to specialty gardens and outdoor plazas. All circulation routes improve efficiency and ease of use, while enhancing the user experience with view corridors, signage, lighting and landscape.

GOALS:

- Enhance connections from parking areas to main destinations.
- Provide clear path from visitor parking lot into campus.
- Develop campus connections to public transit stops.
- Improve signage for pedestrians throughout the campus.
- Reduce jaywalking.

IMPLEMENTATION:

GATEWAYS

- Pedestrian gateways are outdoor portals that attract visitors from parking and bus drop-offs to the network of pathways.

MAJOR PATHWAYS

- Major pathways provide cross-campus access between gateways. Major routes are oriented on east-west and north-south axes.
- They lead pedestrians to the Student Services Center, Activities Center and other primary destinations.

SECONDARY PATHWAYS

- Secondary pathways provide access from the campus perimeter to gateways and major pathways.

PART F

ACCESSIBILITY MASTER PLAN

ACCESSIBILITY MASTER PLAN PART F

Full accessibility from all buildings and open spaces continues to be a guiding principle for all development at San José City College. The Accessibility Master Plan should be updated with each future construction project and evaluated to identify and resolve access issues. San José City College continues to perform self-evaluation and all proposed pedestrian path systems will accommodate the physically challenged by providing barrier free access in all major connective open spaces. Refer to the #### San José City College Campus Accessibility Compliance Report for details.

GOALS:

- Design environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.
- Implement a long-term plan for effective upgrade of accessibility compliance throughout the campus and conduct scheduled maintenance of all access features.
- Promote safe, equitable and universally accessible conditions for the greater student body.
- Utilize the "Principles of Universal Design" [North Carolina State University, The Center for Universal Design] to guide construction/development of all aspects of the campus environment. Accessibility should not be an additional or secondary consideration, but rather integrated into the main design of any project.

IMPLEMENTATION:

PARKING

- Ensure that the number of accessible parking stalls and drop-offs meet current ratios.
- Avoid siting parking ticket dispenser such that they are a barrier.

SIDEWALKS / PAVING

- Provide accessible routes of travel to/from parking and buildings.
- Provide the same means of use for all users whenever possible.

CURB CUTS

- A bumper or curb should be provided and located to prevent encroachment of cars over the required width of adjacent walkways.

SEATING

- Provide a clear line of sight to important elements for any seated or standing user.
- Avoid segregating or stigmatizing any users.

IMPLEMENTATION (CONTINUED):

SIGNAGE

- Provide directional signage indicating direction of accessible path at decision points.
- Arrange information consistent with its importance.

THRESHOLDS / BUILDING ENTRY / DOORS

- All building entries shall be universally accessible.

RAMPS

- Modify the landscape so that it creates an attractive, natural, on-grade access to the main or primary entrance of a building in lieu of building ramps, if possible.

DRINKING FOUNTAINS

- Provide accessible dual-height drinking fountains and hydration stations along accessible paths of travel with clear signage.

TOILET ROOMS

- Locate accessible toilet rooms along accessible paths of travel with clear signage.

END OF SECTION 2 - SAN JOSÉ CITY COLLEGE

3 SITE DESIGN GUIDELINES

INTRODUCTION

The main purpose of establishing site design guidelines is to develop a coherent system that integrates existing and future buildings with their context.

The goal is to promote campuses where buildings are optimized for their locality and purpose, including site infrastructure, hardscape, landscape, circulation, and spatial hierarchy.

Creating a strong and unifying framework throughout the San José City and Evergreen Valley campuses will allow for an eclectic, yet harmonious, integration of site functions and aesthetics, and will eventually foster a better learning environment.

In an evaluation of hardscape and site furnishing, the Site Design Guidelines suggest materials that will withstand the daily activities of campus life, assure overall health and safety, and in many cases, address sustainability goals.

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END OF SECTION 3

SECTION 3

EVERGREEN VALLEY COLLEGE

PART A

UTILITIES + INFRASTRUCTURE

CONTENTS

I. ELECTRICAL UTILITIES

Evergreen Valley College is fed by a 21kV underground service provided by Pacific Gas & Electric (PG&E). The service is routed from Yerba Buena underground onto the campus to the Main Electrical Room (situated in the Southeast corner of the Central Plant Building). The service enters the building and is distributed to seven (7) feeders serving the campus. The current feeder arrangement is as follows:

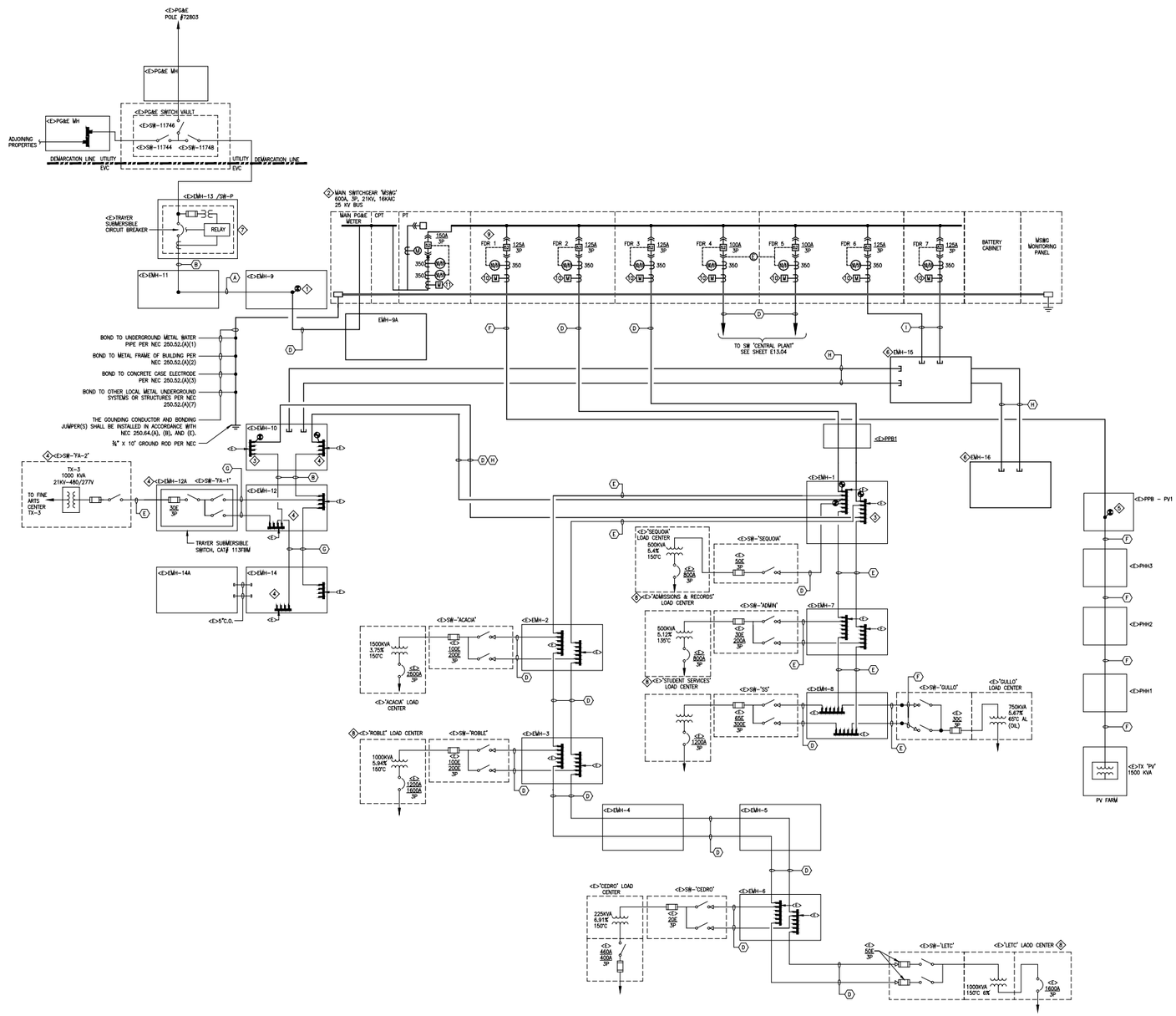
Feeder	Buildings/Quadrant Served
1	Campus PV/Solar Arrays
2	North Campus
3	North Campus
4	Central Plant & Police Station
5	Central Plant & Police Station
6	South Campus
7	South Campus

The electrical services on campus are distributed at 21kV and subsequently stepped down at each building to 480/277V, 3-phase, 4-wire for building distribution. The feeders are routed in 5” conduits encased in concrete for all direct buried or in rigid conduit inside the campus Utility Tunnel. The 21kV services land at primary selector switches installed in the building electrical rooms to connect to the transformers and step down to 480/277V.

For electrical requirements for the building interior(s), see Section 26 00 00.

General Code Compliance

- National Electrical Code
- California Electrical Code
- PG&E Greenbook



CAMPUS ELECTRICAL LAYOUT

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II. FUEL DISTRIBUTION

Evergreen Valley College is served from a single gas meter located adjacent to the Police Station Entrance (Northeast side). The gas service is routed from Yerba Buena, feeding the meter from a 4” gas line at 2.2 psig. After the gas meter, there is one (1) 4” and one (1) 8” gas line routed to the Central Plant. The 4” gas line is routed through the campus utility tunnel and provides service for the North Campus. This service is steel pipe throughout the entire installation in the utility tunnel and for routing to building equipment. A new 4” gas line is served from the 8” gas line and routed through the utilidor and provides service for the South Campus. The installation in the utilidor and the routing to the individual buildings is expected to be steel pipe.

For fuel distribution system and piping requirements, see Section 23 11 23.

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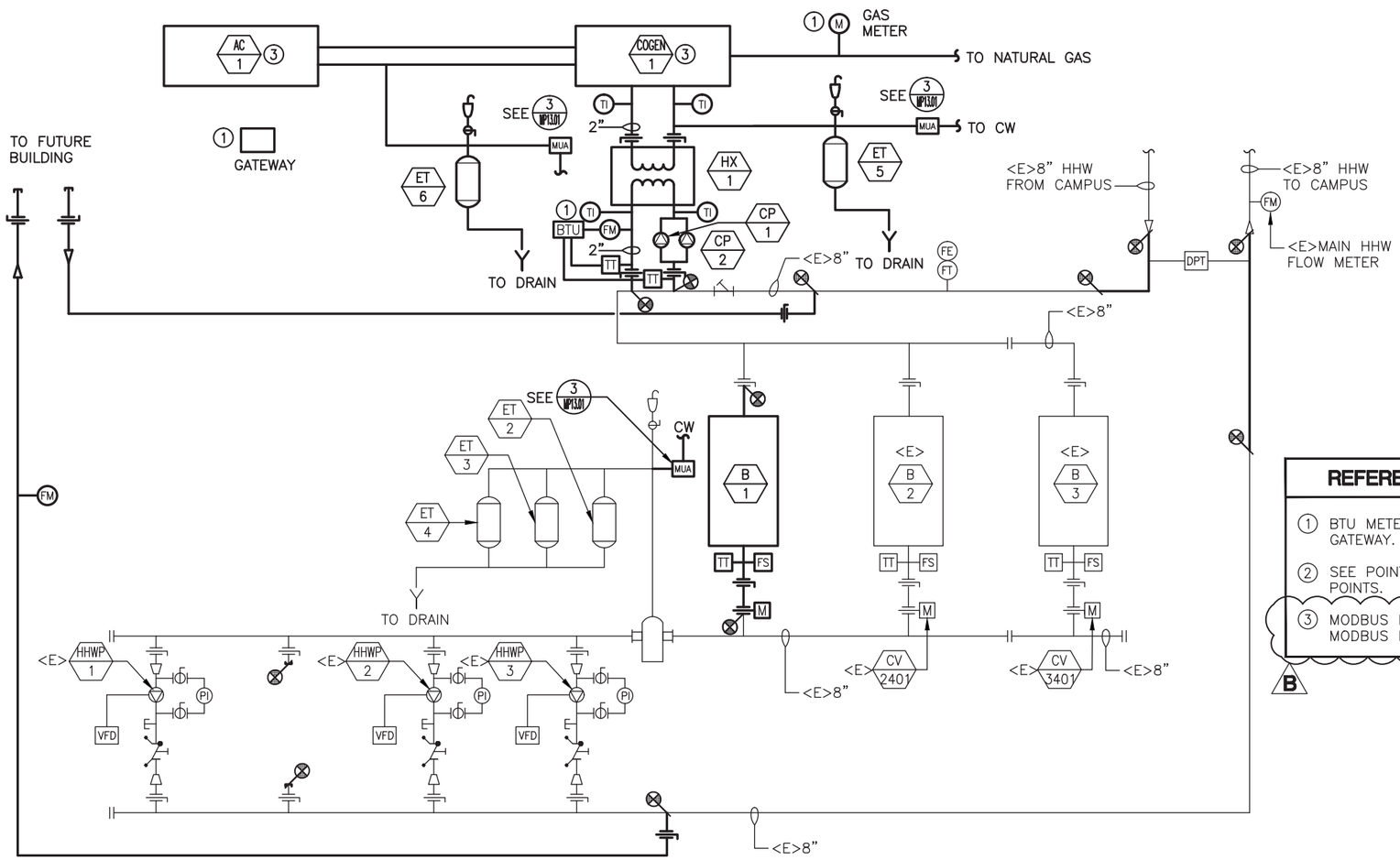
III. HYDRONIC DISTRIBUTION

The Campus heating and chilled water systems employ a pumping system at the Central Plant serving both the buildings and the hydronic water piping. In effect, the primary and secondary pumping is housed at the Central Plant, requiring tertiary pumps at each building for proper operation of the system. The typical control schematics, illustrating equipment, piping, and other important components, are provided in these diagrams.

See Section 23 21 13 for details of the Hydronic Distribution



REFERENCE DETAIL NOTES

1. BTU METER AND GAS METER CONNECT TO GATEWAY.
2. SEE POINT LIST FOR ADDITIONAL CONTROL POINTS.
3. MODBUS INTERFACE WITH COGEN, PROVIDE JCI MODBUS INTEGRATION.

B

HHW SCHEMATIC

HYDRONIC PIPING SITE LAYOUT

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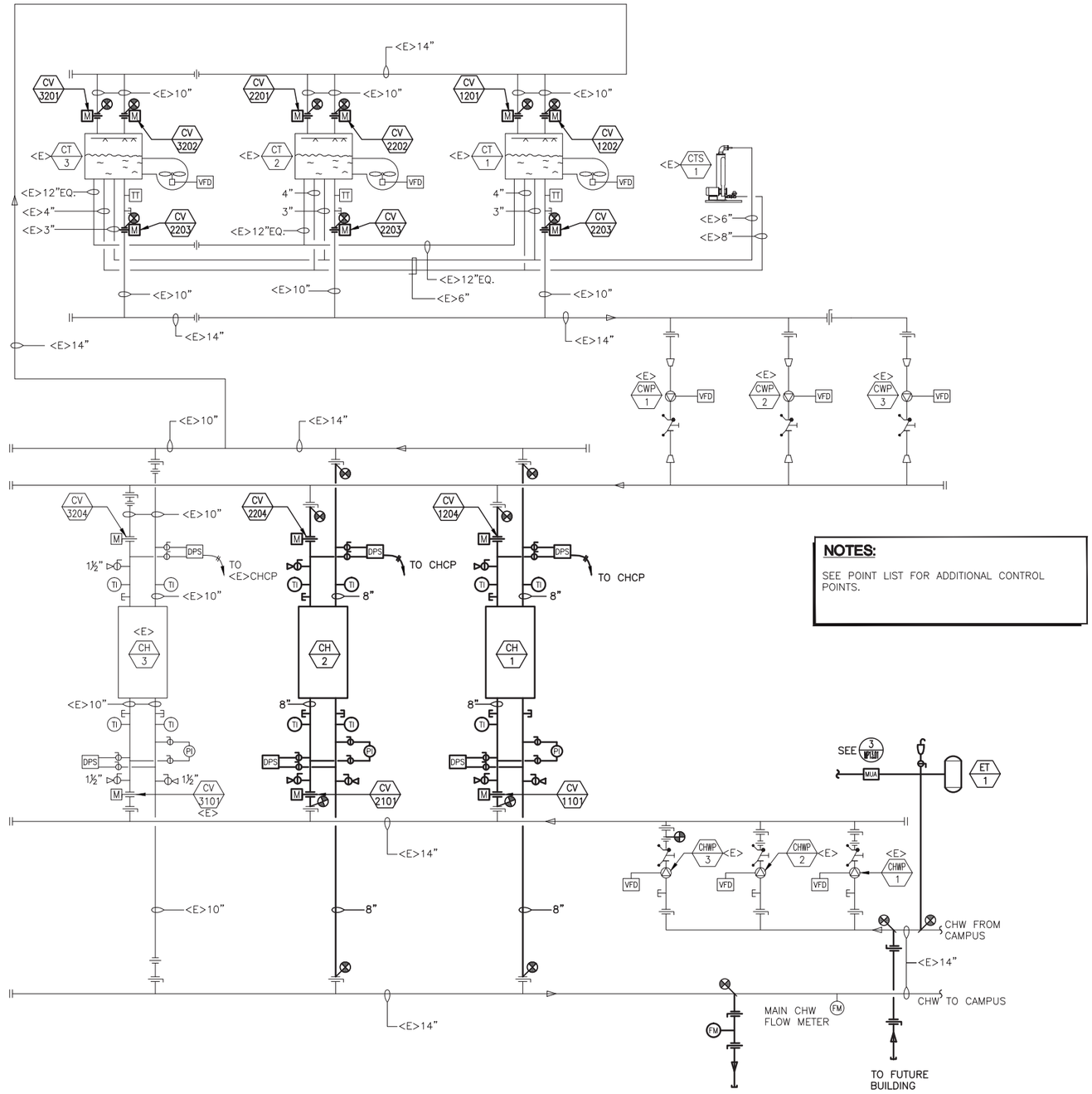

NOTES:

SEE POINT LIST FOR ADDITIONAL CONTROL POINTS.

CHW SCHEMATIC

HYDRONIC PIPING SITE LAYOUT

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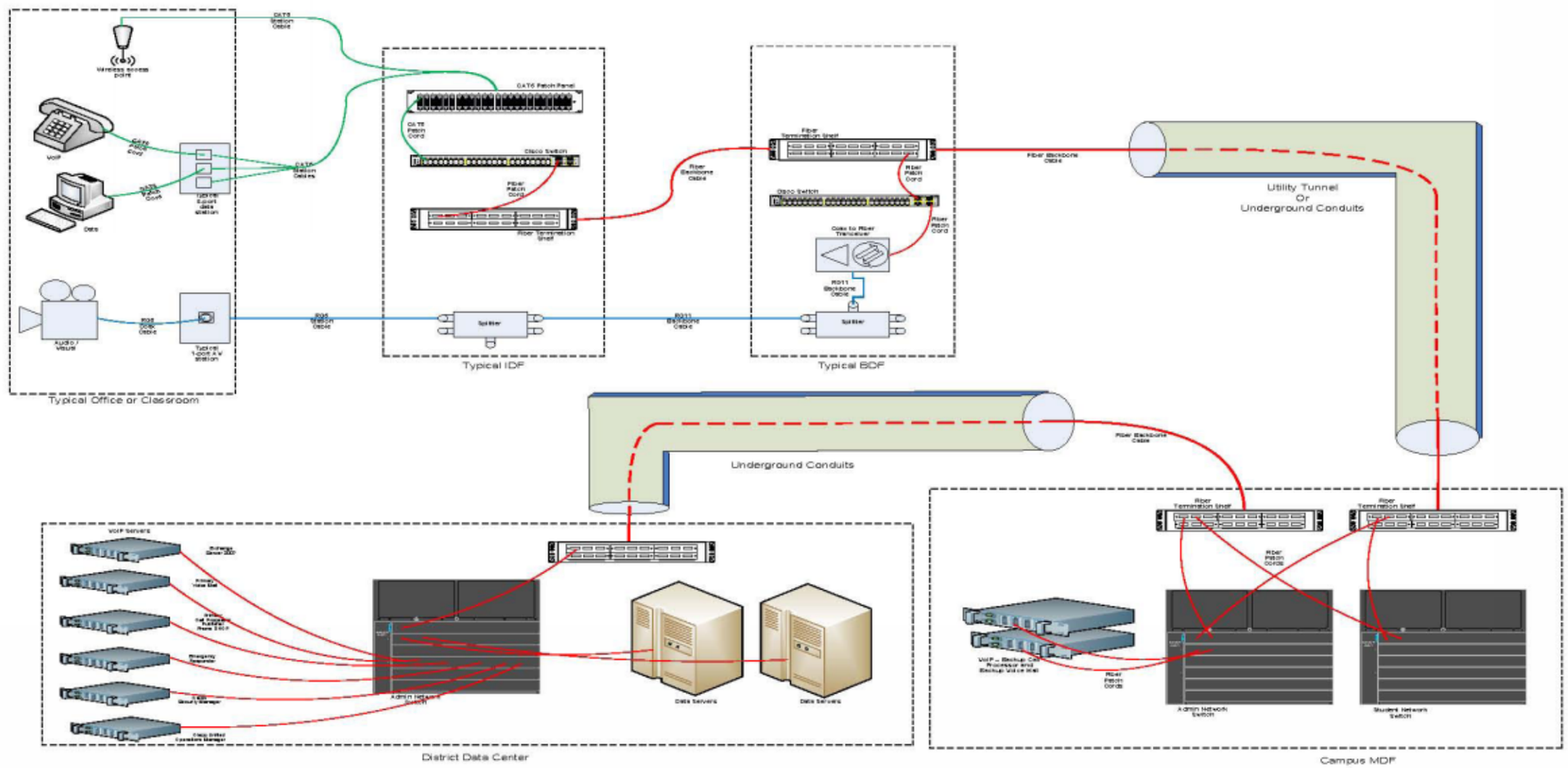
IV. TELECOMMUNICATIONS UTILITIES DISTRIBUTION

The telecommunications infrastructure on campus consists of a network of 4”, 2”, and 1” conduits routed via the utilidor to the legacy buildings and via underground conduits to the newer buildings (those built after 2000). The conduits are all routed in some fashion into/from the utilidor with services provided from the current MDF location in the Roble building. The EVC Campus MDF is directly connected to the District Office/ITSS Data Center. For each building, the campus standard is to route two (2) 4” conduits for distribution and future considerations.

For Telecommunications Equipment and performance requirements, consult the ITSS department at SJECCD[1] . See Section 26 00 00 for general details of the Telecommunications requirements.

[1] At the time this document was compiled, the District was conducting a separate effort to standardize telecommunications. Coordinate with District Personnel for alignment as well as updated infrastructure currently being provided in the Utility Tunnel as part of the MDF Relocation.



TELECOMMUNICATIONS CONDUIT, COPPER, + FIBER LAYOUTS

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V. SANITARY SEWER + STORM DRAINAGE

SANITARY SEWER

Evergreen Valley College existing sanitary sewer system is situated mainly in-line with the walkway through the center of the north campus. It is an 8” line that flows from east to west with the closest manholes located near the Student Services Building, near Acacia, near Roble, and near PE. Buildings designated for North Campus should provide connections at one of the manholes for service. Buildings designated for the South campus must route services to either the manhole between PE and the LETC or to the manhole closest to the LETC parking lot entrance on Paseo De Arboles.

STORM DRAIN

Evergreen Valley College existing storm drainage system is a 24” main situated mainly in the east-west corridor separating North and South Campus. This 24” main is served by 12” perpendicular piping that run effectively North to South, routing storm runoff into the main. If flows from east to west with several manholes and catch basins available for connections. Buildings designated for the North Campus should provide connections at manhole in the roadway adjacent to the southwest corner of the Roble Building. Buildings designated for the North campus should provide connections to the manhole near the center of the south portion of the PE Building.

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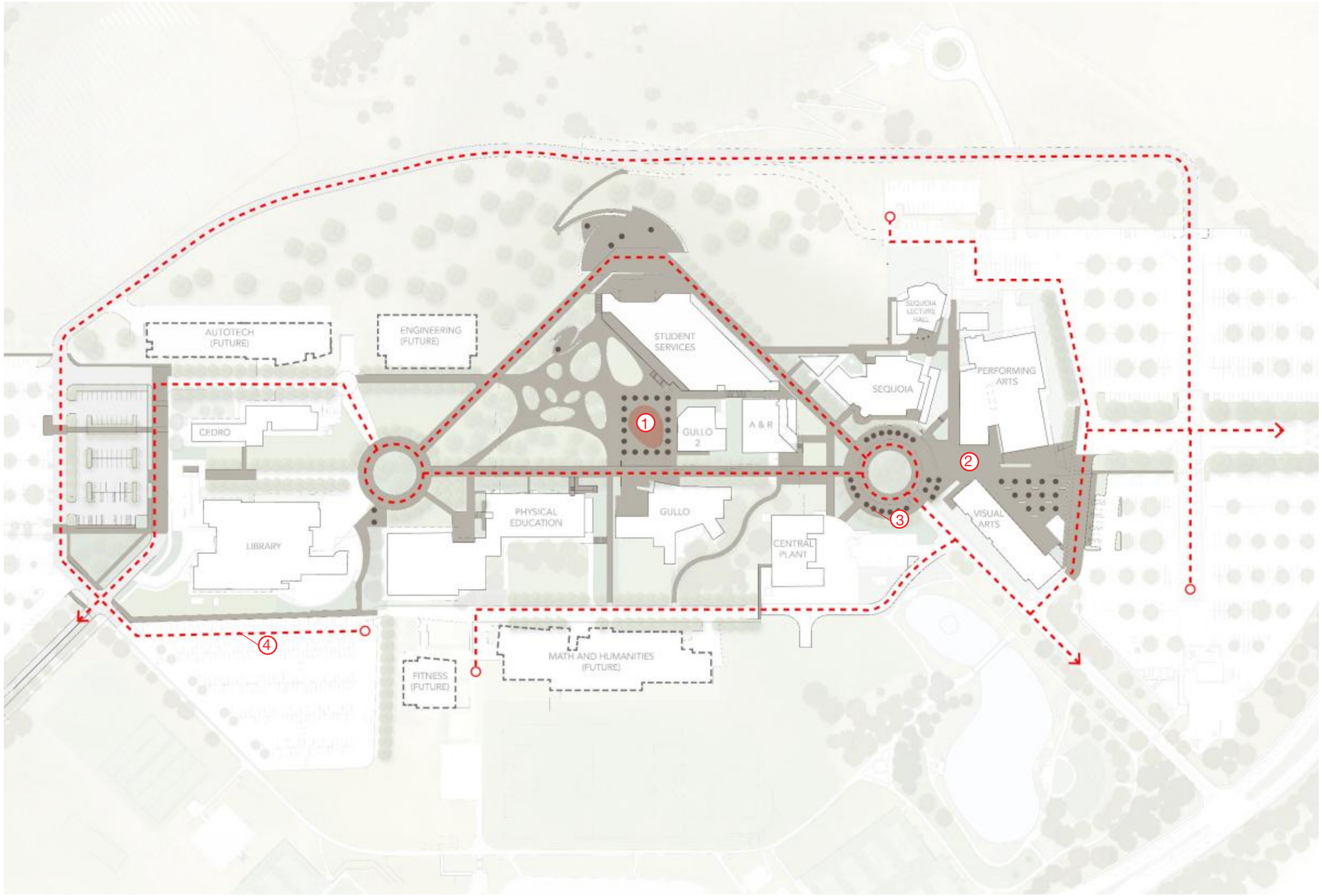
PART B

HARDSCAPE MASTER PLAN



LEGEND:

1. Concrete Paving
2. Concrete Unit Paver
3. Rock Mulch
4. Fire Truck Access

0 ft 120 ft 240 ft

SCALE: 1" = 180'-0"

PROPOSED HARDSCAPE MASTER PLAN

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EXISTING CONDITIONS

The campus has traditionally been open to both cars and pedestrians. The existing paving on campus includes asphalt, brick, stabilized DG, and concrete with different finishes, color and surface aggregates. Paving types need to be standardized to bring unity and predictability to the pathways, and reduce maintenance.

DESIGN PRINCIPLES

The following design principles should be applied:

- Concrete paving will be used for the main walkways, stairs and plazas.
- Unit pavers will be used minimally, only in areas deemed worthy of special paving.
- Rock mulch is to be used as mulch at trees planted within courtyards and paving.
- Detectable tile will demarcate the transition between vehicular and pedestrian paving, per code requirements.

Fire truck access will be maintained and expanded to include South Campus. Paving along these routes will be designed for the weight of emergency vehicles with sufficient lane widths and turning radii.

PART C

HARDSCAPE PALETTE

'Winter Beige" concrete paving with sawcut joints

unit pavers

CONCRETE PAVING

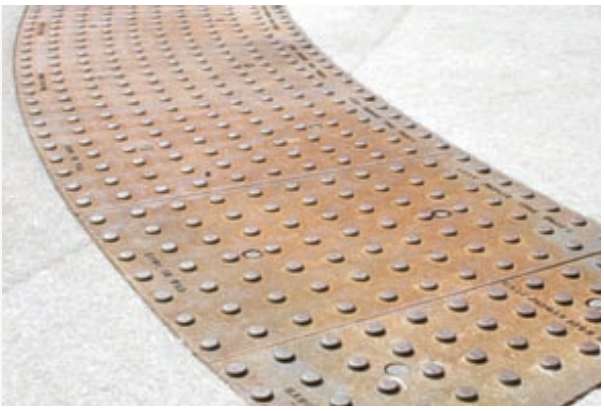
- Central Campus Pedestrian and Vehicular:
  - Material: Cast-in-place concrete
  - Color: "Winter Beige" by Scoffield with water repellent
  - Finish: Light Sandblast
  - Joints: Sawcut control joints every 4' ocew min., expansion joints every 400 sf. min.
- Outer Campus Pedestrian and Vehicular:
  - Material: Cast-in-place concrete
  - Color: Natural Gray
  - Finish: Light broom
  - Joints: Tooled control joints every 4' ocew min., expansion joints every 400 sf. min.
  - Maintenance: Pressure wash as required to remove surface staining or debris. Replace sealant as needed. Patterning within concrete paving not acceptable to prevent tripping hazards and increased maintenance.

UNIT PAVERS

- Manufacturer: Ackerstone
  ackerstone.com
- Material: Concrete Unit Paver
- Colors: Charcoal, Slate, and Pewter
- Finish: Face mix
- Setting Bed: Sand
- Size: 3" x 4", 6" x 12"
- Joints: Use joint sand stabilizer and surface sealer
- Maintenance: Clean per manufacturer's recommendations. Refer to technical specification data for a list of approved stain removal products and methods. Remove damaged pavers and replace as necessary. Level and reset pavers when uplift or settlement occurs.

HARDSCAPE PALETTE

gravel



detectable tile

ROCK MULCH

- Supplier: Lyngso Garden Materials
- lyngsogarden.com
- Material: Gold Pathway Rock or Crushed Black Basalt
- Size: 3/8”
- Recommended depth: 4”
- Application: Mulch at selected tree and planting areas.
- Maintenance: Add additional gravel as necessary to maintain maximum 1/2” grade change with surrounding pavement.

DETECTABLE TILE

- Manufacturer: East Jordan Iron Works
  800.874.4100
  americas.ejco.com
- Material: Cast Iron
- Finish: Natural Finish
- Application: Between pedestrian and vehicular areas per current code requirements.
- Maintenance: Little to none

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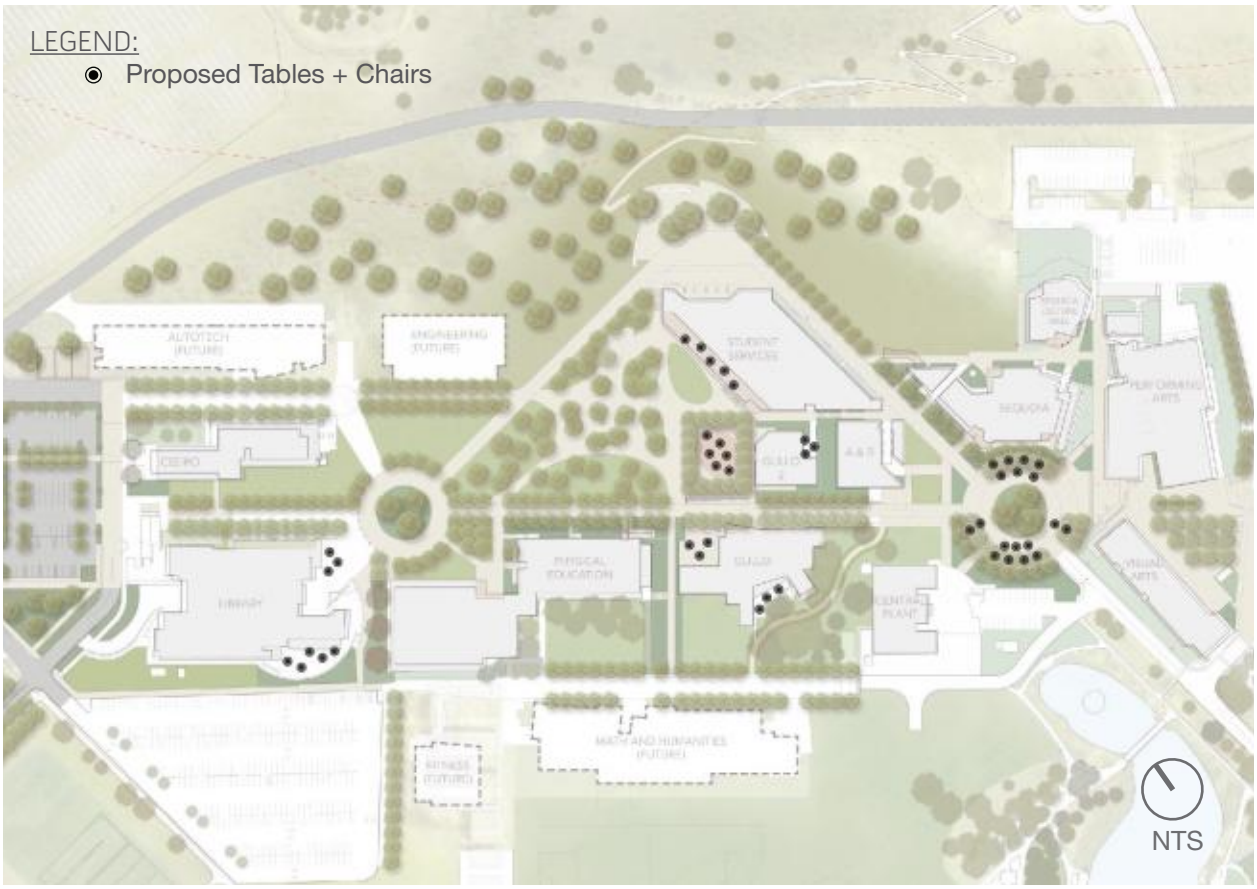
PART D

SITE FURNISHINGS

I. GENERAL GUIDELINES

Site furnishing selections should reinforce the character of a particular area of campus and the campus identity as a whole. Selections should be easy to maintain. To facilitate maintenance, extra paint or finish material shall be supplied for all furnishings. Maintenance of tree grates includes removal of metal pieces as necessary to allow for tree growth. With the exception of special areas where they can be secured or removed at night, benches and chairs should be fixed to the ground or be too heavy to be moved.

II. SITE FURNISHINGS PALETTE - SEATING



The campus design standards for seating include both tables with chairs as well as benches. The standards will bring unity to the disparate range of colors and furniture styles found on campus today. The tables and chairs selected are heavy and durable to prevent theft and vandalism and have a design that will endure over time. The stainless steel finish is neutral and flexible to be used on multiple designs. Additionally, it will be less vulnerable to fading from UV rays.

TABLE + CHAIRS

- Manuf: Landscape Forms
- Contact Info: landscapeforms.com (866) 903.3714
- Model Name: Carousel 4-seat (backed seats) table with steelhead perforated table top, and perforated metal seat panels
- Mounting: Freestanding
- Color: Silver
- Notes: Pangard II polyester powder coat for Anti-graffiti finish. Three-seat ADA compliant styles available. Preferable not to install umbrella model due to maintenance demands.

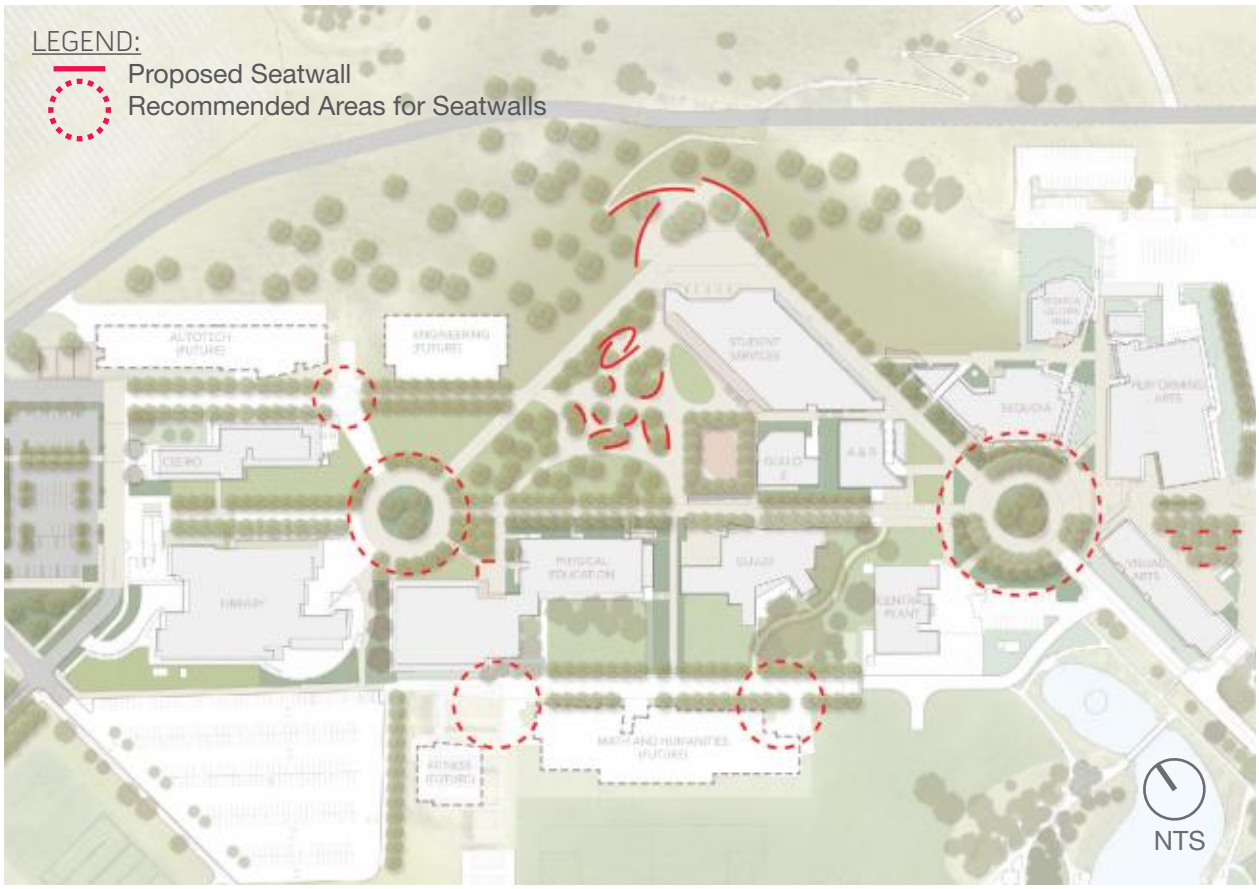
BENCH

- Manuf: Landscape Forms
- Contact Info: landscapeforms.com (866) 903.3714
- Model Name: Parc Vue
- Mounting: Surface mount
- Color: Silver
- Notes: Pangard II polyester powder coat for Anti-graffiti finish, surface mounted. Armless model available.

MAINTENANCE

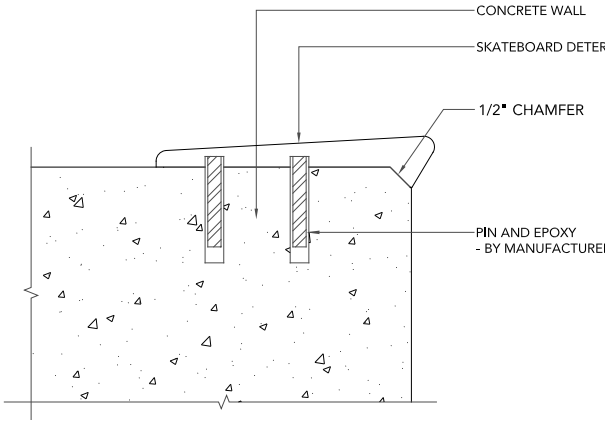
- Clean as needed using a soft cloth or brush with a mild detergent. Avoid steam cleaning, abrasive cleaners, carbon steel brushes/wools and cleaners containing chlorine.
- For powder coat finish, touch-up paint is included and can be used to repair minor nicks and scratches. Larger gouges must be repaired by sanding, and applying a coating of a recommended rust converter product. Use as instructed by manufacturer.
- Best results for cleaning graffiti are obtained when cleaning within 24 hours of graffiti application. Refer to manufacturer's recommendations for graffiti removal.

II. SITE FURNISHINGS PALETTE - SEATWALLS



Due to their versatility, durability and simple forms, cast-in-place concrete seatwalls are recommended throughout campus. The college currently has a range of seatwall designs- including stone and wood platforms- that should be phased out to promote a more simple, unified campus aesthetic. Seatwalls on all future projects should be cast-in-place concrete as detailed in these standards. The adjacent diagram represents areas where seatwalls are proposed, and where seatwalls should be considered as part of current design projects.

concrete seatwall with skateboard deterrents



skateboard deterrent detail

SEATWALLS

- Size: Width: min. 18”, wider if desired. Height 15”-19”
- Color: Scofield Integral Color Winter Beige
- Finish: Light Sandblast
- Corner Dtl: 1/2” chamfer
- Note: Concrete seatwalls should have integral color to match adjacent concrete paving (see paving standards). Notching at top of wall to prevent skateboard use not recommended. Provide locations for ADA companion seating per current code requirements.

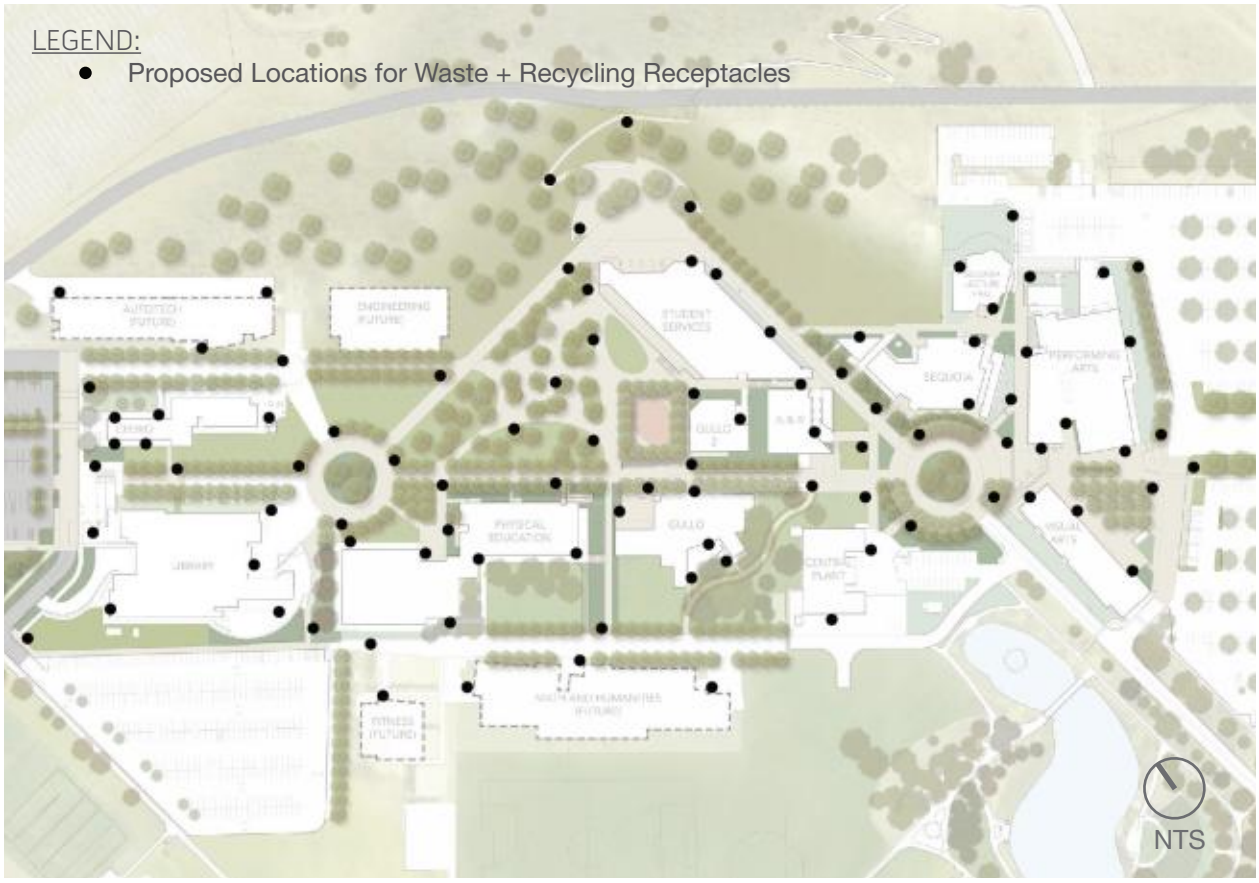
SKATEBOARD DETERRENT

- Manufacturer: Skatestopper
- Contact Info: www.skatestopper.com 619.447.6374
- Material: Stainless Steel
- Model: “Foothill”
- Mounting: Surface mount, per detail above
- Spacing: 2’ OC

MAINTENANCE

- Pressure wash as required to remove surface staining or debris.
- Replace deterrents as required.

II. SITE FURNISHINGS PALETTE - WASTE + RECYCLING RECEPTACLES



Currently there are a wide range of waste receptacles throughout the campus; many are aging, exposed aggregate containers. It is recommended that the campus replace existing receptacles with a more modern standard unit, to be used for both recycling and trash with distribution as shown on the diagram. Locations of receptacles should be predictable and consistent throughout campus, easy to access by both the user and maintenance department, and placed thoughtfully in the landscape so they don't impede the path of travel or compete with site features.

WASTE RECEPTACLES

- Manufacturer: urbanscape
- Contact Info: www.urbanscape.com (866) 903.3714
- Model Name: Receptacle w/ dome top
- Model #: TG3F33S
- Lid: Dome Top to match receptacle color
- Dimensions: 24” (W) x 24” (D) x 31 1/4” (H)
- Mounting: Surface mount
- Finish: Powder Coat
- Color: Silver
- Notes: Side opening

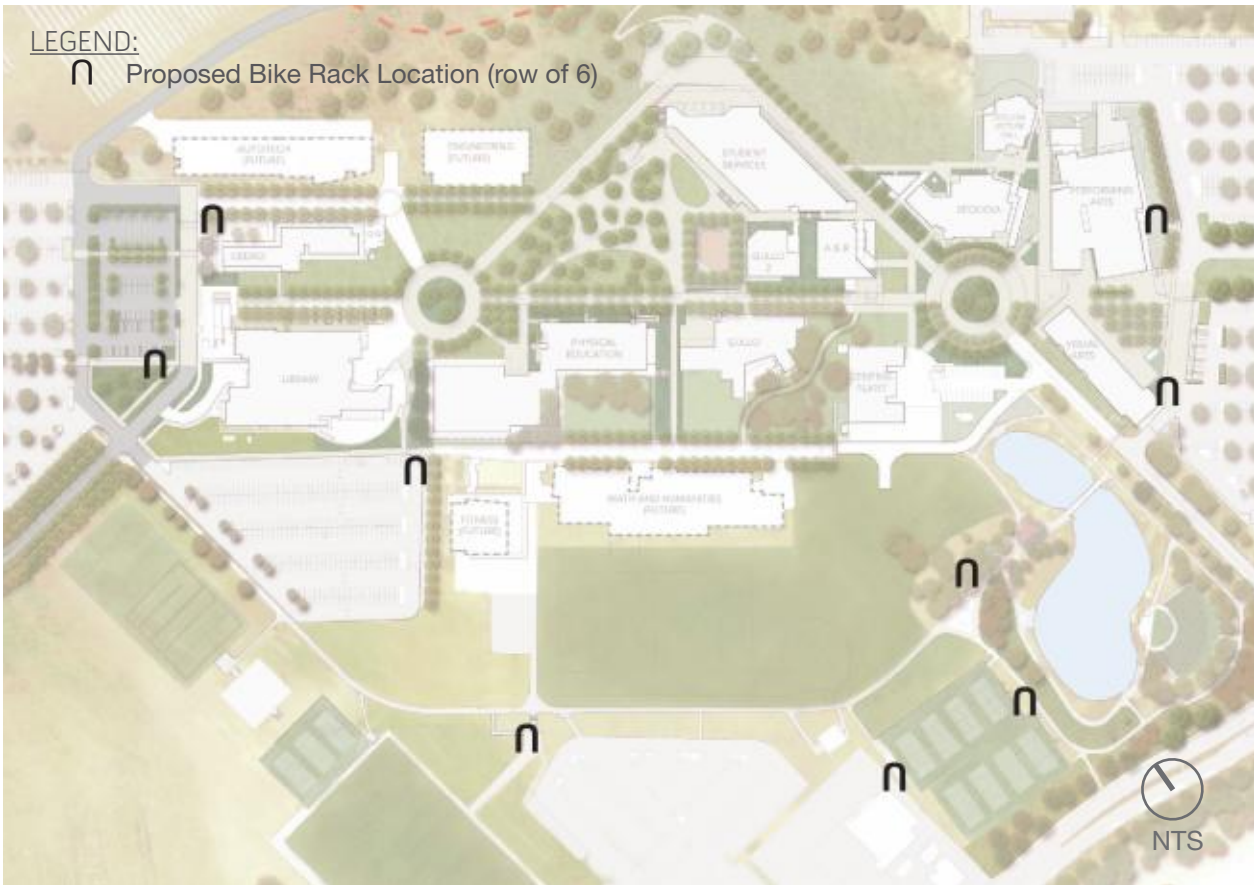
RECYCLING RECEPTACLES

- Manufacturer: urbanscape
- Contact Info: www.urbanscape.com (866) 903.3714
- Model Name: Receptacle w/ recycling lid
- Model #: TG3F33S
- Lid Color: Hunter
- Dimensions: 24” (W) x 24” (D) x 31 1/4” (H)
- Mounting: Surface mount
- Finish: Powder Coat
- Color: Silver
- Notes: Side opening

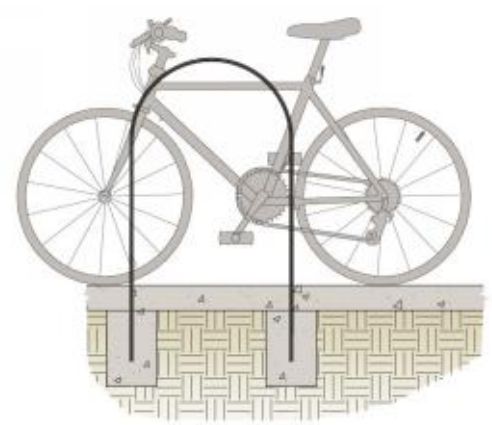
MAINTENANCE

- Regular inspection and maintenance of all parts and fasteners is recommended. Touch up paint is available and should be applied to small nicks and scratches. Larger nicks may require sanding, cleaning of the area and application of a rust inhibiting paint in preparation for the touch-up.
- For cleaning, use a mild detergent and a soft cloth to avoid scratching.

II. SITE FURNISHINGS PALETTE - BIKE RACKS



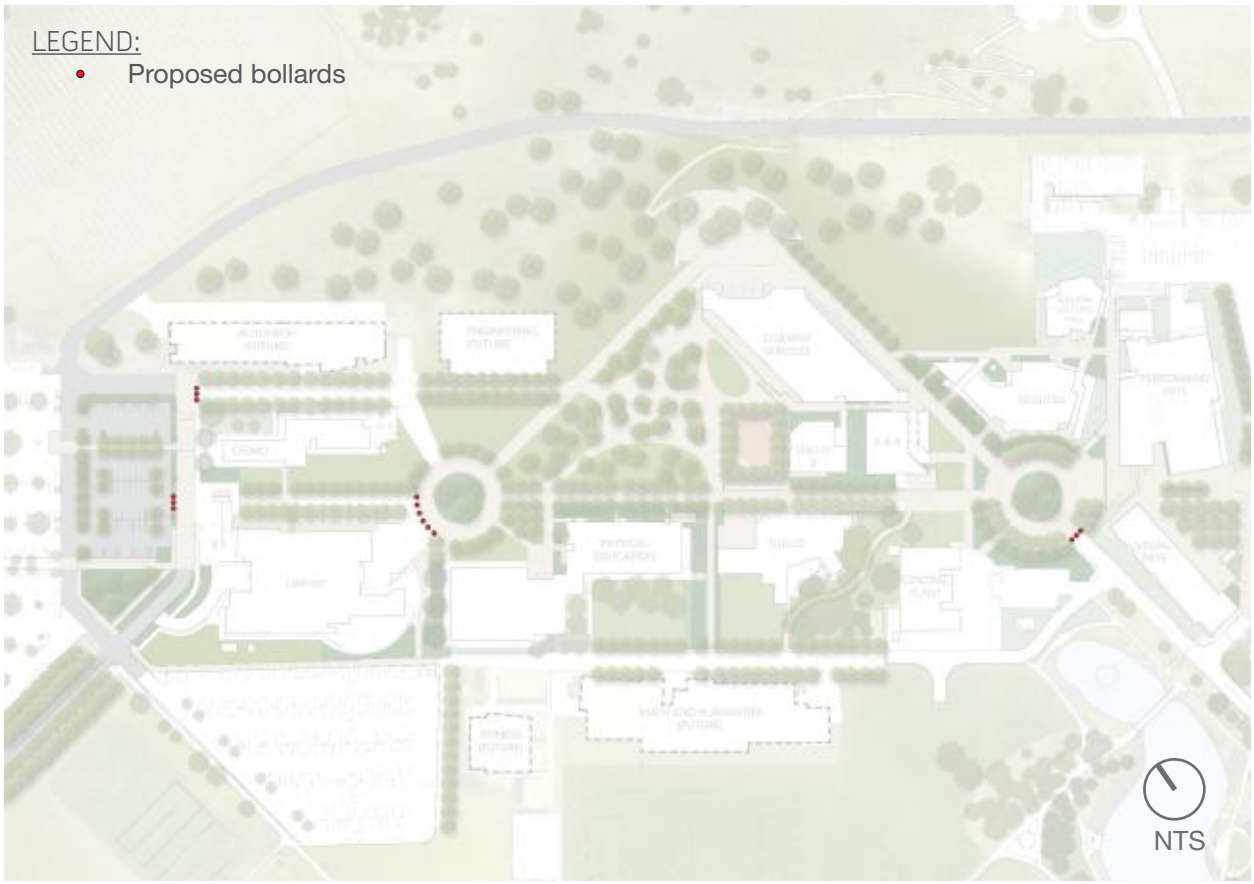
In an effort to promote more sustainable transportation methods, permanent bike parking should be installed. Future expansions of the Paseo de Arboles will include bike lanes to encourage bike riding and to make it safer to navigate around EVC. Bike racks will be conveniently located at gateways into the inner campus and near the sports fields.



BIKE RACKS

- Manufacturer: Wabash Valley
- Contact Info: (800) 253.8619
- Model Name: BL100 36” Bike Loop
- Mounting: in ground
- Metal Color: silver/gray
- Maintenance: none

II. SITE FURNISHINGS PALETTE - BOLLARDS



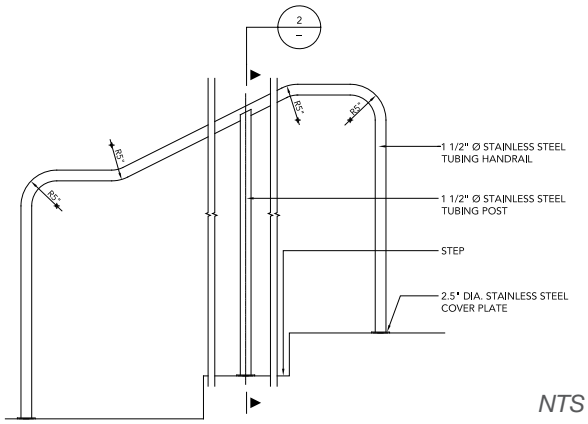
Bollards will be used to prevent cars from entering pedestrian-only areas. Removable bollards will be used where fire trucks and services vehicles need to access the campus core. The selected fixture is simple and unobtrusive.

BOLLARDS

- Application: At Pedestrian/Vehicular Crossings
- Manufacturer: Urban Accessories
- Contact Info: urbanaccessories.com
- Material: Recycled Aluminum
- Size: 8” diam.
- Notes: Fixed or removeable (key and padlock). Anti-graffiti finish available.
- Maintenance: Little to none. Clean graffiti and debris as required.

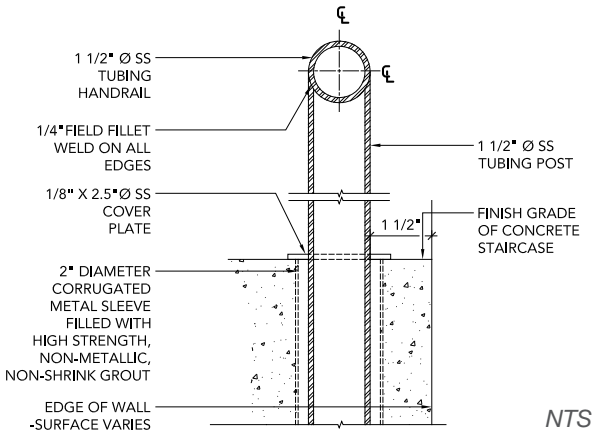
II. SITE FURNISHINGS PALETTE - HANDRAILS

stainless steel handrails



NTS

handrail elevation



NTS

handrail section

HANDRAILS

- Material: Stainless steel tubing with steel posts
- Notes: Use flangeless detail where possible. To reduce maintenance requirements, painted handrails are not recommended. Structural design for rail to be verified by project structural engineer. With each project, refer to current ADA code requirements for design of handrails.
- Maintenance: Replace or tighten fasteners if connections become loose or begin to wobble. Clean graffiti and other debris with mild soap intended for use on stainless steel.

II. SITE FURNISHINGS PALETTE - DRAINS

cast iron drain grate

'Jamison' trench drain

planting area drains

PAVING AREA DRAINS

- Application: Concrete and Unit Paving
- Manufacturer: Neenah Foundry, www.nfco.com
- Model: NF-T626 with tapped holes for 2 recessed screws and frame w/ weep holes.
- Material: Cast iron
- Size: 4" - 6" round
- Maintenance: Keep grates clear of leaves and debris. Periodic flushing of drainline may be required.

TRENCH DRAINS

- Applications: Concrete and Unit Paving
- Manufacturer: Urban Accessories, www. urbanaccessories.com
- Material: Raw Cast iron
- Size: 6" wide, length varies
- Cover: Jamison with standard frame
- Maintenance: Keep grates clear of leaves and debris. Periodic flushing of drainline may be required.

PLANTING AREA DRAINS:

- Applications: Lawn (flat cover) and planting areas (atrium grate)
- Manufacturer: National Diversified Sales (NDS), 800.726.1994
- Material: Plastic
- Size: round, diameter varies 4" - 8"
- Color: Black
- Maintenance: Keep grates clear of leaves and debris. Periodic flushing of drainline may be required.

PART E

SITE ENCLOSURES

ENCLOSURES

Outdoor service equipment, generators, and trash cans shall be screened with utility enclosures. These enclosures shall be easily accessible and shall be well designed to integrate with the campus architecture as well as the identity of each building. Enclosures should screen the structures and moderate any noise.

EXISTING ENCLOSURES

BUS SHELTERS

Bus shelters shall be located along major pedestrian spines and will provide a safe, comfortable, and covered area.

Shelters shall reflect the campus architecture and be uniform in design.

- Manuf:
- Model:
- Size:
- Color:
- Finish:
- Mounting:
- Note:

WALL ENCLOSURES

Wall enclosures should reflect the character of the discipline housed in the specific building as well as serving the purpose of screening and separating spaces. In this instance corrugated metal panel and perforated metal screen were used as a design element that is consistent with building architecture. The enclosure materials are also durable and require low maintenance.

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PART F

FENCING, GATES, + SCREENING

1

PERIMETER FENCE

A consistent unified fence shall be installed at the perimeter of the campus. This fence shall be located at the edges to all campus areas and will reinforce a safe identity as well as an improved curb-appeal for neighbors and nearby businesses.
Entries will be gated and will allow for emergency vehicular access.

2

ATHLETIC FENCE

Athletic areas shall be fenced with a 10’-12’ tall hot-dipped (black) chain link fence.

Where athletic areas interface with the campus perimter, an additional 8’ tall perimeter fence will be added.

PART G

LANDSCAPE CORRIDOR MASTER PLAN

GOALS:

- Enhance campus landscaping to be related to its surrounding landscape and hillside topography.
- Facilitate wayfinding and circulation by defining campus edges, entries, and pathways.
- Reinforce and emphasize entry points from San Felipe Road and Yerba Buena Road.
- Identify entries and circulation routes with structured plantings and accent landscapes.
- Establish a hierarchy of spaces throughout the campus.
- Provide open view corridors along the three spines to connect the “Hillside”, Evergreen Lake, and “Plains”.
- Clearly define primary and secondary pedestrian routes through campus.
- Evaluate the existing tree and shrub plantings and continue to develop plantings that maintain visibility and create a safe, secure, and welcoming campus.
- Provide a visual and ecological connection to the immediate and Northern California context.
- Combine naturalistic informal elements with more structured architectural and formal spaces.
- Provide variations on horizontal plane with varied topography.
- Establish standards for sustainable landscape selections and materials.
- Provide consistent and unified fencing around the perimeter of the campus to reinforce the relationship with the community and provide a safe campus.

PART H

LANDSCAPE ELEMENTS

CAMPUS ENTRIES

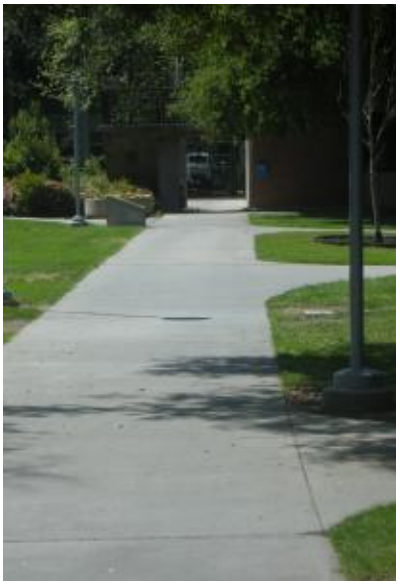
Pedestrian and vehicular entry points to the campus from the surrounding access areas shall be clearly defined. Entries should be reinforced with designated paving, accent plantings, specific tree species, and lighting. Appropriate signage is necessary to indicate entrances and to direct people into the campus. Entrances also reinforce the campus' presence and its identity to the surrounding community.

CAMPUS IDENTITY

The northern "Hillside" is a significant landscape resource and backdrop to the campus. This northeast edge of the campus is defined by the Montgomery Hills Park situated within the Evergreen hills. The existing Evergreen Fault and topography make it difficult to build in this area. The 2025 Facilities Master Plan recommends the hillside area north of the fault be preserved as a "no-build" zone on campus. A new loop road adjacent to the hillside is created to become the main internal vehicular connection between campus areas. The center of campus is primarily designated as a pedestrian zone. With the goal of ensuring that vehicular traffic is intuitive, roads, parking, and entry points will be clearly identified and reinforced with planting, hardscape, signage, and site amenities.

LANDSCAPE ELEMENTS

PEDESTRIAN SPINES



Pedestrian circulation for the campus is defined by three spines – the Pedestrian Promenade, the Village Walk West, and the Village Walk East. Together these three spines connect and define the core or "Academic Village" of campus. They act as edges to major open spaces and present opportunities to create specialty gardens and outdoor plazas along them. These pedestrian corridors should be reinforced through the use of strong plantings, allées of trees, decorative paving, signage, and lighting.

PARKING LOTS

Campus parking lots will first and foremost provide safe parking with clear visibility and visual access to campus entries and pedestrian walkways. Campus parking lots also present an opportunity to further reinforce the campus' sustainable approach to design. Opportunities for sustainable stormwater management include the use of permeable paving and bioswales where appropriate. A minimum tree cover of one tree with a large canopy per six stalls will minimize heat island effects.

DROP-OFF AREAS

There is a demand for increased drop-off areas on campus. For efficient campus circulation, designated drop-off zones need to be clearly identified to encourage use. They should be characterized by specific lighting, special paving, a consistent tree species, accent plantings, site amenities such as trash cans and benches, and, if along a bus route, a bus shelter. Location and identification of these zones on campus should be prominent and intuitive.

QUADS AND PLAZAS

Quads and plazas are the spaces between buildings on campus. These places provides opportunities for passage, gathering, and respite. For quads and plazas to serve these purposes, they must first be safe spaces: there should be high levels of visibility and the spaces should be well lit after dark. Additionally, the more people that are drawn to them the safer they will be, so they should include appealing amenities and attractive plantings. Quads and plazas can be planted with water-conserving grass and large trees for shade.

COURTYARDS

Small courtyards are pedestrian-scale outdoor spaces which accommodate minimum levels of users and are generally found immediately adjacent to buildings. Small courtyards are typically used for seating and small-scale gatherings at the entry and exit routes to buildings. The landscape selections will emphasize the building entry points and reinforce the individual and unique identity of the adjacent building discipline.

DRAINAGE OF BIOSWALES + GRASS-LINED SWALES

DESIGN PRINCIPLES:

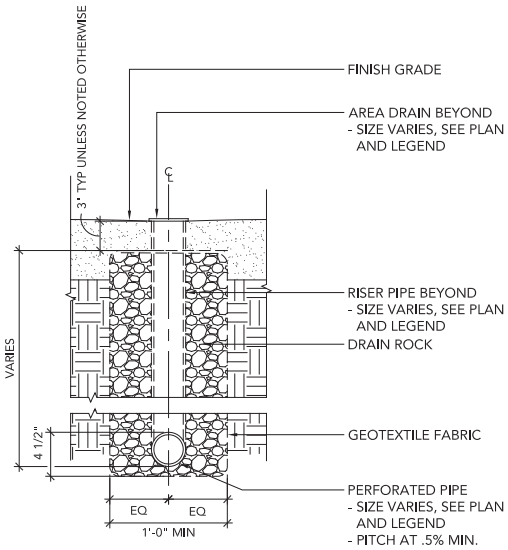
- Civil engineer should calculate capacity and determine drainage devices required
- Bioswales should not be located near campus gateways or building entrances
- Planting areas should not be mixed species, rather large areas of single species
- When possible bioswales should be defined by an edge for ease of plant maintenance and to bring clarity to the feature.
- Shallow depressions with gently sloping sides are preferred over deep trenches with steep embankment

bioswales can be simple and beautiful.

BIOSWALES

Bioswales are landscape devices used to capture and store stormwater run-off. Bioswales are designed by a Civil Engineer to hold water for 24-48 hours, and thus require special soils and specific plants and trees that can tolerated saturated conditions. Refer to Planting Design Standards for recommended species to plant in bioswales. The Landscape Architect should collaborate closely with the Civil Engineer to bring form and composition to bioswales.

grass-lined swales are used at the base of the slope adjacent to paving



french drain

GRASS-LINED SWALES

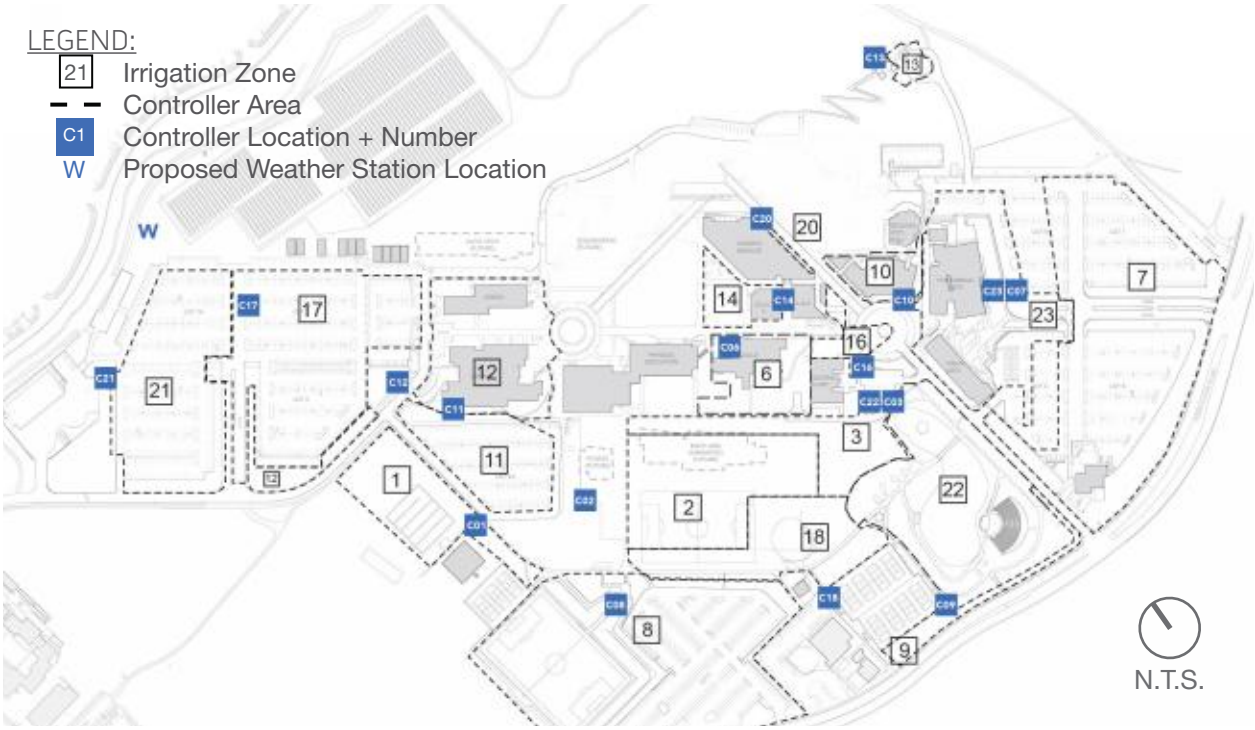
Grass-lined swales are more subtle depressions at the edge of planted areas, used to drain water flowing over paving and turf areas. If french drains are properly maintained, grass-lined swales typically drain quickly and can be used with most turf or groundcover species. Water from a sloping landscape should never pitch directly onto paving.

FRENCH DRAINS:

- Application: Grass-lined Swales
- Maintenance: Routinely monitor water level at cleanouts to ensure line is free of debris and blockage.

PART J

IRRIGATION DESIGN



EXISTING CONDITIONS

The irrigation system at EVC suffers from several issues including maintenance, an aging infrastructure, and damage to valves from excessive salt and chlorine levels found in reclaimed water. In addition, the college lacks documentation for the majority of campus irrigation, making repairs difficult. Moving forward, the college will have a master CAD file showing the location of all mainlines, controllers, valves, laterals and heads. After project completion, consultants will be responsible to add to the master CAD file Record Drawings of all new projects and repairs. It is the college's responsibility to provide consultants with the electronic file.

The irrigation assessment discovered many broken heads, laterals and valves, and noted several major breaks, potentially causing thousands of gallons of water wasted on a weekly basis. In addition, the investment in the campus landscape is lost when plants and trees are not irrigated.

RECOMMENDATIONS

To address the existing issues, the following upgrades should be treated as priorities:

- Connect system to weather station for maximum water efficiency.
- Only use equipment designed for use with recycled water.
- Repair leaks and breaks as soon as possible, using the campus standard equipment. All repairs should be documented and added to the campus master CAD file.
- Direct burial of wires is not recommended.

II. IRRIGATION STANDARD EQUIPMENT LIST

1. SATELLITE CONTROLLER

A. Manufacturer: Rainmaster-Evolution Dx2 with Radio and Antenna Connectivity To Central Computer
B. Supplier: John Deere/United Green Tech
- Pro Max Remote Control Receiver
- Flow board for use with flow sensor
- Flip top stainless steel enclosure
- Electrical Grounding: Per Manufacturers Requirements
- Installation: To be inspected and certified by John Deere/United Green Tech

2. FLOW SENSOR

A. Manufacturer: Rainmaster FS series
B. Connect to controller with Rainmaster Ev-Cab-Sen cable housed in 1.25” conduit

3. MASTER CONTROL VALVE

A. Manufacturer: Superior
B. Model: Superior 3100 series

4. REMOTE CONTROL VALVE

A. Manufacturer: Griswold
B. Model: DWS or DW-PRV Series
C. Provide Nibco BTU ball valve for each RCV

5. QUICK COUPLING VALVE

A. Manufacturer: Rainmaster 33DNP (provide 1 QC key and hose swivel per 5 QCV’s)

6. ISOLATION VALVE

A. 3.0” and larger:
- Manufacturer: Nibco
- Material: iron
- Model: F-619-RW
- Specify a valve to pipe restraint system as manufactured by Harco
- Provide 1 operating key for 5 GV’s installed

B. 2.5” and smaller:
- Manufacturer: Aqua Valve
- Material: brass
- Model: 313
- Specify a valve to pipe restraint system as manufactured by Harco
- Provide 1 operating key for 5 GV’s installed

7. MAINLINE PIPING

A. 1.5” and smaller:
   - Material: Schedule 40 Purple PVC pipe, NSF approved

B. 2” and larger:
   - Material: Class 315 Purple PVC pipe, NSF approved

C. Recycled water use: purple color pipe with recycled water use warnings stenciled on pipe.
D. 24” cover in planting areas
E. 36” cover under fire lanes and pavements
F. Install terra tape sentry line detectable warning tape above mainline

8. MAINLINE FITTINGS

A. 1.5” and smaller:
   - Material: Schedule 80 PVC

B. 2” and larger:
   - Manufacturer: Harco
   - Material: Ductile iron, epoxy coated, with joint restraints
   - Connections: deep bell

9. LATERAL LINE PIPING

A. Pipe: Schedule 40 PVC, NSF approved
B. 18” cover in planting areas
C. 36” cover under fire lanes and pavements

10. LATERAL LINE FITTINGS:

A. Material: Schedule 80 PVC

11. SLEEVES

A. Pipe: Schedule 40 Purple PVC, NSF approved, 3” dia. minimum size
B. Provide two separate sleeves in each location, 36” cover under fire lanes and pavements

12. ELECTRICAL CONDUIT:

A. Conduit: Schedule 40 PVC, 3” minimum size
B. To house all low voltage control wiring
C. 24” cover in planting areas
D. 36” cover under fire lanes and pavements
E. Provide splice boxes at splices/changes in direction

13. LOW VOLTAGE WIRING:

A. Single conductor, copper, type UF, UL listed for direct burial
B. 14 AWG for hot wire, red or black insulation
C. 12 AWG for common wire, white insulation
D. Connections made with 3M DBR/Y-6 waterproof connector kits

14. VALVE BOXES:

A. Manufacturer: Rain Bird
B. Model: VB series, black body and lid, size as required
C. Install Christy #3800 recycled water valve box nameplate.

15. SPRAY HEADS:

A. Manufacturer: Toro
B. Model: 570Z-PRX-COM with Toro precision series spray nozzles

16. TREE BUBBLER

A. Manufacturer: Rain Bird
B. Model: RWS-B-C-1402
C. Two per tree or as required for larger box trees

17. SHRUB BUBBLER

A. Manufacturer: Rain Bird
B. Model: 1401
C. Riser: Salco flexible PVC. one per shrub

18. ROTOR HEADS

A. Manufacturer: Hunter
B. Model: I-20-04-SS-R

19. DRIP SYSTEMS

A. Dripline and Accessories
   - Manufacturer: Rain Bird
   - Model: XFS Subsurface
B. Drip Zone Kit
   - Manufacturer: Rain Bird
   - Model: XCZ-PRB-100/150-COM

20. RECYCLED WATER

A. Systems shall be designed, installed and operated per the rules and regulations of South Bay Water Recycling and the City of San Jose.

21. RECYCLED WATER WARNING SIGNS

A. Per requirements of the South Bay Water Recycling Program

PART K
PLANT PALETTE

planting areas with single species are recommended

PLANTING DESIGN PRINCIPLES

The approved plants for EVC were selected after a rigorous assessment of the existing planting on campus. The assessment included an Arborist's Report, a campus-wide survey of existing plants, and interviews with the grounds department. The problems on campus are extensive and the standards are essential in transitioning to a more tenable and aesthetically successful landscape. The problems on campus include:

- Compacted soils with high salt content
- Overgrown, weedy and hard to maintain planting areas
- Deferred pruning and tree maintenance
- Poor overall maintenance practices
- Improper plant selection for reclaimed water use

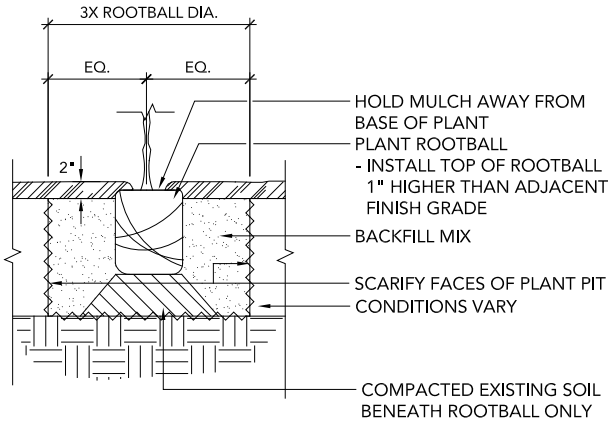
PLANTING DESIGN PRINCIPLES (CONTINUED)

Soil samples were taken at 13 locations on campus and tested for chemical and physical properties. Though soils vary slightly, excessive salt, copper and magnesium were found in the surface soils in most locations. Excessive salts are likely from the use of reclaimed water which facilitates the compaction of soils. At the end of 2013 the Santa Clara Valley Water District will open the Silicon Valley Advanced Water Purification Center. Currently salt levels average over 700 ppm, with the new Purification Center it is anticipated that the salt content will drop to 500 ppm, which is similar to the levels found in well water. It is recommended that the campus continue to monitor the salt content of their irrigation water and mitigate compacted and high saline soils as required.

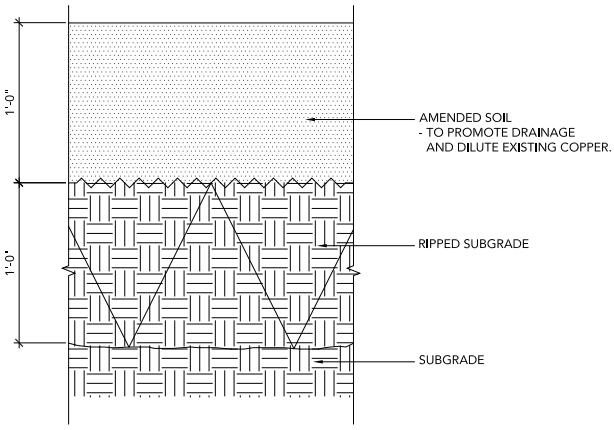
Though California natives and drought-tolerant species are recommended, planting beds containing several species should not be installed on campus. Planting areas should have the following features:

- Plants should be contained in well defined areas- suitable in size for the selected plants.
- Planting areas should contain a single plant type. If more than one plant is used, there should be clear definitions between plants - such as edging or headers.
- Soils should be amended to promote drainage. Soil testing should be required during construction and amendments tailored accordingly. Designers should be aware that copper was found on the campus and that soil of this type is more costly to remove.

SHRUB PLANT PIT



AMENDED SOIL AT TURF + GROUNDCOVER AREAS



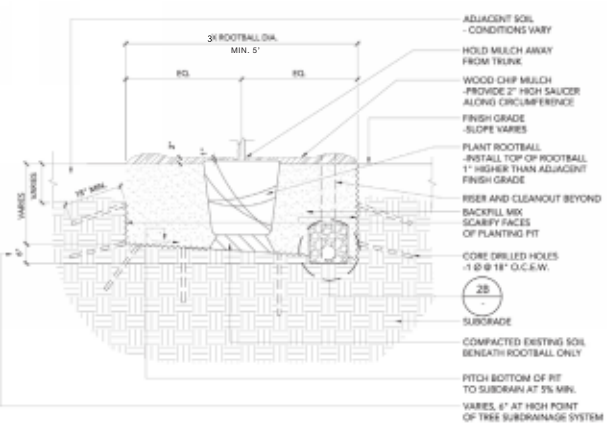
TREE PLANTING PRINCIPLES

After extensive assessment by a certified arborist, several issues were found in regards to tree maintenance and installation practices. (See Evergreen Valley College Tree Survey Report, dated February 4, 2013 and Supporting Document section for maps showing project lifespan of campus trees as well as recommended maintenance diagrams) The following are recommendations to preserve tree health and provide long-term benefits to all trees planted on campus:

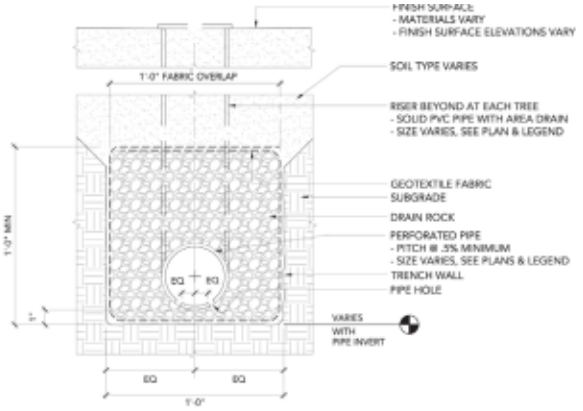
1. Avoid Weed Trimmer Damage: a large dimension mulch ring should be installed around the trunk of newly planted trees to avoid damage by weed trimmers.
2. Tree Pruning: According to the Arborist Report, early structural pruning two years after planting is critical to avoid failure and to enhance the health and aesthetic value. Trees should always be pruned by a Certified Arborist familiar with BMP Pruning Standards.
3. Tree Stakes: Remove tree stakes after two years.
4. Compacted Soil: Due to severely compacted to soil found in most areas throughout campus, it is recommended that tree subdrainage be installed with all newly planted trees, and tree pits be 3 times the width of the rootball as shown. For valuable existing trees suffering from compacted soil issues, water-jetting is recommended.

It is recommended that the adjacent details become standard for all newly planted trees at EVC. Future design teams should take into account the existing soil characteristics and should be provided with the arborist report and asked to follow these recommendations.

2A. TYPICAL TREE PLANTING DETAIL



2B. TREE SUBDRAINAGE



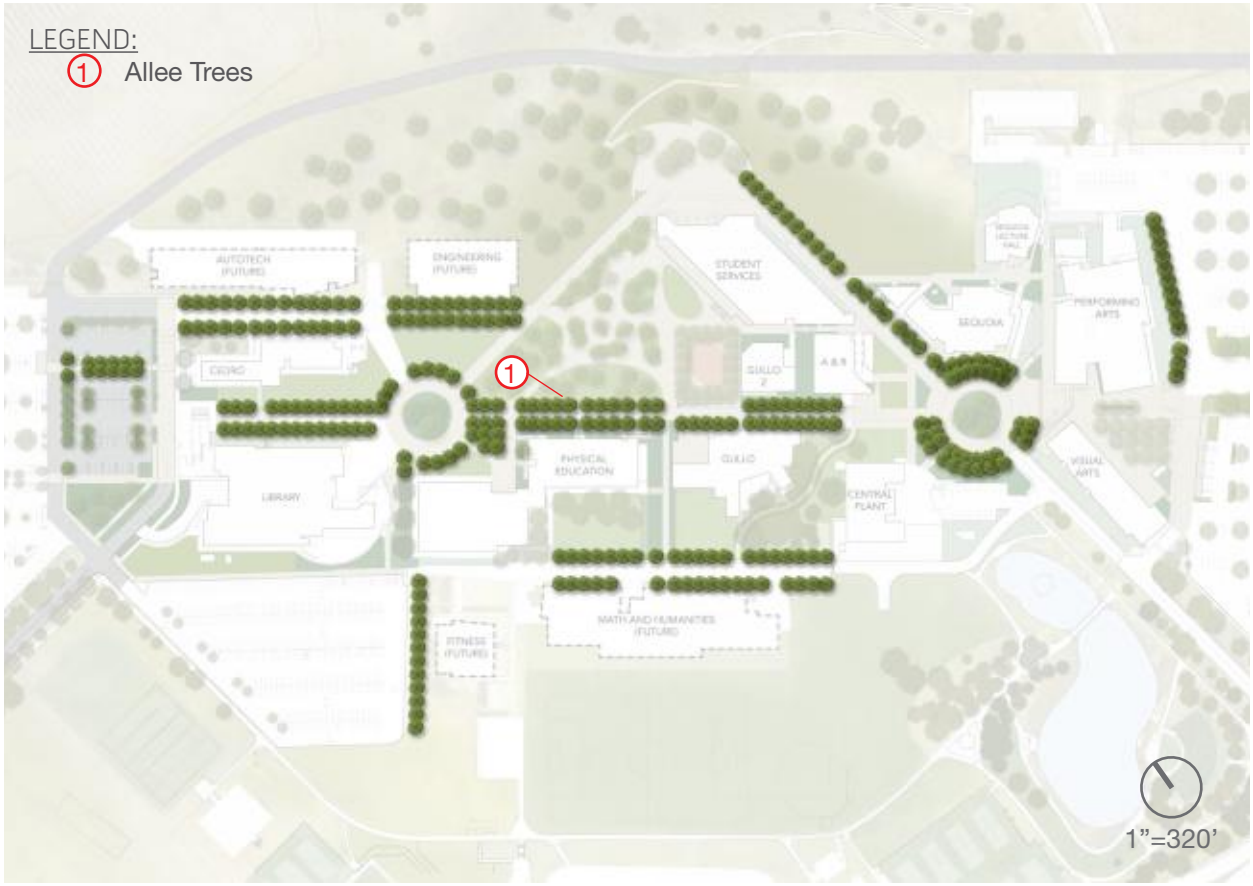
I. CENTRAL GREEN TREES

pine trees and mounded lawns

The trees of the proposed Central Green will create a park-like sense of place, providing much needed shade and character. The design should be developed selecting a family of tree species - either coniferous or deciduous.

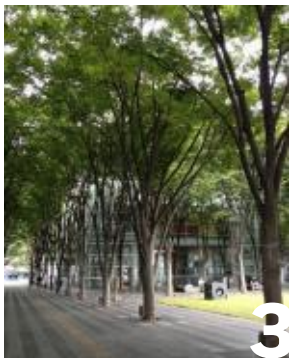
	BOTANICAL NAME	COMMON NAME	HEIGHT	WIDTH	NOTES	MAINTENANCE
1	*Pinus sylvestris*	Scotch Pine	30’-50’	25’-30’	Evergreen	Structural pruning 2 years after planting by skilled arborist or trained professional
2	*Calocedrus decurrens*	Incense Cedar	40’-60’	10’-15’	Evergreen	
3	*Araucaria heterophylla*	Norfolk Island Pine	60’-100’	30’-60’	Evergreen	
4	*Aesculus x carnea*	Red Horsechestnut	30’-40’	30’-40’	Deciduous	Same as above. Blow, rake and remove fallen leaves once a year.
5	*Nyssa sylvatica*	Tupelo Tree	30’-50’	15’-25’	Deciduous	
6	*Ulmus parvifolia* ‘Drake’	Drake’s Elm	30’-50’	30’-40’	Semi-Evergreen	Same as above. Thin old trees to lessen storm damage.
	Betula nigra ‘Dura-Heat’	Dura-Heat Birch				
	Cercis canadensis	Eastern Redbud				
	Geijera parviflora	Australian Willow				
	Ginkgo biloba *‘Autumn Gold’*	Autumn Gold Maidenhair Tree				
	Pinus nigra	Austrian Pine				

II. ALLEE TREES



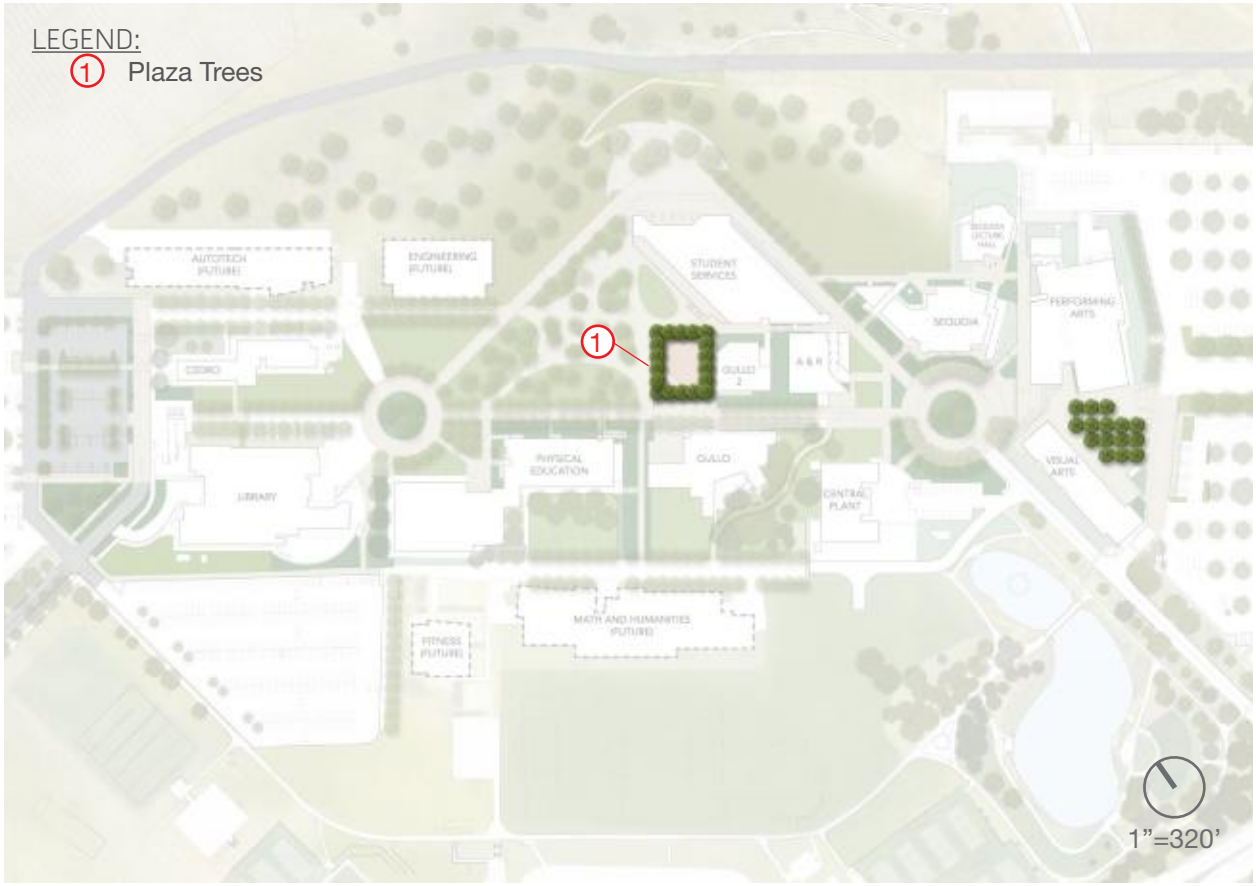
deciduous tree allee

Allees are a traditional campus aesthetic used to define main promenades and provide shade for those walking through them. Trees recommended for this use are deciduous, with an emphasis on graceful, symmetrical canopies. Trees should be appropriately spaced to create a dense linear canopy, reinforcing the path.



	BOTANICAL NAME	COMMON NAME	HEIGHT	WIDTH	NOTES	MAINTENANCE
1	*Acer x freemannii* 'Autumn Blaze'	Autumn Blaze Maple	40'-50'	30'-40'	Deciduous	Structural Pruning 2 years after planting by skilled arborist or trained professional. Blow, rake and remove fallen leaves once a year.
2	*Ulmus parvifolia* 'Drake'	Drake's Elm	30'-50'	30'-40'	Semi-evergreen	
3	*Zelkova serrata* 'Green Vase'	Green Vase Zelkova	50'-60'	30'-40'	Deciduous	
4	*Platanus x acerifolia* 'Bloodgood'	Bloodgood Sycamore	50'-70'	30'-40'	Deciduous	
	Tilia cordata	Littleleaf Linden				
	Ulmus parvifolia 'Allee'	Allee Chinese Elm				
	Zelkova serrata 'Village Green'	Village Green Zelkova				

III. PLAZA TREES

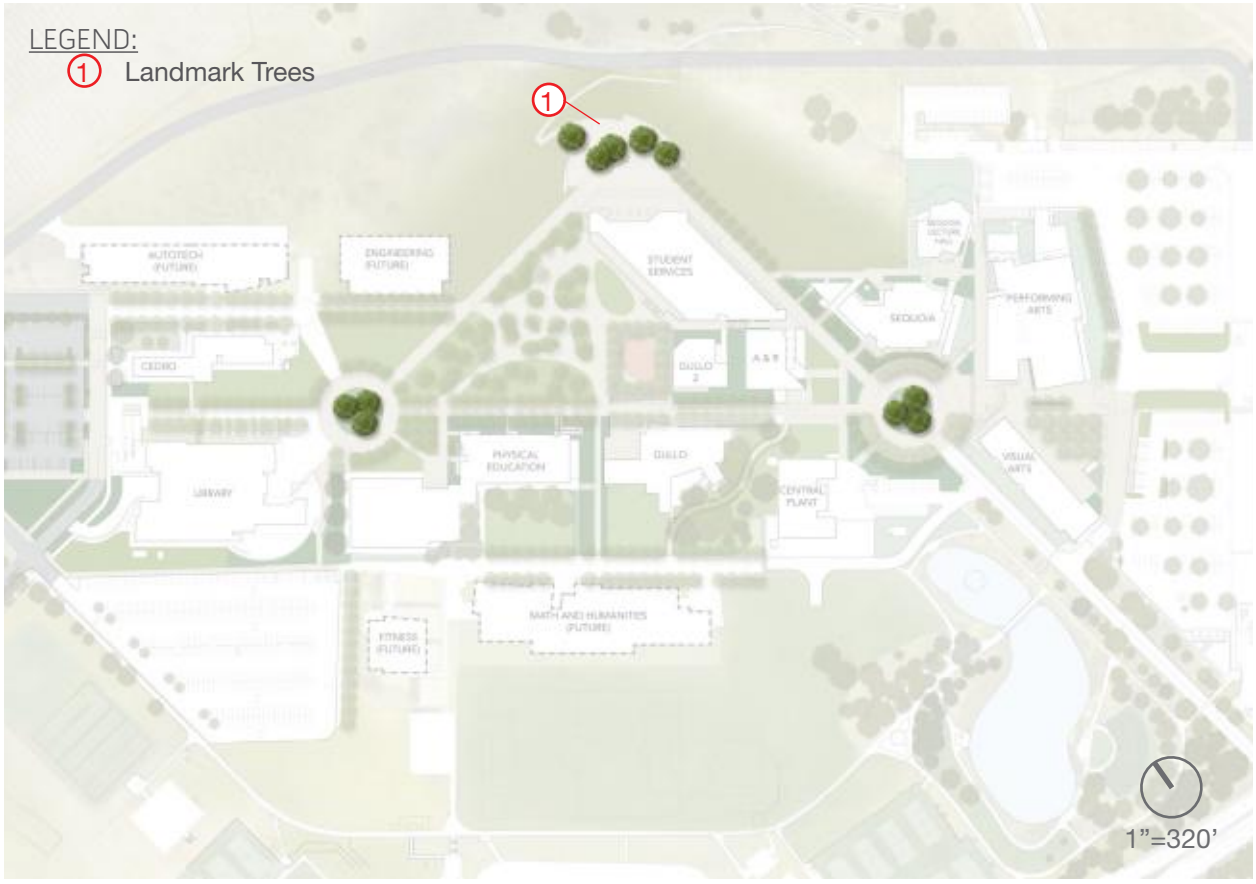


plaza trees

Plaza trees are similar to those recommended for allees, but also include more upright formal varieties. Species should be deciduous to lend color in autumn, provide shade during warmer months, and allow sun and warmth in winter once leaves have fallen.

	BOTANICAL NAME	COMMON NAME	HEIGHT	WIDTH	NOTES	MAINTENANCE
1	*Ginkgo biloba* 'Autumn Gold'	Autumn Gold Maidenhair Tree	40'-50'	30'-40'	Deciduous Only specify and select male species	Structural Pruning 2 years after planting by skilled arborist or trained professional. Blow, rake and remove fallen leaves once a year.
2	*Zelkova serrata* 'Village Green'	Village Green Zelkova	30'-50'	30'-40'	Deciduous	
3	*Gleditsia triacanthos* 'Shademaster'	Honey Locust	30'-40'	20'-30'	Deciduous	
4	*Olea europaea* 'Fruitless'	Fruitless Olive				
	Lagerstroemia species	Crape Myrtle				
	Liriodendron tulipifera	Tulip tree				

IV. LANDMARK TREES

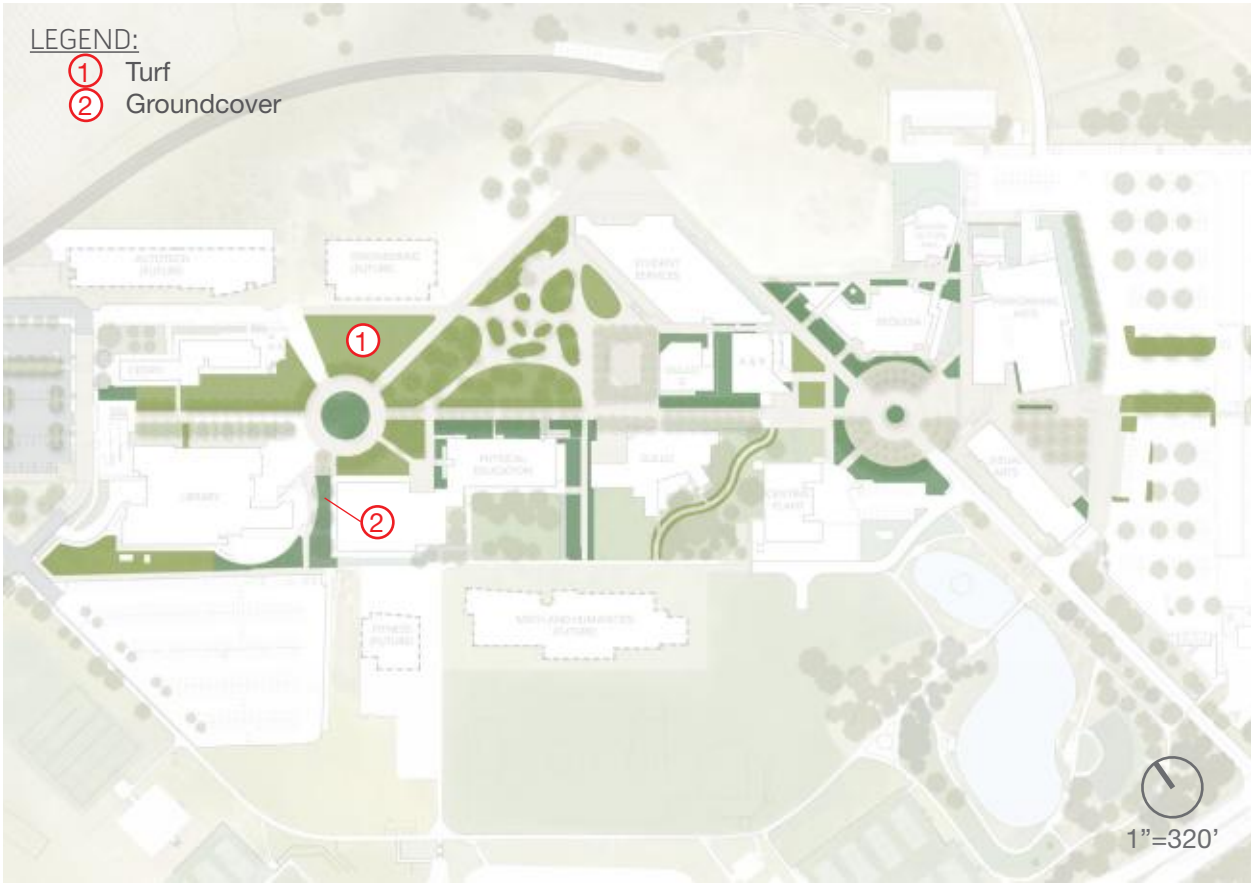


landmark tree

Native oaks will identify and anchor the three main intersections on campus. The East Hub will be planted with large oaks similar to those existing at the West Hub. The landmark trees of Hillside Green are organically arranged to create an extension of the greater landscape in the hills beyond campus.

	BOTANICAL NAME	COMMON NAME	HEIGHT	WIDTH	NOTES	MAINTENANCE
1	*Quercus agrifolia*	Coast Live Oak	30’-50’	40’-60’	Evergreen	Structural Pruning 2 years after planting by skilled arborist or trained professional.
2	*Quercus lobata*	Valley Oak	50’-70’	50’-70’	Deciduous	Same as above. Blow, rake, and remove fallen leaves once a year.
	Quercus shumardii	Shumard Red Oak				

V. TURF + GROUNDCOVER



During the landscape assessment phase, several invasive species were found in the existing campus lawn areas. It was also noted that turf areas are preferred over mixed plantings due to ease of maintenance. Currently, the grass berms are composed of many grass species, including Bermuda Grass and Kikuyu Grass, both of which spread freely and are difficult to remove.

The recommended tall fescue blend contains dark-green, fine-bladed turf that does well in both sun and shade, and is fairly drought tolerant when compared to other turf species. It grows best when kept mowed to a height of 3"-4", and prefers little to no fertilization.

The campus should also move towards planting large scale groundcovers that are easy to maintain. The two plant types shown on the opposite page are attractive, low-maintenance species well-suited to the environment of EVC, and are representative of a larger list of recommended species.

	BOTANICAL NAME	COMMON NAME	TYPE	USE	EXPOSURE	MAINTENANCE
1		Tall Fescue Blend	90/10 Fescue/ Bluegrass Blend	turf grass replacement	sun and light shade	Mow to keep lawn under 4" in length. Edge trim at sidewalks and all hardscape such as walls or curbs. Fertilize monthly. Water requirements will vary based on season and rainfall. For weed abatement and to eliminate future weed germination, new planting areas should undergo at least two grow-kill cycles previous to turf installation.
2	*Arctostaphylos* 'Pacific Mist'	Pacific Mist Manzanita	Groundcover	large scale plantings	sun or shade	Water weekly. Shear or edge as required. Blow leaves out during fall to keep neat.
3	*Lonicera nitida* 'Maygreen'	Maygreen Boxwood Honeysuckle	Groundcover	large scale plantings	sun or shade	

PLANT PALETTE


CARPET JUNIPER


DEER GRASS

	BOTANICAL NAME	COMMON NAME	REMARKS
GRASSES	*Lomandra longifolia* 'Breeze'	Dwarf Mat Rush	
	Lomandra confertifolia 'Seascape'	Seascape Mat Rush	
	Muhlenbergia rigens	Deer Grass	
	Muhlenbergia dubia	Deer Grass	
	Pennisetum spathiolatum	Slender Veldt Grass	
GROUND COVER	*Arctostaphylos* 'Emerald Carpet'	Emerald Carpet Manzanita	
	Arctostaphylos 'Pacific Mist'	Pacific Mist Manzanita	
	Baccharis pilularis 'Twin Peaks'	Twin Peaks Coyote Brush	
	Grevillea lanigera 'Coastal Gem'	Coastal Gem Grevillea	
	Myoporum parvifolium 'Putah Creek'	Putah Creek Myoporum	
	Juniperus horizonalis 'Wiltonii'	Carpet Juniper	
	Ribes viburnifolium	Evergreen Currant	

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VI. CAMPUS FRAME LANDSCAPE

view towards observatory and hills beyond

Building off the regional landscape typology of oak studded meadows, recommendations include planting additional oak trees and replacing the turf within the Campus Frame with Native Meadow. Evergreen trees such as the Deodar Cedar are recommended at the San Felipe Entrance to create a strong gateway into campus while screening future development.

	BOTANICAL NAME	COMMON NAME	TYPE	EXPOSURE	MAINTENANCE
1	*Quercus agrifolia*	Coast Live Oak	Evergreen	full sun	Structural pruning 2 years after planting by skilled arborist or trained professional
2	*Aesculus californica*	California Buckeye	Deciduous	full sun to partial shade	
3	*Cedrus deodara*	Deodar Cedar	Evergreen	full sun	
4	*Leymus triticoides*	Beardless Wild Rye	Deciduous Native Grass	full sun to partial shade	Mow yearly in mid-summer. Two grow-kill cycles recommended prior to planting for weed abatement.
5	*Calochortus venustus*	Pinpoint Clover	Native Perinneal	full sun	None
6	*Escholzia cal. var. maratima*	California Poppy	Native Perennial	full sun	None
	Arctostaphylos 'Dr. Hurd'	Dr. Hurd Manzanita			
	Pistacia chinensis	Chinese Pistache			
	Schinus molle	California Pepper			
	Quercus wilslizenii	Interior Live Oak			

VII. CAMPUS ENTRIES

	BOTANICAL NAME	COMMON NAME
CAMPUS ENTRIES	*Calocedrus decurrens*	Incense Cedar

VIII. SHRUBS & PERENNIALS LIST


RED YUCCA

	BOTANICAL NAME	COMMON NAME
SHRUBS / PERENNIALS	*Aloe striata*	Coral Aloe
	Agave attenuata	Foxtail Agave
	Arctostaphylos 'Dr. Hurd'	Dr. Hurd Manzanita
	Arctostaphylos 'Sunset'	Sunset Manzanita
	Asarum caudatum	Wild Ginger
	Ceanothus 'Dark Star'	Dark Star Ceanothus
	Erigergon karvinskianus	Santa Barbar Daisy
	Fremontodendron 'California Glory'	Flannel Bush
	Hardenbergia violacea	Purple Vine Lilac
	Ilex vomitoria 'Stokes Dwarf'	Yaupon Holly
	Lantana sellowiana 'White Lighting'	White Spreading Lantana
	Leptospermum scoparium	New Zealand Tea Tree
	Liriope gigantea	Giant Lily Turf
	Olea europaea 'Montra'	Dwarf Olive
	Pittosporum tenufolium 'Silver Sheen'	Silver Sheen Pittosporum
	Prunus carolina 'Compacta'	Hybrid Carolina Cherry
	Rhaphiolepis umbellata minor	Dwarf Yeddo Hawthorn
	Rhamnus californica 'Mound San Bruno'	Coffeeberry
	Rosa californica	California Wild Rose
	Sisyrinchium bellum	Blue-Eyed Grass
	Yucca species	Yucca

IX. BIOSWALES

BLUE-EYED GRASS

	BOTANICAL NAME	COMMON NAME
BIOSWALES	*Aquilegia formosa*	Western Columbine
	Alnus rubra	Red Alder
	Betula nigra 'Dura-Heat'	Dura-Heat Birch
	Calochortus albus	Fairy Lantern
	Carex flacca	Blue Sedge
	Chondropetalum tectorum	Cape Rush
	Festuca rubra	Red Fescue
	Juncus effusus	Soft Rush
	Leymus triticoides	Wild Rye
	Lomandra longifolia 'Breeze'	Dwarf Mat Rush
	Muhlenbergia rigens	Deer Grass
	Nyssa sylvatica	Tupelo Tree
	Platanus racemosa	California Sycamore
	Sisyrinchium bellum	Blue-Eyed Grass

END OF SECTION 3 - EVERGREEN VALLEY COLLEGE

SECTION 3

SAN JOSÉ CITY COLLEGE

PART A

UTILITIES + INFRASTRUCTURE

CONTENTS

I. ELECTRICAL UTILITIES

San Jose City College is fed by a 12kV underground service provided by Pacific Gas & Electric. The service is routed from Moorpark Avenue underground onto the campus to the Main Electrical Room (situated in the Northeast corner of the Central Plant Building). The service enters the building and is distributed to six (6) feeders serving the campus. The current feeder arrangement is as follows:

Feeder	Building/Quadrant Served
1	Central Plant & Parking Garage
2	Central Plant & Parking Garage
3	Northeast Quadrant
4	Northeast Quadrant
5	Northwest and Southwest Quadrants
6	Northwest and Southwest Quadrants

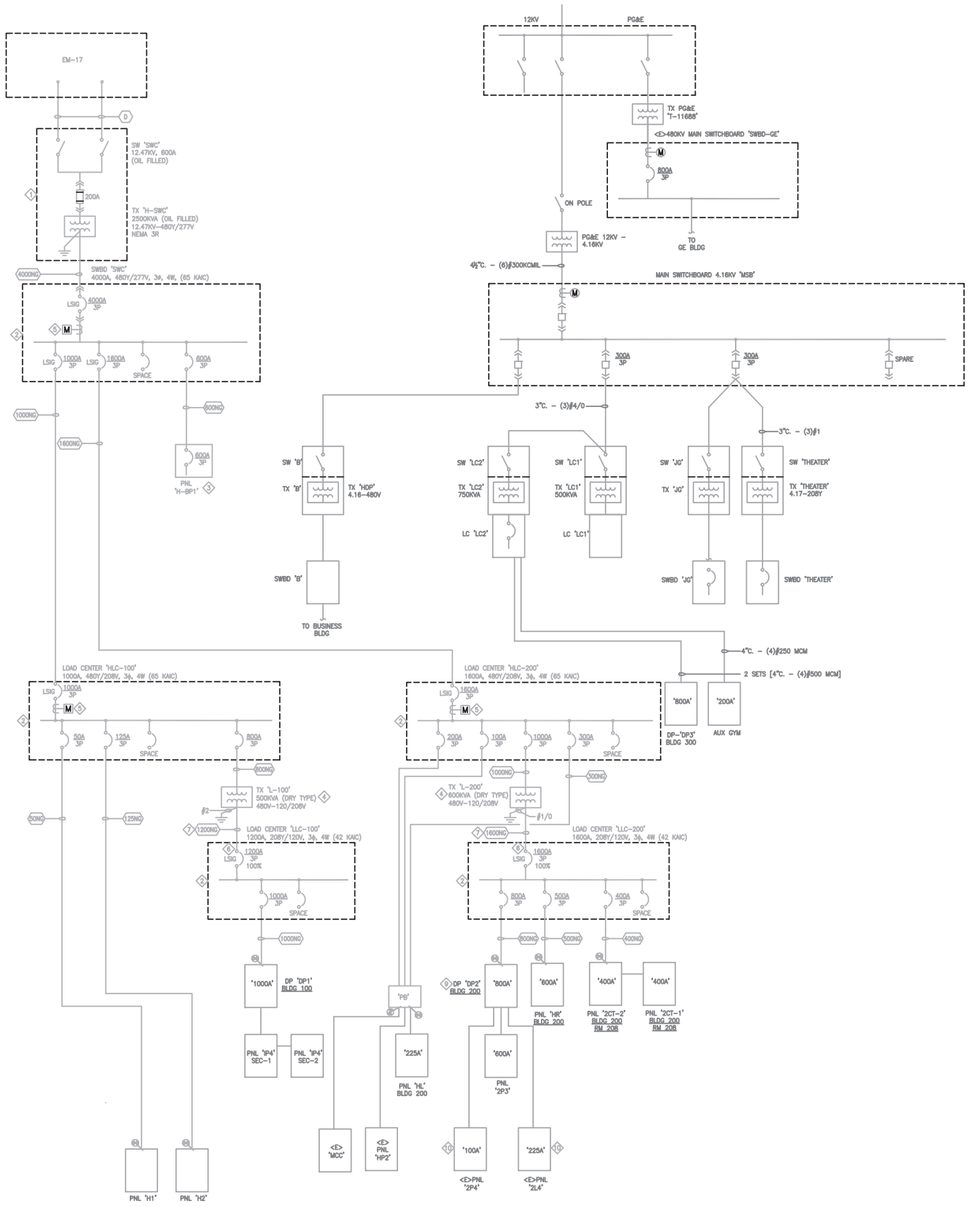
The electrical services on campus are distributed at 12kV and subsequently stepped down at each building to 480/277V, 3-phase, 4-wire for building distribution. The feeders are routed in direct buried duct banks encased in concrete (5” conduit). The 12kV services land at external primary selector switches prior to entering the building electrical rooms to connect to the transformers for step down to 480/277V.

Currently, the campus is in the midst of removing the existing 4160V service. This PG&E service is routed to campus from the Sherman Oaks Drive overhead street service. It routes underground to Building 300 and distributes to six (6) feeders. The 4160V service distributed through underground conduits to buildings, stepping down to 480V/277 prior to entry. Currently, few services remain on this antiquated service which is scheduled for complete removal in 2015, relocating all remaining buildings onto the 12kV campus service.

For electrical requirements for the building interior(s), see Section 26 00 00.

General Code Compliance

- National Electrical Code
- California Electrical Code
- PG&E Greenbook



CAMPUS ELECTRICAL LAYOUT

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II. FUEL DISTRIBUTION

San Jose City College is served from a single gas meter located between the Student Services Center and the East Parking structure. The meter is fed from a 2” gas line at 5 psig. The buildings are served from a direct buried high density polyethylene. The Natural Gas service is routed along the same direct buried path(s) as the Hydronic Piping Distribution.

For fuel distribution system and piping requirements, see Section 23 11 23.

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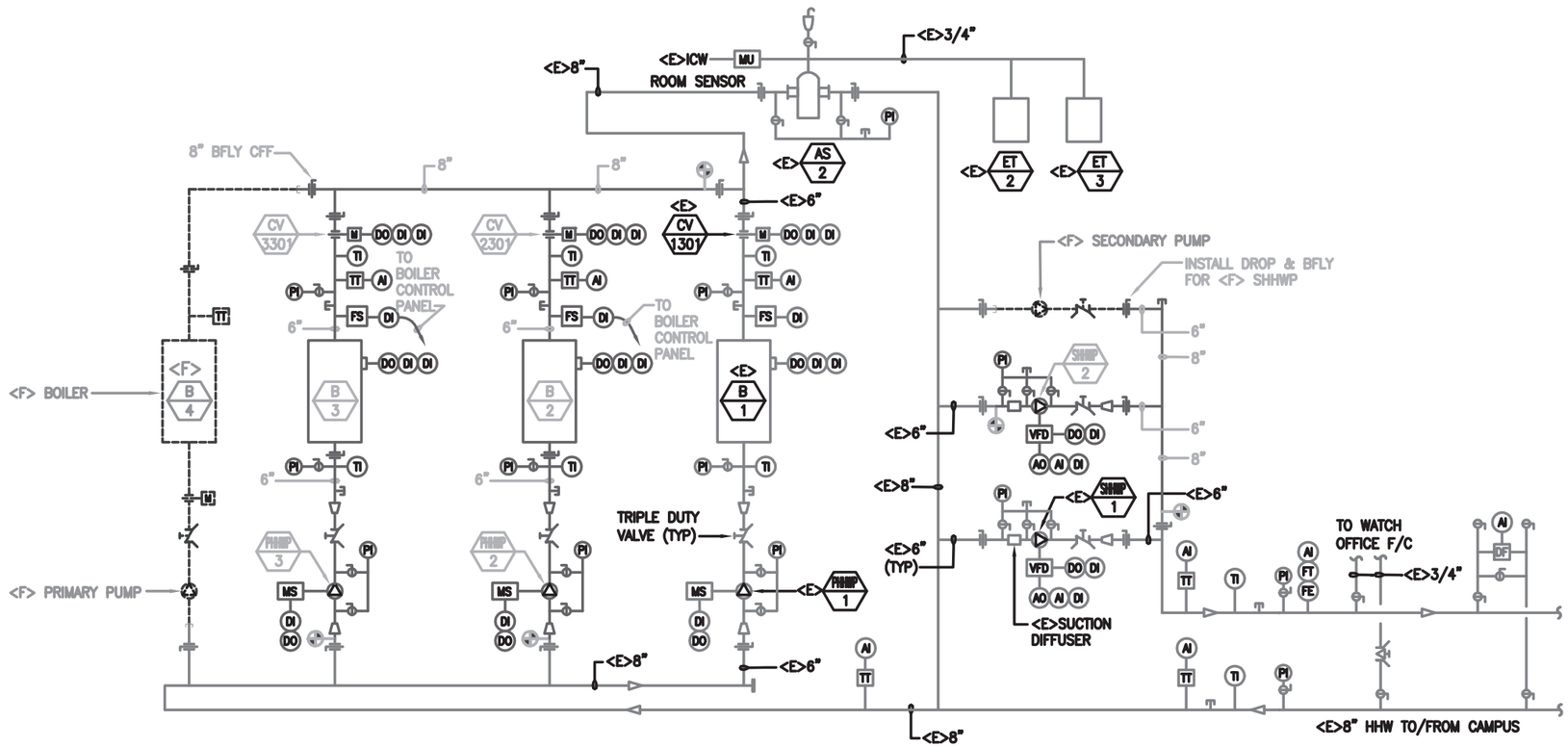
III. HYDRONIC DISTRIBUTION

San Jose City College employs a heating and chilled water system to condition the buildings and on campus. The services are housed at the Central Plant building and distributed via primary/secondary pumping system. For building services, tertiary pumps are utilized for internal distribution.

The hydronics are distributed in a prefabricated, direct buried piping system with a series of manholes and valves for access, system isolation, and controls. The routing of the heating and chilled water piping systems are in concert with the natural gas piping.

For Hydronic Distribution, piping, typical CHW/HHW schematics, and equipment requirements, see Section 23 21 13.



CHW SCHEMATIC

HHW SCHEMATIC

HYDRONIC PIPING SITE LAYOUT

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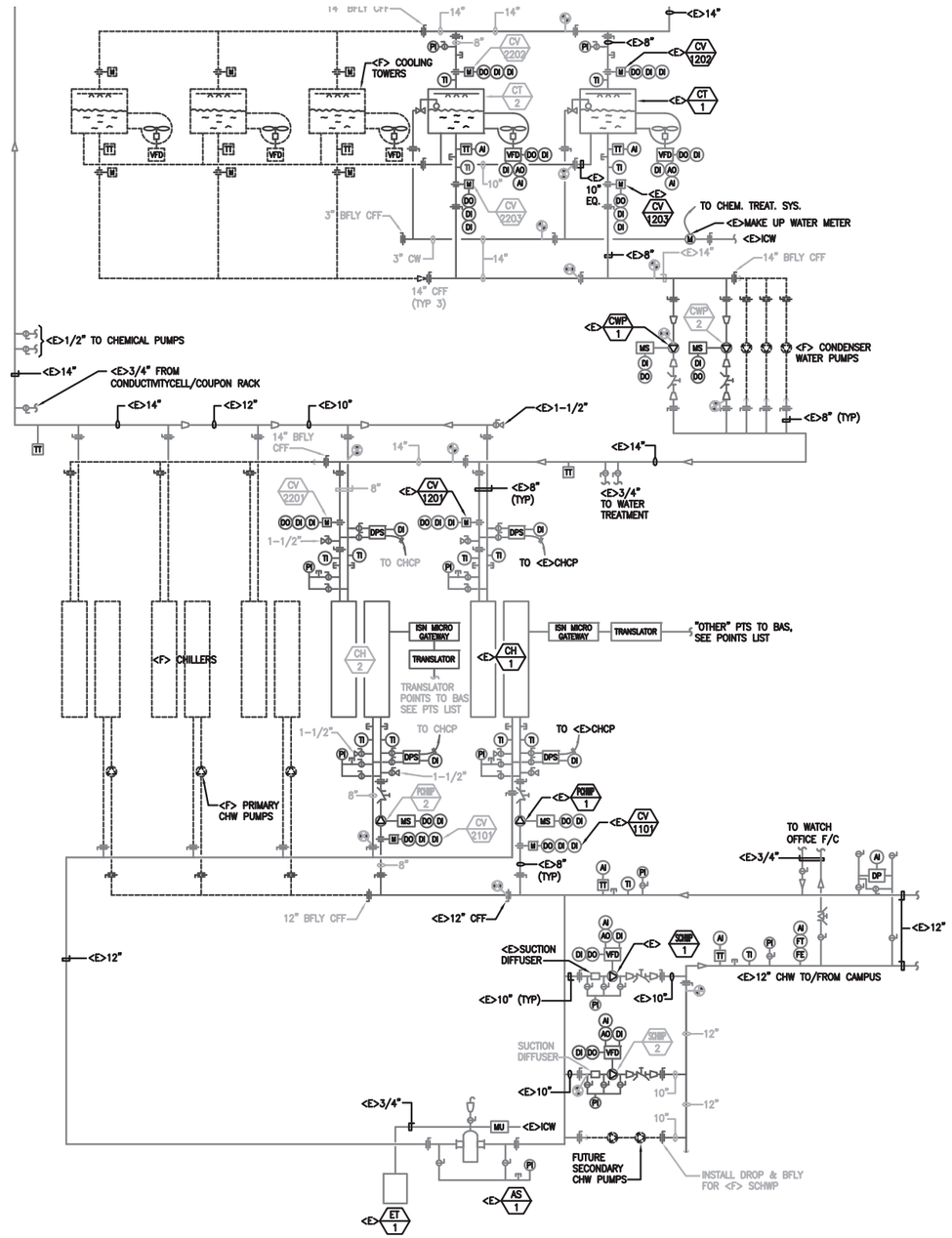

CHW SCHEMATIC

HYDRONIC PIPING SITE LAYOUT

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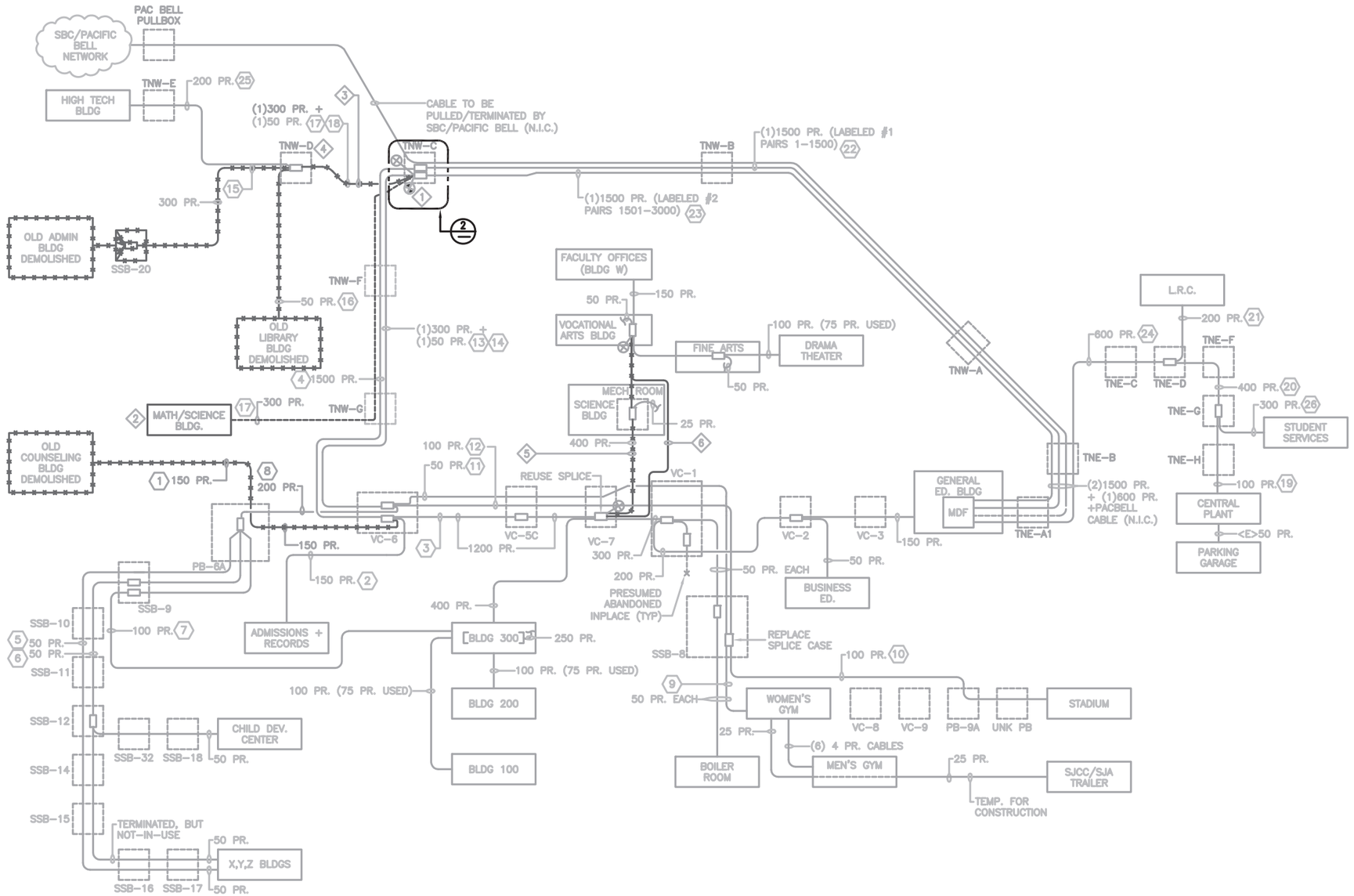
IV. TELECOMMUNICATIONS UTILITIES DISTRIBUTION

The telecommunications infrastructure on campus consists of a network of 4” conduits routed to and from the central main distribution frame (MDF) located at the GE-108. The 4” conduits are direct buried with a series of intermittent manholes for pulling cabling as well as distributing to buildings. For each building, the campus standard is to route four (4) 4” conduits for distribution and future consideration.

For Telecommunications Equipment and performance requirements, consult the ITSS department at SJECCD[1] . See Section 26 00 00 for general details of the Telecommunications requirements.

[1] At the time this document was compiled, the District was conducting a separate effort to standardize telecommunications. Coordinate with District Personnel for final alignment and updated requirements for the system and services.



COPPER CABLE PLANT

TELECOMMUNICATIONS CONDUIT, COPPER, + FIBER LAYOUTS

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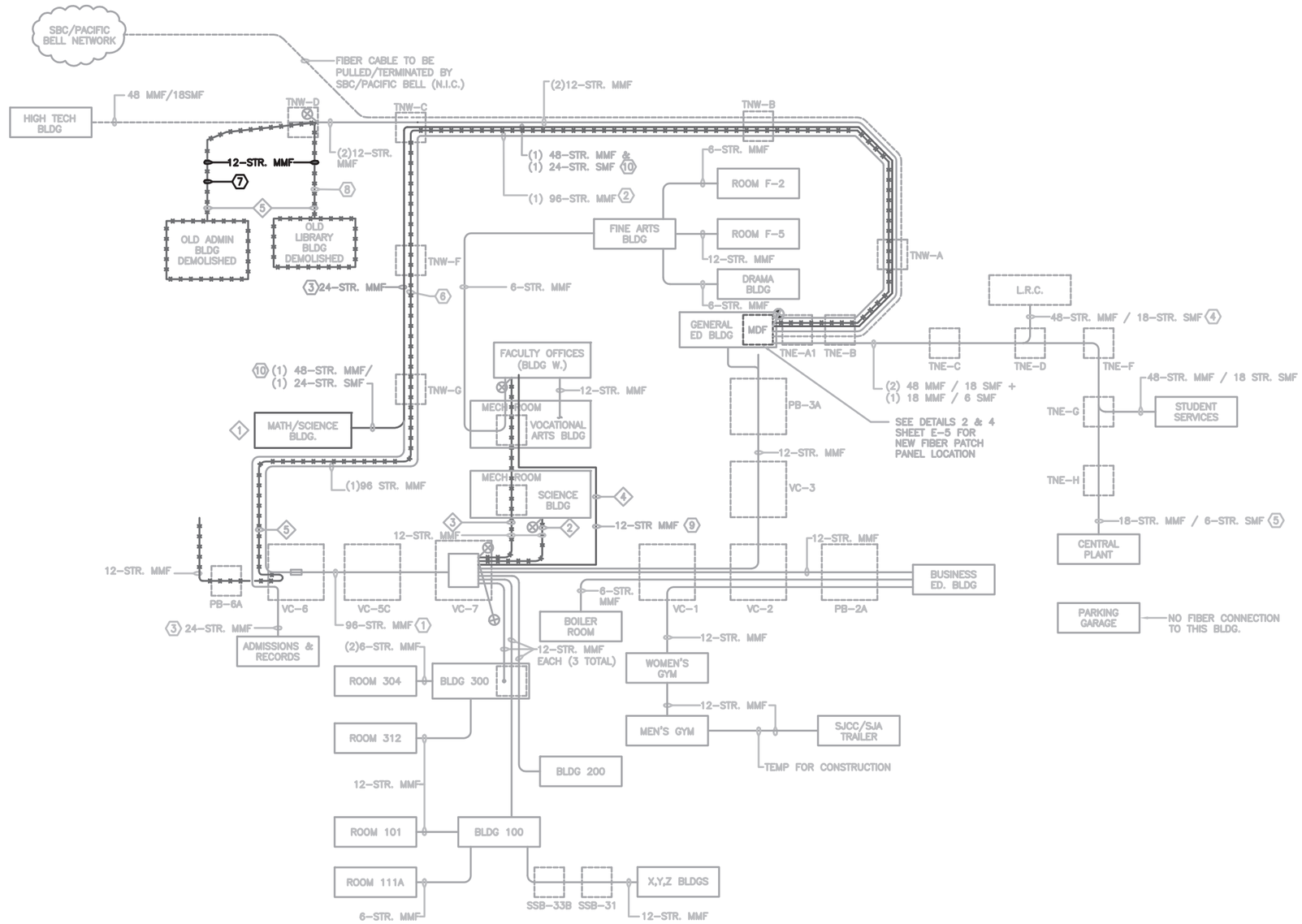

FIBER CABLE PLANT

TELECOMMUNICATIONS CONDUIT, COPPER, + FIBER LAYOUTS

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V. SANITARY SEWER + STORM DRAINAGE

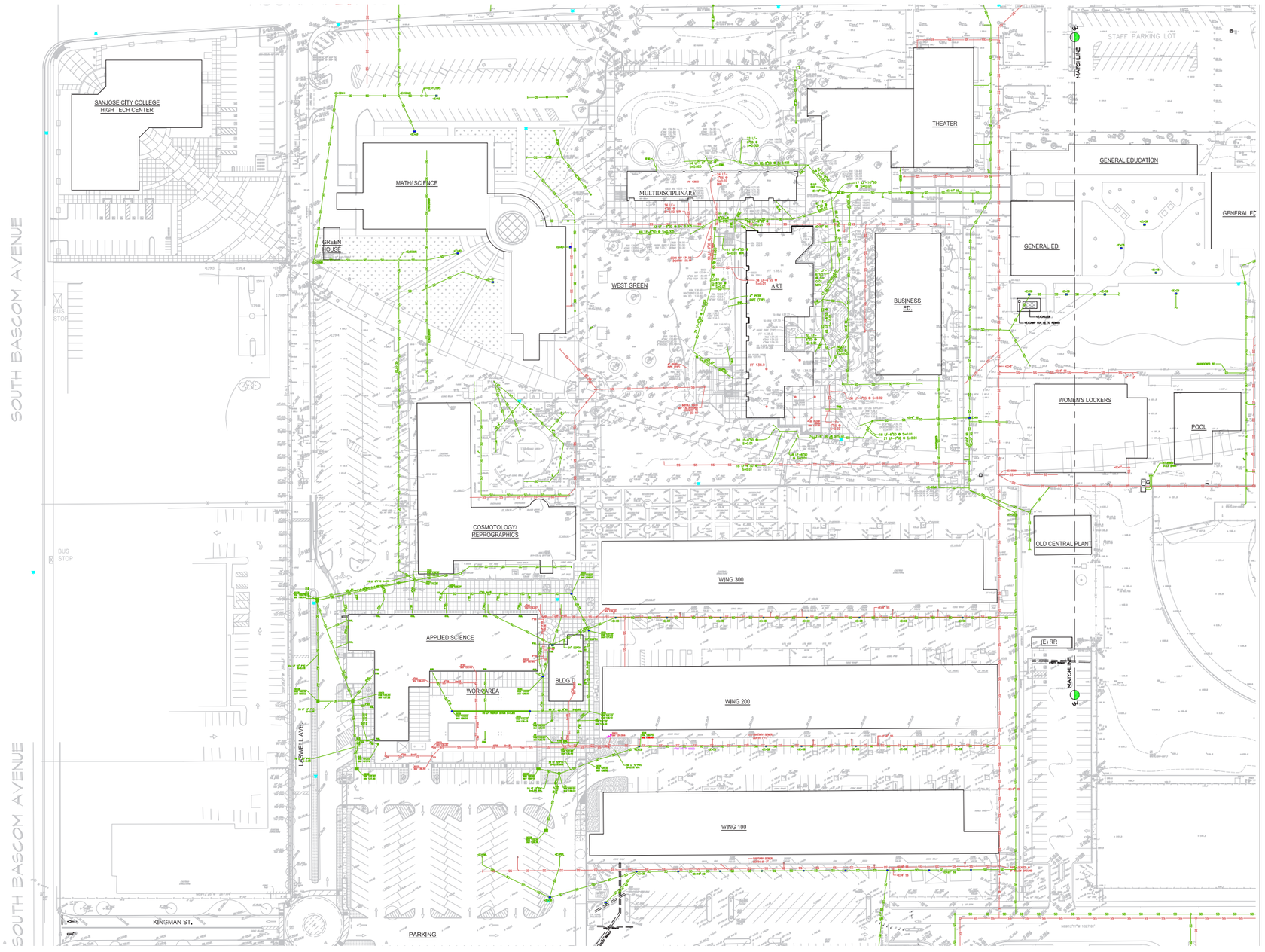
SANITARY SEWER

San Jose City College existing sanitary sewer system is situated in the corridor between east and west campus (between the General Education Building and the Business Building. It is an 8” pipe that extends from the SE corner of Building 100 up to Moorpark, connecting at an existing manhole in the street. For buildings designated for the South campus, services must be routed to the closest manhole located in the service road intersection (between the Girl’s Gym and the Old Central Plant) For Buildings Designated for North Campus, connections can be made in several locations based on existing installation or can be routed to Moorpark Avenue.

STORM DRAIN

San Jose City College existing storm drain is situated in three locations. The first two (2) are located in the corridor between east and west campus (between the General Education Building and the Business Building. The third is on the West side of the Science Complex building. They are 15”, 20”, and 20”, respectively.

For buildings designated for the South campus, services can be routed in a number of ways. There are existing smaller services (12” and smaller) that can be utilized depending on the building footprint. The most direct connections can be made to the manholes located in the service road intersection (between the Girl’s Gym and the Old Central Plant) and the manhole near the service road south of the Old Central Plant Building. For Buildings Designated for North Campus, connections can be made in several locations based on existing installation or can be routed to Moorpark Avenue.



SITE UTILITIES AS-BUILT WITH MANHOLES + INVERTS

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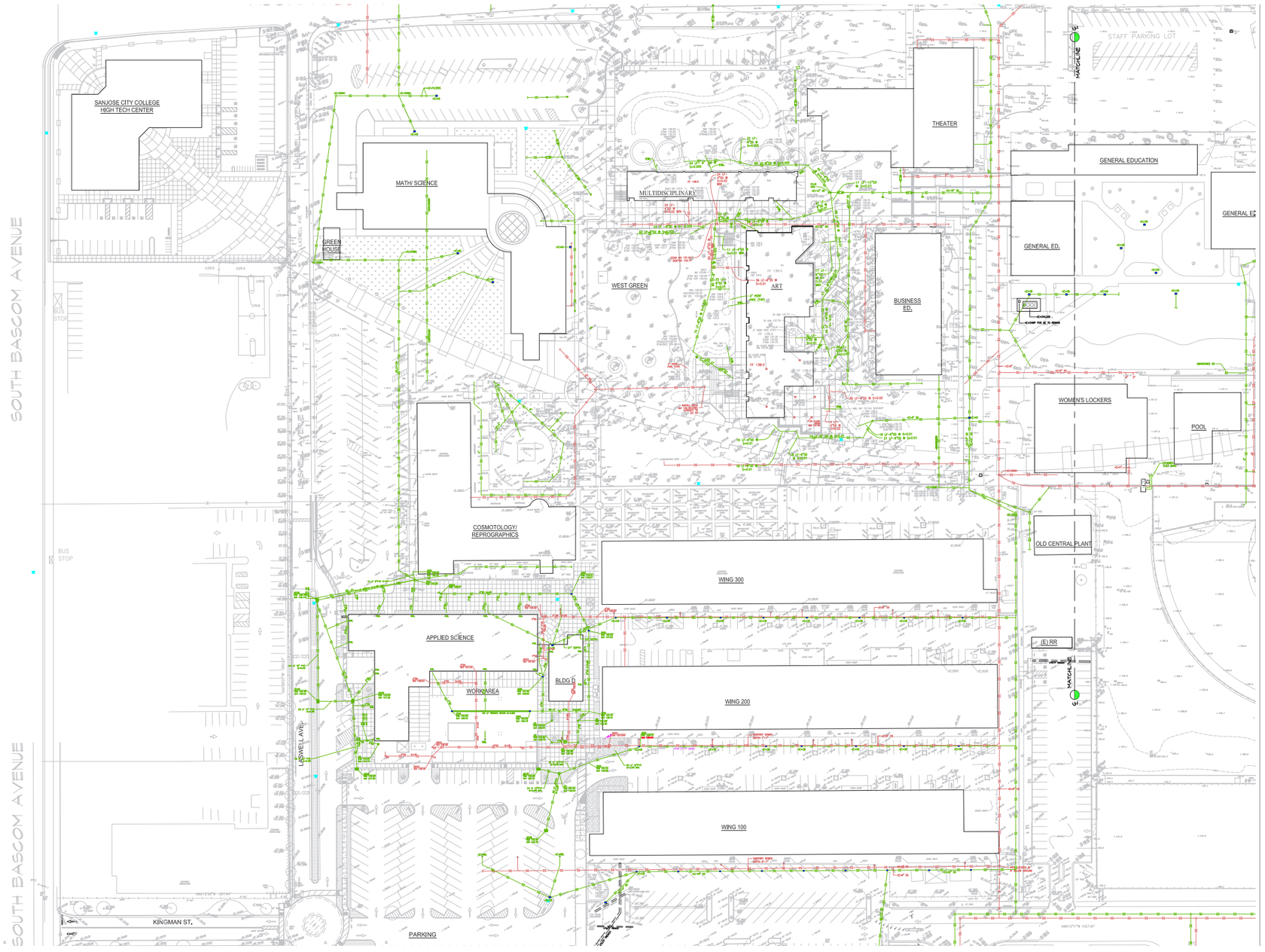

SITE UTILITIES AS-BUILT WITH MANHOLES + INVERTS

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PART B

HARDSCAPE MASTER PLAN

San José City College is comprised of a network of formal pedestrian ways and minor walks which have been defined by hardscape type. Campus major walks have been designated thematically and will be reinforced in the future. A well-designed hierarchy of walks, plazas, and hard surface areas enriches the campus environment, improves visual quality, supports wayfinding, and reinforces the importance of the pedestrian.

GOALS

- Define the pedestrian system and establish a hierarchy of paths, entries and plazas.
- Use a consistent pattern of materials.
- Minimize use of petroleum based products and products requiring high energy consumption.

IMPLEMENTATION

CONCRETE PAVING

- Use concrete in lieu of asphaltic concrete, as appropriate, for service areas that need to withstand heavy vehicle loads.
- Design concrete pavement in accordance with recommendations set forth in the geotechnical report and functional requirements.
- For areas which function as a vehicular roadway, pedestrian walk, and plaza area, consider the use of concrete paving to distinguish the area as a unified public space.
- All concrete edges not adjacent to structure or buildings shall have a minimum 1/2” radius on all corners.
- All sawcuts to be a minimum 1/8” wide x 1” depth, and locations should be noted on concrete drawings.
- Apply thickened edge on walks that double as vehicular access ways along turf and shrub areas.

MODULAR PAVING

- Select a method of installation based on site specific conditions, anticipated uses, and the demands of vehicle weight loads.
- Install modular pavers over a pervious material where possible.
- Use simple edge restraints where modular paving meets adjacent soil.
- Incorporate concrete interlocking pavers or stone pavers in monochromatic colors, rectangular forms, and with slip-resistant surfaces.
- Incorporate pavers with appropriate sizes and scale based on landscape context and project goals.
- Determine thickness of pavers based on functional requirements and material strength.
- In general, configure pavers in a pattern perpendicular to the direction of travel.
- Stamped or formed concrete that looks like modular or brick paving is not acceptable.

ASPHALT PAVING

- The use of asphaltic concrete for pedestrian paths and interior vehicular roads should be discouraged.
- Asphalt is appropriate for jogging or bike paths in the athletic zones.

PART C

HARDSCAPE ELEMENTS

I. ROADS

- The roads throughout San Jose City College should provide clear and safe access around the campus and into parking lots and garages.
- With the goal of ensuring that vehicular traffic is intuitive, roads, parking, and entry points shall be clearly identified and reinforced with landscape, signage, and site amenities.
- Roads may be constructed of asphalt.
- Crosswalks shall be raised or clearly identified with pavers or decorative concrete.
- The intent of the Master Plan is to create a logical loop road that will link all parking areas and allow for vehicular travel through the perimeter of the entire campus. This road will be clearly labelled and entries and exits shall provide safe and clear transitions to busy roads surrounding the campus.
- The campus entrance from Moorpark Avenue is prominent and should include a vehicular drop-off and widened entry point.
- Entries and major vehicular routes shall include planted medians. These medians shall include accent planting and be a minimum of 4-feet wide.

II. SERVICE PATHS

- Restrict vehicular access to service paths (review location of accessible and service paths for vehicles on campus).
- Path width for service vehicles shall be a minimum of 8 feet.
- Areas with restricted access shall be designated with bollards or an automated bar. Service access shall be limited to certain routes through the campus and vehicular traffic on pedestrian pathways shall be limited.
- Fire truck access shall be maintained with lock-boxes at locked entry points or with removable bollards.

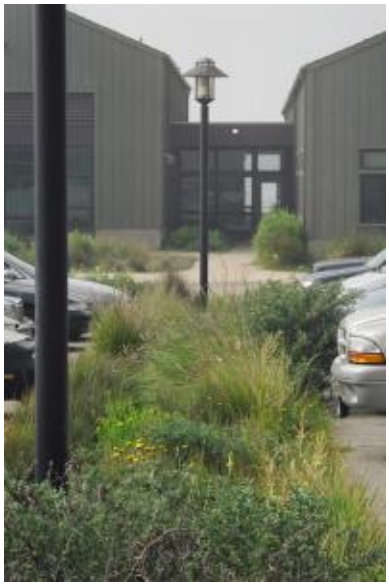
III. PARKING AREAS

Parking areas shall first and foremost provide safe parking areas with clear visibility and visual access to campus entries and pedestrian walkways. Campus parking areas also present an opportunity to further reinforce the campus' sustainable approach to design. Sustainable opportunities include the use of permeable paving, integrated stormwater run-off and bio-swales, maximum tree cover to minimize heat island effects, and integration of photovoltaic canopy covered parking.

LANDSCAPE

- Parking areas may include bio-swales to integrate stormwater run-off. Planter width shall be a minimum of 4 feet wide to accommodate this planting.
- Landscaped areas shall not obscure traffic signs or fire hydrants, or obstruct visibility across the parking area and driveway entrances.
- Parking lots should be planted with a minimum of one tree per six stalls.
- Landscape shall reinforce the clear visibility of vehicular and pedestrian entries and shall not obscure any views or lighting fixtures.
- A mix of evergreen and deciduous large canopy trees shall be planted in parking areas. Trees shall be pruned up to 7 feet to provide clear visual and pedestrian access.
- Groundcover plantings shall be lower than 18 inches to maximize visibility.
- Landscape islands shall incorporate raised curbs with inlets for stormwater; planting selections should be selected for this condition.

III. PARKING AREAS



PAVING MATERIALS

- Parking areas shall be asphalt pavement designed in accordance with recommendations set forth in the geotechnical report and anticipated vehicle loading.
- Permeable pavers and pervious concrete may be used when the site conditions and budget permit. This allows for infiltration of site water and minimizes run-off into storm drains.
- Concrete selections shall be reflective and meet the SRI reflectivity of 29 to minimize heat islands.

DRAINAGE

- Site drainage shall be directed into planted bio-swales where appropriate to minimize run-off to storm drains and meet CalGreen stormwater guidelines.

STRIPING AND SIGNAGE

- Striping and signage shall be installed to ensure vehicle and pedestrian safety and conform with ADA codes.
- Signage shall be installed to reinforce a clear understanding of campus orientation and guide students safely to the central campus.

IV. PEDESTRIAN PROMENADE

The Pedestrian Promenade defines the primary pedestrian route through the campus, connects with all the secondary pedestrian pathways, and assists in wayfinding and student orientation throughout the campus. The promenade is 30' wide. Paving consists of a series of dark concrete bands with pockets for seating along the path.

V. PEDESTRIAN SPINES

The pedestrian spines branch off from the Pedestrian Promenade. Centrally located north-south routes connect the promenade to the central campus and surrounding vehicular entry points defining the campus core. These paths are a minimum of 10-12' wide. The paths act as edges to major open spaces and present opportunities to create specialty gardens and outdoor plazas along them. These spines will reinforce campus circulation as well as define these informal gathering spaces en route. These primary circulation routes should be reinforced through the use of distinctive paving.

VI. PEDESTRIAN ENTRIES

Pedestrian entry points to the campus from the surrounding access areas shall be reinforced with paving and shall clearly define the entry to campus. Path width should be a minimum of 10 feet.

VII. INFORMAL PATHS

Buildings may require additional informal access points. Materials may vary for this application and may include standard grey concrete paths, permeable concrete pavers, or flagstone pathways for occasional use. The use of decomposed granite is not recommended.

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PART D

HARDSCAPE PALETTE

I. GENERAL GUIDELINES

Consistent paving materials should be used throughout campus, although additional decorative and colored concrete elements can help define special spaces, such as plazas and entries, and enhance the unique character of each space. Select decorative paving elements or decorative scoring can be employed at building entries. Avoid large expanses of empty paving and use of asphalt; however, where there are large expanses of concrete, incorporate well-placed large canopy trees to minimize heat island effect.

Campus hardscape should incorporate sustainable practices whenever conditions allow. Run-off should be diverted from paving into landscaped areas, concrete should have an SRI (Solar Reflectance Index) value of 29 or greater, and permeable paving and pavers should be utilized in parking areas and at new building installations where surface conditions support their use.

II. CONCRETE PAVING

- Where possible, concrete with an SRI (Solar Reflectance Index) of 29 or greater shall be installed. These highly reflective concrete colors meet LEED criteria for minimizing heat islands.
- Natural grey concrete with a lamp black additive may also be used when installing pathways and small plazas. Specialty paving, decorative scoring, and special finishes should be limited to building entries and plazas.
- The Pedestrian Promenade shall incorporate a dark colored band with a salt finish and shall match the existing pattern.
- Finishes may include a medium broom and medium sandblast finish in general use areas.

	CONCRETE PAVING	COLOR	FINISH	LOCATION
NATURAL		Natural Grey with glare-reducing agent (Lamp Black)	Medium Sandblast Medium Broom Finish	Accent for: • Walkways, curbs, ramps • Small and informal plazas
INTEGRALLY COLORED		Davis Cobblestone C-15 [SRI 45]	Medium Sandblast Medium Broom Finish Heavy Sandblast	Accent for: • Pedestrian Spines • Pathway nodes • Plazas • Entries
		Davis Color "Graphite" C-24 [SRI 12]	Salt Finish	Accent for: • Pedestrian Promenade

*SRI = Solar Reflectance Index

III. PAVING FINISHES

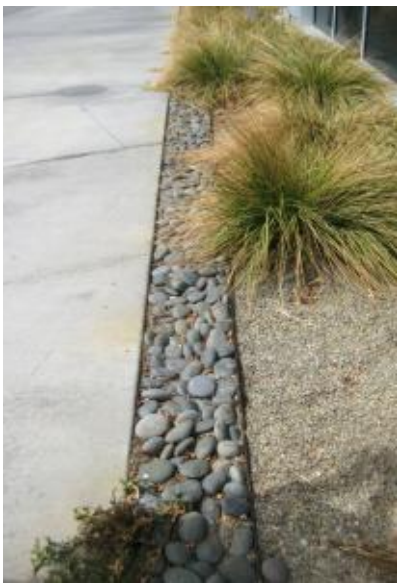
1. Salt finish charcoal paving in Pedestrian Promenade
2. Decorative or detailed paving in plazas and at building entries
3. Permeable concrete unit pavers where appropriate
4. Decorative concrete banding at Pedestrian Promenade
5. Application of specialty elements in standard grey concrete to define entries

IV. PAVING TYPES

CONCRETE PAVERS

Concrete paver units may be used selectively as a decorative accent at main campus and building entries, the pedestrian spine, and in small plaza applications. These pavers may break up large concrete expanses and help to define individual spaces.

- Manuf: Acker-stone
- Model: Unit Paver
- Size: Traditional (6”x12”) or Linear (4”x16” or 4”x20”)
- Notes: Color and finish to be consistant with campus standard concrete palette of grey tones.



COBBLE BANDING

Cobble banding shall be installed 18” minimum width surrounding all new buildings to allow for drainage, support building maintenance, and prevent irrigation water from damaging buildings and windows. Cobble mulch may also be used to allow for stormwater infiltration.

- Model: Mexican Beach Pebble
- Size: 1/2”-2”
- Color: Black

PERMEABLE PAVERS

Permeable concrete pavers may be installed in areas where the subsurface drainage conditions will support their use. Permeable pavers are an excellent solution for allowing site water to infiltrate without the use of storm basins.

- Manuf: SF Concrete Technology Inc.
- Model: SF Rima Paver
- Notes: Color and finish to be consistant with campus standard concrete palette of grey tones.

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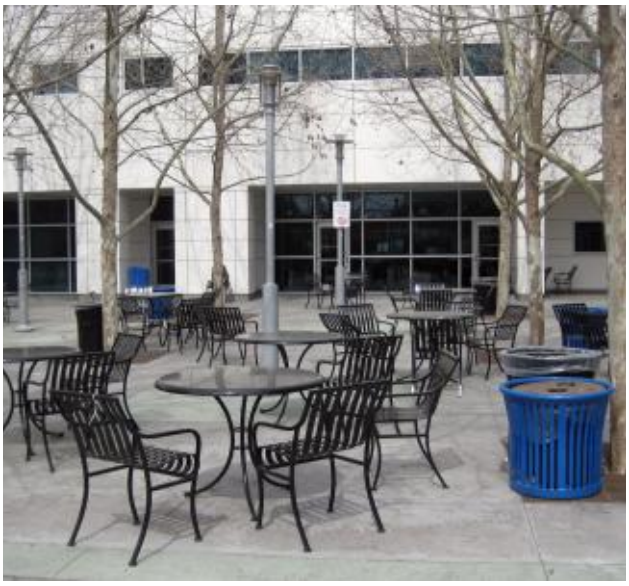
PART E

SITE FURNISHINGS

I. GENERAL GUIDELINES



Site furnishing selections should reinforce the character of a particular area of campus and the campus identity as a whole. Selections should be easy to maintain. To facilitate maintenance, extra paint or finish material shall be supplied for all furnishings. Maintenance of tree grates includes removal of metal pieces as necessary to allow for tree growth. With the exception of special areas where they can be secured or removed at night, benches and chairs should be fixed to the ground or be too heavy to be moved.

II. SITE FURNISHINGS PALETTE

CAMPUS BENCH

Use along pedestrian spines and along plazas and pathways.

- Manuf: Keystone Ridge Designs
- Model: Exeter (EX28)
- Size: 8' long
- Color: Black
- Mount: In ground
- Note: Backless option also available

PEDESTRIAN PROMENADE BENCH

Use in small alcoves along Pedestrian Promenade.

- Manuf: Belson Outdoors
- Model: Modern Series Ribbed Steel, Backless
- Size: 33"Wx18"H, 4' or 6' L
- Color: Black
- Finish: 2-7/8" O.D. Powder-coated
- Mount: In ground
- Note: #11 gauge ribbed plasma cut steel seat

CONCRETE BENCH

Use at plazas, courtyards, and along minor pedestrian paths.

- Manuf: Landscape Forms
- Model: ABRIL
- Size: 117" long
- Color: Grey
- Finish: Concrete
- Mount: Free standing

SEATING AND TABLES, MOVEABLE

Moveable seating and tables may be used where they can be secured or removed at night. Areas for campus dining are the most appropriate application. In small courtyards or plazas, fixed tables would be a more appropriate solution. Where painted selections are used, black should be specified.

- Manuf: Keystone Ridge Designs
- Model: Courtyard Table Set (CY6)
- Color: Black
- Finish: Powder coat finish
- Mount: Free standing
- Note: Round top table with standard base, chairs with arms

SEATING AND TABLES, FIXED

Fixed and concrete tables.

II. SITE FURNISHINGS PALETTE (CONTINUED)

BUS SHELTERS

Bus shelters shall be located along major pedestrian spines and will provide a safe, comfortable, and covered area.

Shelters shall reflect the campus architecture and be uniform in design.

- Manuf: Landscape Forms
- Model: Kaleidoscope
- Color: Black
- Finish: Solid canopy panels with standard powder coat
- Note: Model with 2 posts, straight, offset canopy with presideo seating.

DRINKING FOUNTAINS

- Manuf: Haws Corporation
- Model: 3380GFR
- Size: ADA compliant
- Material: Galvanized steel pedestal with stainless steel receptor
- Finish: Galvanized Steel

TRASH AND LITTER RECEPTACLES

Trash containers shall be durable with removable liners. Finishes shall be graffiti resistant and washable. Receptacles will be located at building entrances, main pedestrian corridors and campus entries from parking areas.

- Manuf: Keystone Ridge Designs
- Model: Harmony III
- Size: 32 gallon
- Color: Green
- Mount: Freestanding

RECYCLING RECEPTACLES

Recycling containers shall be durable with removable liners. Finishes shall be graffiti resistant and washable. Receptacles will be located at building entrances, main pedestrian corridors and campus entries from parking areas.

- Manuf: Keystone Ridge Designs
- Model: Harmony III
- Size: 32 gallon
- Color: Black
- Mount: Freestanding

II. SITE FURNISHINGS PALETTE (CONTINUED)

REMOVABLE BOLLARDS

Bollards should serve to restrict vehicular access along pedestrian paths. Bollard location shall be at intersections of vehicular and pedestrian routes and shall be painted black. Removable bollards may be used where occasional vehicular or cart traffic occurs.

- Manuf: Fairweather
- Model: B-4A with lock well cover
- Material: 5” Sch. 10 steel
- Color: Tiger Drylac series 39 – 80010 (black)
- Finish: Powdercoating

LIGHTED BOLLARDS

Lighted bollards shall be located to denote a special entry or gathering space for nighttime use. Entries and pathways leading to plazas may be accented with lighted bollards. Fixtures should be easily replaced and vandal resistant. Finishes shall be durable and weather resistant. See lighting section for manufacturer and model information.

SAFETY BOLLARDS

Emergency bollards shall be located at major intersections where fire access routes have been established. They shall be clearly labelled and distinguished from protective or decorative bollards. All bollard placement shall be reviewed with the local fire department and equipped for emergency access.

TREE GRATES

- Manuf: Ironsmith
- Model: Market Street 1/2" Squares to meet ADA requirements with removeable sections for tree growth
- Size: 60" Square
- Finish: Cast Iron
- Note: Remove metal pieces to allow for tree growth

DRAINAGE GRATES

- Manuf: Urban Accessories
- Model: Standard ADA Style
- Size: As needed
- Finish: Cast Iron

II. SITE FURNISHINGS PALETTE (CONTINUED)

BICYCLE PARKING

Bicycle parking shall be installed at the entries to all new and existing buildings. Where new buildings are being erected, the parking shall be installed as part of the site landscape and shall be fixed. Free standing bicycle parking may be added to existing buildings. Parking should be located near the entry but should not interfere with pedestrian access or campus landscaping.

BICYCLE POSTS

- Manuf: Keystone Ridge Designs, Inc.
- Model: Bike Posts W/0, 1, or 2 loops
- Color: Black

DESIGN FOR SKATEBOARDS

Design for skateboards should be integrated into the hardscape through design details such as chamfered edges and seams in poured concrete walls. Secondary installation of skateguards should be avoided.

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PART F

SITE ENCLOSURES

ENCLOSURES

Outdoor service equipment, generators, and trash cans shall be screened with utility enclosures. These enclosures shall be easily accessible to facility staff while keeping out others for safety reasons. They shall be well designed to integrate with the campus architecture as well as the identity of each building. Enclosures should screen the structures visually and moderate any noise.

WALL ENCLOSURES

Wall enclosures should reflect the character of the discipline housed in the specific building as well as serving the purpose of screening and separating spaces. In this instance recycled campus timber was used as a design element that is sustainable and low maintenance.

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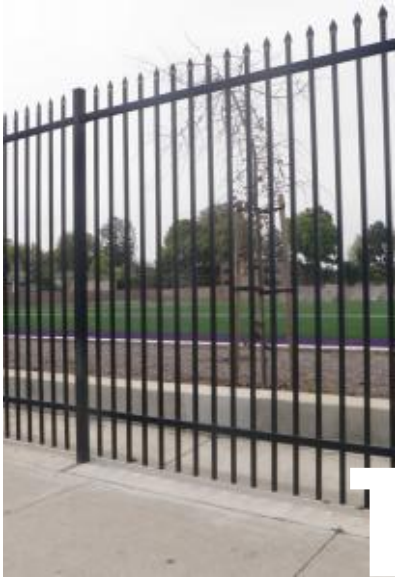
PART G

FENCING, GATES, + SCREENING



PERIMETER FENCE

A consistent unified fence shall be installed at the perimeter of the campus. This fence shall be located at the edges to all campus areas and will reinforce a safe identity as well as an improved curb-appeal for neighbors and nearby businesses.
Entries will be gated and will allow for emergency vehicular access.

- Manuf: Ameristar
- Model: Aegis II
- Size: 8’ tall
- Color: Black
- Finish: High Gloss
- Mounting: Per. Mfg.

ENTRY FENCE

A decorative fence should be installed along the campus frontage on Moorpark Avenue to promote the campus identity as well as reinforce a unified and safe identity for visitors.

This fence shall be designed in collaboration with the campus signage and will be 4’-6’ tall with decorative metal features.

ATHLETIC FENCE

Athletic areas shall be fenced with a 10’-12’ tall hot-dipped (black) chain link fence.

Where athletic areas interface with the campus perimeter, an additional 8’ tall perimeter fence will be added.

- Size: 10’ -12’
- Color: Black
- Finish: Hot Dipped

PART H

LANDSCAPE CORRIDOR MASTER PLAN

GOALS:

- Establish strong identities at the corners of Bascom/Moorpark and Moorpark/Leigh Avenues.
- Facilitate wayfinding and circulation by defining campus edges, entries, and pathways.
- Reinforce and emphasize entry points from Leigh, Moorpark, and South Bascom Avenues.
- Identify entries and circulation routes with structured plantings and accent landscapes.
- Establish a hierarchy of spaces throughout the campus.
- Complete the Pedestrian Promenade planning and connect this route through the campus.
- Clearly define primary and secondary pedestrian routes through campus.
- Evaluate and enhance existing plantings, including memorial and heritage trees.
- Visually and physically link the campus core with the athletic fields and program.
- Evaluate the existing tree and shrub plantings and continue to develop plantings that maintain visibility and create a safe, secure, and welcoming campus.
- Provide a visual and ecological connection to the immediate and Northern California context.
- Combine naturalistic informal elements with more structured architectural and formal spaces.
- Provide variations on horizontal plane with varied topography.
- Establish standards for sustainable landscape selections and materials.
- Provide consistent and unified fencing around the perimeter of the campus to reinforce the relationship with the community and provide a safe campus.

PART J

LANDSCAPE ELEMENTS

CAMPUS ENTRIES

Pedestrian and vehicular entry points to the campus from the surrounding access areas shall be clearly defined. Entries should be reinforced with designated paving, accent plantings, specific tree species, and lighting. Appropriate signage is necessary to indicate entrances and to direct people into the campus. Entrances also reinforce the campus' presence and its identity to the surrounding community.

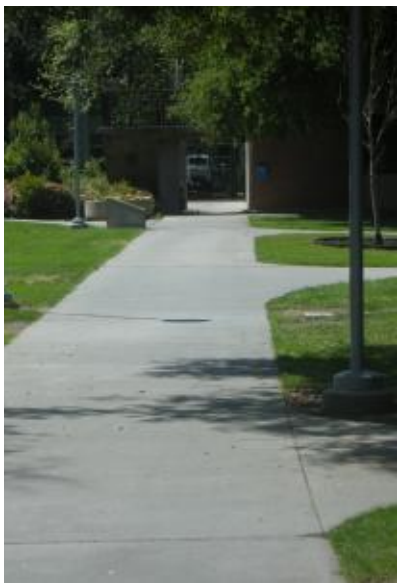
LOOP ROADS AND INNER CAMPUS STREETS

The 2025 Facilities Master Plan creates a logical loop road that will link all parking areas and allow for vehicular travel through the perimeter of the entire campus. The inner-campus roads should provide clear and safe access around the campus and into parking lots and garages. This plan will also provide safe and clear transitions to surrounding busy roads. With the goal of ensuring that vehicular traffic is intuitive, roads, parking, and entry points will be clearly identified and reinforced with planting, hardscape, signage, and site amenities.

PEDESTRIAN PROMENADE

The pedestrian promenade defines the primary pedestrian route across the campus, connects with all the secondary pedestrian pathways, and assists in wayfinding and orientation throughout the campus. Paving consists of a series of dark concrete bands with pockets for seating along the path. Ginkgo trees line both sides of the path with an under-planting of Japanese Blood Grass. The trees and planting are unique to the pedestrian promenade, distinguishing it from other campus zones.

PEDESTRIAN SPINES



Pedestrian spines branch off from the pedestrian promenade. Centrally located north-south routes connect the promenade to central campus and surrounding vehicular entry points defining the campus core. The paths act as edges to major open spaces and present opportunities to create specialty gardens and outdoor plazas along them. These pedestrian corridors should be reinforced through the use of strong plantings, allées of trees, decorative paving, signage, and lighting.

PARKING LOTS

Campus parking lots will first and foremost provide safe parking with clear visibility and visual access to campus entries and pedestrian walkways. Campus parking lots also present an opportunity to further reinforce the campus' sustainable approach to design. Opportunities for sustainable stormwater management include the use of permeable paving and bioswales where appropriate. A minimum tree cover of one tree with a large canopy per six stalls will minimize heat island effects.

DROP-OFF AREAS

There is a demand for increased drop-off areas on campus. For efficient campus circulation, designated drop-off zones need to be clearly identified to encourage use. They should be characterized by specific lighting, special paving, a consistent tree species, accent plantings, site amenities such as trash cans and benches, and, if along a bus route, a bus shelter. Location and identification of these zones on campus should be prominent and intuitive.

QUADS AND PLAZAS

Quads and plazas are the spaces between buildings on campus. These places provides opportunities for passage, gathering, and respite. For quads and plazas to serve these purposes, they must first be safe spaces: there should be high levels of visibility and the spaces should be well lit after dark. Additionally, the more people that are drawn to them the safer they will be, so they should include appealing amenities and attractive plantings. Quads and plazas can be planted with water-conserving grass and large trees for shade.

COURTYARDS

Small courtyards are pedestrian-scale outdoor spaces which accommodate minimum levels of users and are generally found immediately adjacent to buildings. Small courtyards are typically used for seating and small-scale gatherings at the entry and exit routes to buildings. The landscape selections will emphasize the building entry points and reinforce the individual and unique identity of the adjacent building discipline.

PART K

IRRIGATION DESIGN

EXISTING CONDITIONS

The campus currently uses domestic water from the City of San Jose Water Service for irrigation. The campus irrigation is mostly new with some basic uniform materials and updated controllers in place. The campus needs a long term plan for mainline location, to minimize water consumption and allow for minimal maintenance. The focus of new work should be low maintenance and minimal water consumption.

DESIGN INTENT

The general goal for irrigation guidelines on campus is to increase efficiency in order to reduce water consumption as much as possible. Irrigation systems shall be designed per campus standards for equipment and installation. The irrigation systems and plans shall be designed to meet the requirements of the State of California Assembly Bill AB 1881, the City of San Jose Model Water Efficient Landscape Ordinance and the San Jose Water Service irrigation system design and water conservation standards for all domestic water or recycled water used for irrigation.

Individual irrigation systems around campus shall be designed to water the entire landscaped area within that area in one evening between the hours of 10pm and 8am.

Irrigation systems and irrigation water connections are not to be cross connected with campus buildings, restrooms, or drinking fountains under any circumstances. Connections shall be connected to the main campus irrigaiton piping system designated for irrigation use only. No irrigation connections shall be made to the potable water system which serves buildings, restrooms, or drinking fountains.

Irrigatiion lines and valves shall be installed using reclaimed piping (purple pipe) in the case that the campus moves towards using recycled water in the future.

I. IRRIGATION STANDARDS

1. GENERAL DESIGN STANDARDS

A. Irrigation plans shall be designed using AutoCAD with the current release.
B. Irrigation plans shall include the plan, the equipment legend, installation notes, and construction details for each major component, and construction specifications in the current version of Microsoft “Word”, 8-1/2 x 11 format.
C. Irrigation systems shall be designed per the campus standards for equipment and installation. Refer to the “Irrigation Standard Equipment List”.
D. Individual irrigation systems around the campus shall be designed to water the entire landscaped area within that area in one evening between the hours of 10 pm and 8 am.
E. Irrigation systems and plans shall be designed to meet the requirement of the State of California Assembly Bill AB 1881 and the Model Water Efficient Landscape Ordinance (MWELO) of the City of San Jose.

2. CAMPUS IRRIGATION SYSTEM

A. The campus currently uses domestic water from the City of San Jose Water Service for irrigation.
B. The campus uses a piping system throughout the campus for the main campus irrigation with the following attributes:
   - The piping is designated for irrigation use only.
   - Water pressure in this piping exceeds 130 psi.
   - Backflow prevention for the irrigation main line piping exists at the point of connection on Leigh Ave., Moorpark Ave., or Bascom Ave.
C. As of the date of this document, there are no plans for recycled water use at the campus (Campus to confirm if future connection is in planning).
D. Obtain and follow the campus standards and guidelines, the City of San Jose Model Water Efficient Landscape Ordinance, and the San Jose Water Service irrigation system design and water conservation standards for all domestic water or recycled water used for irrigation.
E. Irrigation systems and irrigation water connections are not to be cross connected with campus buildings, restrooms, or drinking fountains under any circumstance.
F. Connections shall be connected to the main campus irrigation piping system designated for irrigation use only.
G. No irrigation connections shall be made to the potable water system which serves buildings, restrooms, or drinking fountains.

I. IRRIGATION STANDARDS (CONTINUED)

3. IRRIGATION SYSTEM POINT OF CONNECTION

A. Design and connect to the irrigation distribution main line piping located on the campus as directed by the campus maintenance division.
B. Backflow prevention shall not be required when an irrigation connection is made to the irrigation distribution main line pipe which is protected by a backflow device.
C. Design and install the designated standard campus pressure reducing valve per the campus standards for material and installation at each irrigation point of connection.

4. PRESSURE REDUCING VALVE

A. Design and install the designated standard campus valve per the campus standards for material and installation at irrigation points of connection where pressure will be too high for the irrigation system to function properly.
B. The spring range of the pressure reducing valve is predicated on the irrigation system calculations at the time of the design.
C. Construction: brass or bronze
D. Connection:
   - 3” and smaller: FIPT threaded connections
   - 4” and larger: flanged connections
E. Spring range: per the design calculations.

5. MASTER VALVE

A. Design and install the designated standard campus master valve per the campus standards for material and installation.
B. Construction: brass
C. Configuration: globe pattern, normally open, pressure regulating
D. Shut-off valve:
   - 3” and smaller: design and install an upstream union and shut-off ball valve.
   - 4” and larger: design and install an upstream shut-off valve.
E. Connection:
   - 3” and smaller: fipt threaded connections
   - 4” and larger: flanged connections
F. Size per maximum flow of entire system.
G. Control wire: low voltage wire shall be awg #14 wire per the irrigation specification.
H. Conduit: install low voltage wire in pvc electrical conduit from master valve to the designated satellite controller pedestal.
I. Provide the following note on drawing:
   - Install one 2” dia. electrical conduit (with pull boxes and sweep ells) for the master valve and the flow sensor wiring. Pull wire from controller pedestal to the master valve/flow sensor assembly in the conduit. Low voltage wire shall be wire per the irrigation specification.

6. FLOW SENSOR

A. Design and install the designated standard campus flow sensor per the campus standards for material and installation.
B. Do not use a flow sensor assembly with a solvent welded tee for 3” and larger piping.
C. Do not install a threaded flow sensor (Badger Meter 228b) into a standard threaded tee. The sensor will not adjust properly.
D. Control wire: low voltage wire shall be sensor cable specifically for use with the Rainmaster “Evolution” satellite controller per the irrigation specification. Splices are to be kept to a minimum. Do not extend wire longer than 2000 feet.
E. Conduit: install low voltage sensor wire in pvc electrical conduit from flow sensor to satellite controller pedestal.
F. Note: Rainmaster “Evolution” specifications state that it is permissible to install master valve and flow sensor wire in the same conduit.
G. Size sensor for a minimum flow of 1 fps and a maximum flow of 10 fps. Note: some sensors will provide data at 1/2 fps.
H. Size sensor piping smaller than the main line pipe diameter to achieve 1 fps minimum. Velocity may exceed 5 fps but must not exceed 10 fps, this is permissible for the short run through the master valve and flow sensor. Use brass piping if velocity exceeds 5 fps.
I. Provide the following note on drawing:
   - Install one 2” dia. electrical conduit (with pull boxes and sweep ells) for the master valve and the flow sensor wiring. Pull wire from controller pedestal to the master valve/flow sensor assembly in the conduit. Low voltage wire shall be wire per the irrigation specification.

I. IRRIGATION STANDARDS (CONTINUED)

7. MAIN LINE PIPE

A. Design and install the designated standard campus pipe per the campus standards for material and installation.

B. 1.5 inch and smaller pipe:
- Pipe: solvent welded pvc pipe
- Pipe joints: pipe sections shall be assembled with integral bell at end of pipe using solvent weld cement and primer.
- Fittings: schedule 80 pvc solvent welded fittings for changes in direction, branch main line pipe, or valves.

C. 2 inch and larger:
- Pipe: gasketed pvc pipe
- Pipe joints: pipe sections shall be assembled with integral bell at end of pipe using the rubber gasket and lubricant.
- Fittings: ductile iron fittings with rubber gasketed connections for changes in direction, branch main line pipe, or valves. Use a ductile iron service tee or a saddle connection to main line for remote control, air and vacuum, quick coupling valves and main line branches 1.5” and smaller.
- Install joint restraints to restrain pipe movement.

D. Cover: Under planted areas: 24”; Under fire lanes and pavements: 36”

E. Connections between main line pipe and valves shall be:
- Constructed with threaded connections
- Constructed with schedule 80 pvc (tbe) nipples and fittings.

F. Keep main line surges to within 67% of the pipes pressure rating, working pressure + surge. Use check valves on long main lines to break up the surge distance.

8. GATE VALVE, MAIN LINE SHUT-OFF

A. Design and install the designated standard campus gate valve per the campus standards for material and installation to shut down sections of main line pipe for repair.
B. Construction: brass, bronze, or cast iron globe valve
C. Connection:
   - 2.5” and smaller: threaded connections
   - 3.0” and larger: push-on gasketed connections and square nut.
D. Operation handle:
   - 2.5” and smaller: hand wheel
   - 3.0” and larger: square nut

9. QUICK COUPLING VALVE

A. Design and install the designated standard campus valve and box per the campus standards for material and installation.
B. Construction:
   - Two piece body
   - Red brass or bronze
   - Threaded connections
   - Thermoplastic cover marked “do not drink” in English and Spanish

10. AIR AND VACUUM RELIEF VALVE

A. Design and install the designated standard campus valve per the campus standards for material and installation.
B. Construction:
   - Brass or bronze
   - Threaded connections

11. REMOTE CONTROL VALVE

A. Design and install the designated standard campus valve and box per the campus standards for material and installation.
B. Valve:
   - Construction: brass or bronze
   - Solenoid controlled
   - Pressure regulated
   - Size as follows:
     I. 3/4” dia.: not used
     II. 1.0” dia.: 1-25 gpm
     III. 1.5” dia.: 26-60 gpm
     IV. 2.0” dia.: 61-120 gpm
     V. 2.5” dia.: 121-180 gpm
C. Design and install unions at the inlet and outlet end of the remote control valve.
D. Design and install one shut-off valve and union upstream of the valve inlet to shut down the remote control valve for service.

I. IRRIGATION STANDARDS (CONTINUED)

12. VALVE IDENTIFICATION TAGS

A. Design and install the designated standard campus valve identification tags per the campus standards for material and installation.
B. Identification tag: show controller letter and station number

13. VALVE BOXES

A. Material: plastic
B. Box and lid color:
   - Potable water: standard black box and lid
   - Recycled water: standard black box and lid with recycled water use nameplate attached to lid.
C. Brick supports: common red brick
D. Base material under valve/sensor/or splice (all boxes typical): pea gravel for drainage
E. Master valve:
   - Configuration: rectangular, jumbo size
   - Brick support: four totals, placed at each corner and under box base.
   - Lock: single bolt, threaded
F. Flow sensor:
   - Configuration: rectangular, standard size
   - Brick support: four total, placed at each corner and under box base.
   - Lock: single bolt, threaded
G. Gate valve:
   - Configuration: round, 10” diameter
   - Brick support: two total, 180 degrees apart, placed under box base.
   - Lock: single bolt, threaded
H. Quick coupling valve:
   - Configuration: round, 10” diameter
   - Brick support: two total, 180 degrees apart, placed under box base.
   - Lock: single bolt, threaded
I. Air and vacuum relief valve:
   - Configuration: round, 10” diameter
   - Brick support: two total, 180 degrees apart, placed under box base.
   - Lock: single bolt, threaded
J. Remote control valve:
   - Configuration: rectangular, standard size
   - Brick support: four total, placed at each corner and under box base.
   - Lock: single bolt, threaded
K. Splice/pull box for low voltage wire:
   - Configuration: rectangular, standard size
   - Brick support: four total, placed at each corner and under box base.
   - Lock: single bolt, threaded

14. LOW VOLTAGE CONTROL WIRE, 24 VOLT AC

A. Design and install the designated standard campus wire per the campus standards for material and installation.
B. Type: standard irrigation single conductor wire, AWG-UF (American wire gauge-underground feeder).
C. Size:
   - Control wire: 14 AWG up to 2500 feet, 12 AWG beyond 2500 feet.
   - Common wire: 12 AWG wire.
D. Jacket colors as follows:
   - Control: red
   - Common: white
   - Spare: yellow
   - Master valve:
     - Control: blue
     - Common: black
   - Flow sensor: Rainmaster “Evolution” cable

15. WIRE SPLICES

A. Install the designated standard campus low voltage splice kit per the campus standards for material and installation.
B. Install at all wire splices and stubbed wire.

16. LATERAL LINE PIPE

A. Design and install the designated standard campus pipe per the campus standards for material and installation.
B. Pipe: solvent welded pvc pipe.
C. Pipe joints: pipe sections shall be assembled with integral bell at end of pipe using solvent weld cement and primer.
D. Fittings: pvc solvent welded fittings for changes in direction, branch lateral line pipe, or irrigation heads.
E. Cover: 12”
F. Connections between lateral line pipe and irrigation heads with threaded connections shall be made with pvc (tbe) nipples and fittings.

I. IRRIGATION STANDARDS (CONTINUED)

17. POP-UP ROTOR HEAD – TURF ZONES

A. Design and install the designated standard campus rotor head per the campus standards for material and installation.
B. Construction: plastic
C. Pop-up height: 6”
D. Connection: fipt female threads
E. Swing joint: triple swing joint
F. Distance from paved surface: 12”

18. POP-UP ROTOR HEAD – SHRUB ZONES

A. Design and install the designated standard campus rotor head per the campus standards for material and installation.
B. Construction: plastic
C. Pop-up height: 12”
D. Connection: fipt female threads
E. Swing joint: preassembled triple swing joint
F. Distance from non-permeable surface: 24”

19. POP-UP SPRAY HEAD – TURF ZONES

A. Design and install the designated standard campus spray head per the campus standards for material and installation.
B. Construction: plastic
C. Pop-up height: 6”
D. Connection: fipt female threads
E. Swing joint: preassembled triple swing joint
F. Distance from non-permeable surface: 24”

20. POP-UP SPRAY HEAD – SHRUB ZONES

A. Design and install the designated standard campus spray head per the campus standards for material and installation.
B. Construction: plastic
C. Pop-up height: 12”
D. Connection: fipt female threads
E. Swing joint: preassembled triple swing joint
F. Distance from non-permeable surface: 24”

21. SHRUB BUBBLER – SINGLE PLANTS

A. Design and install the designated standard campus bubbler head per the campus standards for material and installation.
B. Construction: plastic
C. Quantity per shrub: 1 total
D. Connection: fipt female threads
E. Swing joint: flexible pvc
F. Location: nursery container rootball

22. TREE BUBBLER – SHRUB ZONES

A. Design and install the designated standard campus bubbler head per the campus standards for material and installation.
B. Construction: plastic, including 4” dia. Perforated tube, bubbler, swing joint, cover, and filter fabric.
C. Quantity per tree: 2 total
D. Connection: fipt female threads
E. Swing joint: vendor supplied
F. Location: adjacent to nursery container rootball

23. SWING JOINT

A. Design and install the designated standard campus bubbler head per the campus standards for material and installation.
B. Construction: plastic, including joint fittings, rubber o-rings, and swing joint connection to pipe and head.
C. Size: equal to sprinkler inlet size.

24. SATELLITE CONTROLLER

A. Design and install the designated standard campus satellite controller assembly per the campus standards for material and installation.
B. Install Ethernet cable in conduit from the source point and to the controller. Use 1" pvc schedule 40 conduit with rectangular pull boxes every 200 feet.
C. Use the following standard "Greentech" specification numbers for Rainmaster "Evolution" satellite controllers for specification (in order of specification)
   - Model:SA6-RM9-XX/PMR-CAC
   - Enclosure: stainless steel, flip top
   - Number of stations: 6,12, 18, 24, 36, & 48
   - Communication option: Ethernet
   - Controllers that are wire linkable for hardwire or sharing communication option with controllers: SA6-RM6-XX/PMR-CAC

25. SATELLITE CONTROLLER ENCLOSURE

A. Design and install the designated standard campus satellite controller assembly per the campus standards for material and installation.
B. Use Rainmaster "Evolution" stainless steel enclosure with the following configuration:
   - Flip top
   - Stainless steel pre-drilled removable backboard
   - Vendor pre-wired terminal interface board with labels that clearly indicate the points of connection for all wiring such as master valve, flow sensor, pump start, station valves, common ground, and other specified sensors.
   - Ground rod with clamp
   - UL listed
   - Electrical junction box with on/off switch and a duplex 120 vac receptacle with GFI protection.

26. WEATHER CENTER

A. The weather center exists on the campus at the _____. Refer to the campus master plan.

II. IRRIGATION STANDARD EQUIPMENT LIST

1. PRESSURE REGULATING VALVE (WHERE SPECIFIED OR NEEDED)

A. Manufacturer: Wilkins or approved equal
B. Material: Cast iron, brass, or bronze
C. Model:
- 2” and smaller model no.: 600L (threaded connections)
- 2.5” or 3” model no.: 500FC (flanged connections)
- 4” and larger: (flanged) (per project requirements)

2. MASTER CONTROL VALVE

A. Manufacturer: Superior
B. Material: Brass
C. Configuration: globe valve, normally open
D. Connections: FIPT threaded
E. Model: 1”-3”, Superior 3100 series
F. Recycled water use: add RW to part number
G. Pressure regulating: add PRS to part number

3. FLOW SENSOR

A. Manufacturer: Rainmaster FS series (Badger) meter flow sensor
B. Conduit for sensor wire: Schedule 40 PVC electrical, 1.25” dia., controller to sensor.
C. Valve model: FS series specifically for use with the Rainmaster “Evolution” satellite controller. Refer to Greentech (vendor) for further information and part number.
D. Sensor cable from controller to sensor: Rainmaster sensor cable, model EV-CAB-SEN.

4. MAIN LINE PIPE

A. Manufacturer: PW pipe; JM Eagle, or approved equal
B. 1.5” and smaller:
- Material: 1120-Schedule 40 PVC
- Connections: bell end, solvent weld

C. 2” and larger:
- Material: 1120-Class 315 PVC
- Connections: bell end, push-on gasketed with joint restraints

D. Recycled water use: purple color pipe with recycled water use warnings stenciled on pipe.

5. MAIN LINE FITTINGS

A. 1.5” and smaller:
- Manufacturer: Lasco, Dura, or approved equal
- Material; Schedule 80 PVC
- Connections: socket, solvent welded; threaded, as required.

B. 2” and larger:
- Manufacturer: Harco
- Material: Ductile iron, epoxy coated, for changes in direction or branch main line pipe.
- Connections: push-on, deep bell, gasketed

6. JOINT RESTRAINTS ON 2" AND LARGER MAIN LINE PIPE

A. Manufacturer: Harco, or approved equal
B. Material:
   - Grip rings: cast iron
   - Restraint rods, bolts, and nuts: low alloy steel conforming to AWWA/ANSI C111/A21.11.

7. SADDLE ON MAIN LINE PIPE (WHERE SPECIFIED)

A. Manufacturer: Harco, Romac, or approved equal
B. Material:
   - Saddle: ductile iron epoxy coated conforming to ASTM A536
   - Gasket: virgin sbr rubber gasket conforming to ASTM F477
   - Strap: stainless steel conforming to ASTM A240.
   - Stainless steel strap, bolts, nuts, washers: stainless steel conforming to ASTM A240.

8. LATERAL LINE PIPE

A. Manufacturer: PW pipe; JM Eagle, or approved equal
B. Pipe: 1120-schedule 40 PVC
C. Connection: bell end, solvent weld
D. Recycled water use: purple color pipe with recycled water use warnings stenciled on pipe.

9. LATERAL LINE FITTINGS

A. Manufacturer: Lasco, Dura, or approved equal
B. Material: Schedule 80 PVC
C. Connection: socket, solvent welded; threaded, as required.

10. SLEEVES

A. Manufacturer: PW pipe; JM Eagle pipe or approved equal
B. Pipe: 1120-schedule 40 PVC, 3" dia. minimum size
C. Connection: bell end, solvent weld
D. Recycled water use: purple color pipe with recycled water use warnings stenciled on pipe.

11. ELECTRICAL CONDUIT FOR LOW VOLTAGE WIRE

A. Manufacturer: Cantex, JM Eagle or approved equal
B. Conduit: Schedule 40 PVC, 3" dia. minimum size, with sweep elbows
C. Connection: bell end, solvent weld
D. Color: gray

II. IRRIGATION STANDARD EQUIPMENT LIST (CONTINUED)

12. ISOLATION VALVE, MAIN LINE SHUT-OFF

A. 3.0" and larger:
- Manufacturer: Nibco
- Material: iron
- Model: F-619-RW with 2" square nut
- Description:
  - 250 psi/17.2 bar non-shock cold working pressure
  - Maximum operating temperature of 160ºF/71ºC
  - Non-rising stem
  - Bolted bonnet
  - Resilient wedge
  - Fusion bonded epoxy coated body (NSF and FDA certified)
  - Conforms to AWWA C509
  - Size range 2" to 16"
- Configuration: gate valve with square nut operation
- Connection: flanged

B. 2.5" and smaller:
- Manufacturer: Aqua Valve
- Material: brass
- Model: 603
- Configuration: ball valve, full port, with handle
- Connection: FIPT threaded

13. REMOTE CONTROL VALVE, 1"- 3"

A. Manufacturer: Griswold
B. Material: brass
C. Model: DWS.IB
D. Configuration: configuration: normally closed, pressure regulating, globe valve with integral ball valve and union
E. Connection: FIPT threaded
F. Recycled water use: add "-R" to part number

14. EMITTER CONTROL VALVE, 1" OR 1.5"

A. Manufacturer: Rain Bird
B. Material: plastic
C. Model: XCZ-100-PRB-COM, 1", 3-20 gpm
D. Model: XCZ-150-PRB-COM, 1.5", 15-40 gpm
E. Configuration: configuration: normally closed, pressure regulating, globe valve with integral ball valve
F. Connection: FIPT threaded
G. Recycled water use: add "-R" to part number

15. QUICK COUPLING VALVE

A. Manufacturer: Rain Bird
B. Material: brass
C. Size: 3/4"
D. Model: 33DNP
E. Connection: FIPT threaded
F. Recycled water use: purple color cover with recycled water use warnings stenciled on cover.

16. AIR AND VACUUM VALVE

A. Manufacturer: Bermad
B. Material: plastic
C. Size: 2”
D. Model: 02-ARC-P
E. Connection: FIPT threaded

17. CONTROLLER

A. Manufacturer: Rainmaster
B. Vendor: John Deere Greentech
C. Controller model: “Evolution” DX2 series satellite controller
D. Communication option: radio

18. CONTROLLER ENCLOSURE

A. Manufacturer: VIT Products
B. Vendor: John Deere Greentech
C. Enclosure model: flip top stainless steel pedestal mount enclosure

19. HAND HELD REMOTE

A. Manufacturer: Rainmaster
B. Vendor: John Deere Greentech
C. Model: Pro Max with controller access code (CAC)

20. VALVE BOXES

A. Manufacturer: Rain Bird
B. Material: Plastic
C. Model: VB series, black body and lid
D. Master control valve box
   - Model: rectangular VB-JMBBKL, 12 inches deep, bolt lockable
E. Flow senor valve box
   - Model: rectangular VB-STDBKL, 12 inches deep, bolt lockable
F. Remote control valve box
   - Model: rectangular VB-STDBKL, 12 inches deep, bolt lockable
G. Quick coupling valve box
   - Model: round VB-10RND, 12 inches deep, bolt lockable
H. Air and vacuum valve box
   - Model: rectangular VB-STDBKL, 12 inches deep, bolt lockable
I. Wire splice box
   - Model: rectangular VB-STDBKL, 12 inches deep, bolt lockable
J. Provide the following to all boxes:
   - Locking system: Rain Bird VB-LOCK-H hex head bolt locking system
   - Recycled water use tag (attach to valve box lids): Christy #3800 recycled water valve box nameplate with rivets.

II. IRRIGATION STANDARD EQUIPMENT LIST (CONTINUED)

21. VALVE TAGS

A. Remote control valve ID tag (attached to valve):
   - Manufacturer: Christy
   - Color/configuration: yellow, single sided marking
   - Part no.: ID.STD.Y1

B. Recycled water use tag (attached to valve):
   - Manufacturer: Christy
   - Color/configuration: Purple color tag with recycled water use warnings stenciled on both sides of tag.
   - Part no.: ID-MAX-P2-RC007

22. LOW VOLTAGE WIRE

A. Manufacturer: Paige Electric, Regency, or approved equal
B. Type: single conductor, copper, type UF, UL listed for direct burial
C. Color coded as follows:
   - Control wire: #14-AWG-UF, red or black insulation
   - Common wire: #12-AWG-UF, white insulation
   - Spare wire: #14-AWG-UF, an insulation color other than red or black

23. WIRE SPLICES

A. Manufacturer: 3M
B. Part no.: DBR/Y-6

24. POP-UP ROTOR HEAD – TURF ZONES

A. Manufacturer: Hunter
B. Model: I20-04-SS and nozzle
C. Construction: plastic with stainless steel riser
D. Pop-up height: 4”
E. Connection: FIPT female threads
F. Swing joint: Lasco, Dura, or Rain Bird
G. Recycled water use: add “-R” to part number

25. POP-UP ROTOR HEAD – SHRUB ZONES

A. Manufacturer: Hunter
B. Model: I20-12 and nozzle
C. Construction: plastic with plastic riser
D. Pop-up height: 12”
E. Connection: FIPT female threads
F. Swing joint: Lasco, Dura, or Rain Bird
G. Recycled water use: add “-R” to part number

26. POP-UP SPRAY HEAD – TURF ZONES

A. Manufacturer: Toro
B. Model: 570Z-6P-PRX-COM with Toro precision series spray nozzles
C. Construction: plastic
D. Pop-up height: 6”
E. Connection: FIPT female threads, bottom inlet
F. Swing joint: Schedule 80 PVC threaded fittings and nipples
G. Recycled water use: add “-E” to part number

27. POP-UP SPRAY HEAD – SHRUB ZONES

A. Manufacturer: Toro
B. Model: 570Z-12P-PRX-com with Toro precision series spray nozzles
C. Construction: plastic
D. Pop-up height: 12”
E. Connection: FIPT female threads, bottom inlet
F. Swing joint: Schedule 80 PVC threaded fittings and nipples
G. Recycled water use: add “-E” to part number

28. SHRUB BUBBLER, SINGLE PLANT

A. Manufacturer: Rain Bird
B. Model: 1401, 0.25 GPM, pressure compensating
C. Construction: plastic
D. Connection: FIPT female threads
E. Riser: Salco IPS flexible PVC hose and Schedule 40 PVC fittings

29. TREE BUBBLER – SHRUB ZONES

A. Manufacturer: Rain Bird
B. Model: RWS-B-C-1402/RWS-SOCK, 0.5 GPM
C. Construction: plastic, including 4” dia. Perforated tube, bubbler, swing joint, cover, and filter fabric.
D. Connection: FIPT female threads
E. Swing joint: vendor supplied

Two required per tree

30. EMITTER SYSTEMS

F. Manufacturer: Rain Bird
G. Model: XFS subsurface dripline and accessories

31. SWING JOINT

A. Manufacturer: Rain Bird
B. Construction: plastic, including joint fittings, rubber o-rings, and swing joint connection to pipe and head.
C. Size: equal to sprinkler or valve inlet size.

PART L
PLANT PALETTE

EXISTING PLANTING

The physical campus has changed dramatically over the past fifteen years. Originally a traditional campus, it was surrounded by a dense evergreen barrier on all sides and planted with a mix of deciduous and evergreen trees that are now approaching maturity. The campus has always prioritized preserving and protecting these heritage trees while simultaneously planting and replacing trees for future generations of students. In recent years, as sustainability has become a collective goal, the campus has focused on plantings that require minimal maintenance and conserve resources. Minimizing turf use, favoring water conserving and native plantings, and introducing bio-retention areas for site stormwater infiltration have become standard practices on campus.

DESIGN INTENT

The San José City College campus is located in San Jose's urban core and is subject to extremely hot summers. Enhancing the campus with additonal tree cover, a mixture of drought tolerant and low maintanance shrubs, and simple groundcovers will be a campus priority. Landscape improvements should strive to support circulation and wayfinding on the campus; in addition, strong design statements such as the Ginkgo-lined Pedestrian Promenade should continue to be priorites in the campus development.

Sustainability is a campus goal; therefore, creating landscapes that diminish heat islands, provide cooling outdoor atmospheres, and conserve water is a priority. As additional buildings develop on the campus, integrated use of best management practices for stormwater will be incorporated, particularly the concept of allowing stormwater to infiltrate the landscape. Allowing roof run-off to naturally percolate into bioswales is a practice that has been implemented on campus and should become a standard.

The campus' outdoor spaces provide an exciting opportunity to connect the curriculum with the environment in a direct way. By using native plants and tying educational program into site design, curricula such as biology, geology, engineering, and ecology can become a hands-on educational experience.

SAFETY

According to the 2012 SJECCD Security Master Plan, there are several measures that need to be taken to increase safety on the campus. Naturally low-growing shrubs should be used to enhance each area and to decrease the need for continuous pruning, but should generally not be allowed to exceed 24 inches in height. Trees should be pruned so as to prevent branches and leaves from directly obscuring light sources as well as from indirectly obscuring light sources from the line of site of pedestrian walkways. Trees and tall shrubs should be pruned to open a clear line of site between the ground and the underside of branches. Typically, branches should be pruned to clear a minimum of 6 feet above the ground. Trees and shrubs adjacent to buildings should be pruned approximately two to three feet away from the structure to allow a clear line of site between the foliage and the building.

MAINTENANCE

Maintenance is essential to the long-term sucess of all campus plantings. Plantings should be selected that require minimal maintenance; annuals and perennials that require ongoing maintenence and intensive fertilization or care should be discouraged. Ongoing maintenence invloves coordination with and continuing eduction of the campus maintenance staff. Maintence demands are reduced by allowing mass plantings to grow in their natural form rather than be pruned or boxed into shapes. The arborist report by HortScience, Inc. dated ___ 2013 provides direction for immediate and long-term tree care. The use of mulch aids in weed supression and moisture retention around plantings. Rubberized mulch in areas with high pedestrian traffic will resist deterioration and minimize weed growth.

GINKGO BILOBA

CARPINUS BETULUS 'FASTIGIATA'

FAGUS SYLVATICA

LAURUS NOBILIS 'SARATOGA'

TILIA CORDATA

I. TREE LIST

	BOTANICAL NAME	COMMON NAME	REMARKS
PEDESTRIAN PROMENADE	Ginkgo biloba	Maidenhair Tree	Do not specify female
PEDESTRIAN SPINES	Carpinus betulus 'Fastigiata'	Pyramidal European Hornbeam	
	Fagus sylvatica 'Dawyck Purple'	Purple Beech	
	Laurus nobilis 'Saratoga'	Sweet Bay	Performs well
	Tilia cordata	Little-Leaf Linden	

DESIGN INTENT

Tree selection in pedestrian corridors responds to the scale of the space and contributes to campus wayfinding and character. For instance, the use of Ginkgo biloba exclusively for the pedestrian promenade allows for immediate identification of that particular corridor. When fully grown, these trees also provide shade in the hot San Jose climate. The use of medium scale, upright, and columnar tree species along the pedestrian spines enhance campus identity and hierarchy of circulation through campus.

LAGERSTROEMIA INDICA

PISTACIA CHINENSIS

PRUNUS CERASIFERA 'KRAUTER VESUVIUS'

PRUNUS CALLERYANA 'ARISTOCRAT'

I. TREE LIST (CONTINUED)

	BOTANICAL NAME	COMMON NAME	REMARKS
ENTRIES	Lagerstroemia indica	Crape Myrtle	Use caution in selecting species, some susceptible to powdery mildew
	Pistacia chinensis	Chinese Pistache	Performs well
	Prunus cerasifera 'Krauter Vesuvius'	Purple Leaf Plum	
	Pyrus calleryana 'Aristocrat'	Aristocrat Pear	'Chanticleer' is more columnar in form

DESIGN INTENT

Campus entry trees provide a visual indication of where to enter and exit the campus. Selections should have striking leaf color, dramatic form, or colorful flower display and should be medium in scale. They must have a high impact as they set the character for the campus by being one of the first things people see.


ACER PALMATUM


CERCIS CANADENSIS


CORNUS KOUSA


PRUNUS X YEDOENSIS 'AKEBONO'

I. TREE LIST (CONTINUED)

	BOTANICAL NAME	COMMON NAME	REMARKS
SMALL SCALE AND COURTYARD TREES	Acer palmatum	Japanese Maple	Mound planting, moist well-drained soil, eastern exposure
	Arbutus 'Marina'	NCN	
	Cercis canadensis	Eastern Redbud	May require more water than Western Redbud
	Cornus kousa	Kousa Dogwood	
	Prunus x yedoensis 'Akebono'	Akebono Yoshino Cherry	

DESIGN INTENT

Courtyard trees are meant enhance the character of specific smaller and more intimate spaces. The canopies provide a 'roof' to these outdoor rooms while trunks provide architectural structure. The plantings can be unique to the building(s) they abut and can also provide educational space appropriate for the building discipline(s). Courtyard trees can add to the quality of a space by including flowering or dramatically colored accent trees.

ARBUTUS MARINA

CERCIS OCCIDENTALIS

LOPHOSTEMON CONFERTUS

LYONOTHAMNUS FLORIBUNDUS

PLATANUS ACERFOLIA 'COLUMBIA'

I. TREE LIST (CONTINUED)

	BOTANICAL NAME	COMMON NAME	REMARKS
TREES FOR BIO-SWALES AND PARKING LOTS	Arbutus marina	NCN	
	Cercis occidentalis	Western Redbud	
	Lophostemon confertus	Brisbane Box	Also referred to as Tristania conferta
	Lyonothamnus floribundus	Catalina Ironwood	May be used as replacement for redwoods
	Platanus acerfolia 'Columbia'	London Plane Tree	

DESIGN INTENT

Trees for bioswales and parking lots must be adapted to occasional inundation in water and must be resilient to the pollutants that come from stormwater runoff of parking lots. These trees also serve a key role in providing shade in parking lots, mitigating the heat island effect of asphalt surfaces.


ANIGOZANTHOS HYBRIDS


LEONOTIS LEONURUS


PHORMIUM TENAX SPP.


PUNICA GRANATUM


YUCCA SPP.

II. SHRUBS & PERENNIALS LIST

	BOTANICAL NAME	COMMON NAME	REMARKS
ENTRY AND ACCENT PLANTINGS	Anigozanthos hybrids	Kangaroo Paw	
	Dietes bicolor	Fortnight Lily	
	Leonotis leonurus	Lion's Tail	
	Pennisetum rubrum	Purple Fountain Grass	
	Phormium tenax spp.	New Zealand Flax	
	Punica granatum 'Nana'	Dwarf Pomegranate	
	Salvia leucantha	Mexican Bush Sage	
	Yucca spp.	Spanish Dagger	

GREWIA OCCIDENTALIS

HEMEROCALLIS HYBRIDS

LOROPETALUM CHINENSE

ROSA 'FLOWER CARPET'

II. SHRUBS & PERENNIALS LIST (CONTINUED)

	BOTANICAL NAME	COMMON NAME	REMARKS
MEDIAN PLANTINGS	Cistus spp.	Rockrose	
	Dietes bicolor	Fortnight Lily	
	Grewia occidentalis	Lavender Starflower	
	Grevillea rosmarinifolia	Rosemary Grevillea	
	Hemerocallis hybrids	Day Lily	
	Lantana hybrids	Lantana	
	Loropetalum chinense 'Plum Delight'	Loropetalum	Shade only
	Rosa 'Flower Carpet'	Carpet Rose	
	Trachelospermum jasminoides	Star Jasmine	

NOTE: All shrub selections for medians should be low growing to allow for visual clearance at entries. Plant combinations should be selected for year round interest and color display.

CEONOTHUS GRISEUS HORIZONTALIS

MAHONIA REPENS

MYOPORUM PARVIFOLIUM 'PROSTRATUM'

ROSMARINUS OFFICINALIS 'PROSTRATUS'

II. SHRUBS & PERENNIALS LIST (CONTINUED)

	BOTANICAL NAME	COMMON NAME	REMARKS
GROUND-COVER SHRUBS	Ceanothus griseus horizontalis	Ceanothus	
	Grewia occidentalis	Lavender Starflower	
	Mahonia repens	Creeping Mahonia	Also known as Berberis
	Myoporum parvifolium 'Prostratum'	Myoporum	
	Rosmarinus officinalis 'Prostratus'	Creeping Rosemary	
	Trachelospermum jasminoides	Star Jasmine	

ARCTOSTAPHYLOS SPP.

CEANOTHUS 'JOYCE COULTER'

RIBES VIBURNIFOLIUM

SALVIA CLEVELANDII

II. SHRUBS & PERENNIALS LIST (CONTINUED)

	BOTANICAL NAME	COMMON NAME	REMARKS
NATIVE PLANTINGS	Arctostaphylos spp.	Manzanita	
	Ceanothus 'Joyce Coulter'	Wild Lilac	
	Mahonia repens	Creeping Mahonia	Also known as Berberis
	Prunus ilicifolia	Holly Leaf Cherry	
	Ribes viburnifolium	Evergreen Currant	
	Salvia clevelandii	Cleveland Sage	


FRAGARIA CHILOENSIS


LEYMUS CONDENSATUS 'CANYON PRINCE'


MUHLENBERGIA RIGENS


ROSA CALIFORNICA

II. SHRUBS & PERENNIALS LIST (CONTINUED)

	BOTANICAL NAME	COMMON NAME	REMARKS
BIOSWALE PLANTINGS	Achillea millefolium	Yarrow	
	Carex divulsa	Berkeley Sedge	
	Carex praegracilis	Clustered Field Sedge	
	Fragaria chiloensis	Beach Strawberry	
	Leymus condensatus 'Canyon Prince'	Canyon Prince Wild Rye	
	Muhlenbergia rigens	Deer Grass	
	Rosa californica	California Rose	
	Salvia spathacea	Hummingbird Sage	

IMPERATA CYLINDRICA 'RUBRA'

MELICA IMPERFECTA

ROSA 'CECIL BRUNNER'

VITIS CALIFORNICA 'ROGER'S RED'

III. GRASSES & VINES

	BOTANICAL NAME	COMMON NAME	REMARKS
GRASSES	Calamagrostis x acutiflora 'Karl Foerster'	Feather Reed Grass	
	Carex praegracilis	Clustered Field Sedge	
	Elymus glaucus 'Canyon Prince'	Blue Wild Rye	
	Festuca californica	California Fescue	
	Festuca ovina glauca	Sheep's Fescue	
	Imperata cylindrica 'Rubra'	Japanese Bloodgrass	Main Pedestrian Promenade Only
	Melica imperfecta	California Melic	
	Muhlenbergia rigens	Deer Grass	
VINES	Clematis armandii	Evergreen Clematis	
	Rosa 'Cecil Brunner'	Cecil Brunner Rose	
	Vitis californica 'Roger's Red'	California Wild Grape	


RUBBER MULCH


NATURAL MULCH


STONE

IV. MULCH

Rubber mulch is intended in areas next to pedestrian corridors to withstand deterioration from foot traffic.

- Manuf: Rubber Bark
- Model: Landscape Rubber Mulch
- Size: Standard
- Color: Chocolate Brown
- Finish: Standard
- Mounting: See specifications

Natural mulch is intended for areas with restricted pedestrian access and serves the purpose of weed supression as well as contributing to the overall aesthtics of the campus planting areas.

- Model: Composted Wood Mulch
- Size: 1/2”-3/4”
- Color: Naturally Dyed Dark Brown

Areas of stone mulch facilitate stormwater infiltration into the ground.

- Model: Mexican Beach Pebble
- Size: 1/2”-2”
- Color: Black

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END OF SECTION 3 - SAN JOSÉ CITY COLLEGE

4 SIGNAGE + WAYFINDING GUIDELINES

INTRODUCTION

A comprehensive wayfinding program will provide a positive user experience on the two San José • Evergreen Community College District (SJECCD) campuses. From the edges and entries of the campus, to the paths and places, a successful wayfinding and identity system enables visitors, students, and faculty to navigate their way through campus streets and sidewalks to their desired destination. The campus-specific Signage + Wayfinding guidelines take into consideration existing and future campus conditions to create an uniquely branded and functional solution.

WAYFINDING OBJECTIVES

Four overall design objectives have been identified for wayfinding at the two San Jose Evergreen Community College District campuses.

1. Establish design guidelines for permanent exterior signage
    - Campus entries & parking identification
    - Vehicular & pedestrian wayfinding
    - Pedestrian direction & information signs
2. Develop a functional & visually cohesive sign system
    - Consistent color, typography, and graphic elements
    - Clear nomenclature message hierarchy
    - Reinforce the college brand identity
3. Deliver an executable sign system
    - Cost effective & maintainable
    - Ease of fabrication & installation
    - Ease of changeability
    - Durable materials
4. Provide an integrated sign system
    - Cohesive with master plan vision
    - Works with existing & new building conditions
    - Integrates with landscape & lighting
    - Addresses sign code requirements

DESIGN APPROACH

A kit-of-parts approach base on the following will insure a consistent wayfinding system throughout the SJECCD campuses while providing a unique brand look & feel for each.

1. Materials
    - Utilize materials that are unique to each college environment
2. Form
    - Provide continuity of the physical sign elements
3. Brand
    - Treat brand elements for each college consistently
4. Typography
    - Use one typeface for all wayfinding information
5. Color
    - Use college brand colors as accents
    - Sign panel colors to be the same for each campus
6. Nomenclature & Symbols
    - Establish guidelines for the consistent uses of messages
    - Provide a selection of universal symbols

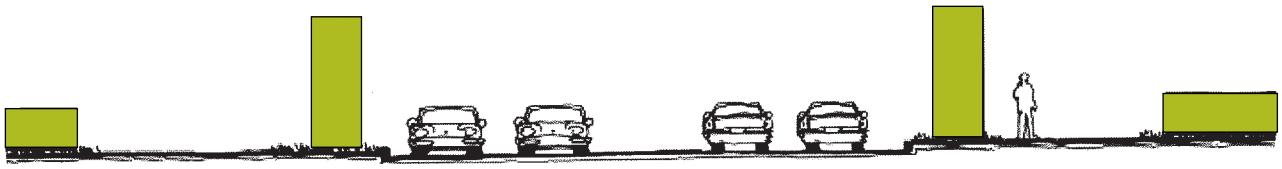
COLLEGE BRAND STANDARDS

Existing brand standards exist for SJECCD and the two SJECCD colleges. The unique college identity is integrated into each college wayfinding system

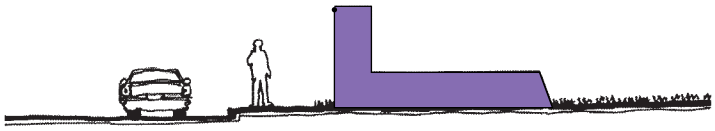
SIGN TYPES

GATEWAY SIGNS (DIAGRAMS - NOT FOR DESIGN)

Gateways and identity along the edges identify the boundaries and entry points to campus. Typically a campus will have one ceremonial entry gateway and several secondary/functional gateway entries. These signs communicate the brand and express the college pride to all those that encounter the campus edges.



PRIMARY GATEWAY



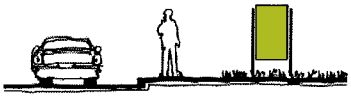
SECONDARY GATEWAY OR CORNER IDENTITY

SIGN TYPES

VEHICULAR SIGNS (DIAGRAMS - NOT FOR DESIGN)

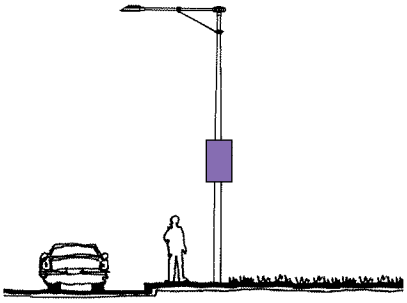
Vehicular circulation is greatly enhanced with the proper placement and scale of vehicular wayfinding signs. The primary objective of vehicular traffic on campus is to find parking in relative proximity to one's destination. A consistent design language used throughout these signs will reinforce the campus image and increase functionality. Minimal messages and proper placement of such signs are critical to ensure enough time to read and comprehend the information.

S3 PRIMARY VEHICULAR DIRECTION



S4 SECONDARY VEHICULAR DIRECTION

S5 PARKING ENTRY

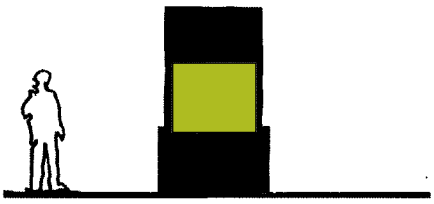


S6 PARKING LOT ID

SIGN TYPES

PEDESTRIAN SIGNS (DIAGRAMS - NOT FOR DESIGN)

Pedestrian sign types are smaller in size and are read from close proximity. Pedestrians typically arrive to campus via automobile or public transportation. From the point of arrival, pedestrians look for information to help guide them to their destination on campus. These signs should be clear and concise with placement and messages.

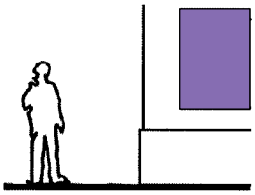


S7 KIOSK

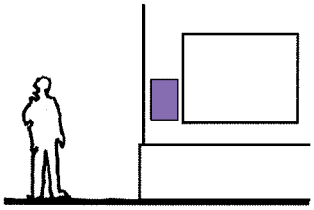
S8 CAMPUS DIRECTORY

S9 PEDESTRIAN DIRECTION

S10 GENERAL INFORMATION



S11 BUILDING ID



S12 BUILDING ENTRY ID

S13 ACCESSIBLE ROUTE

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END OF SECTION 4

SECTION 4

EVERGREEN VALLEY COLLEGE

PART A

EXISTING CONDITIONS

I. GENERAL REVIEW & PHOTO DOCUMENTATION

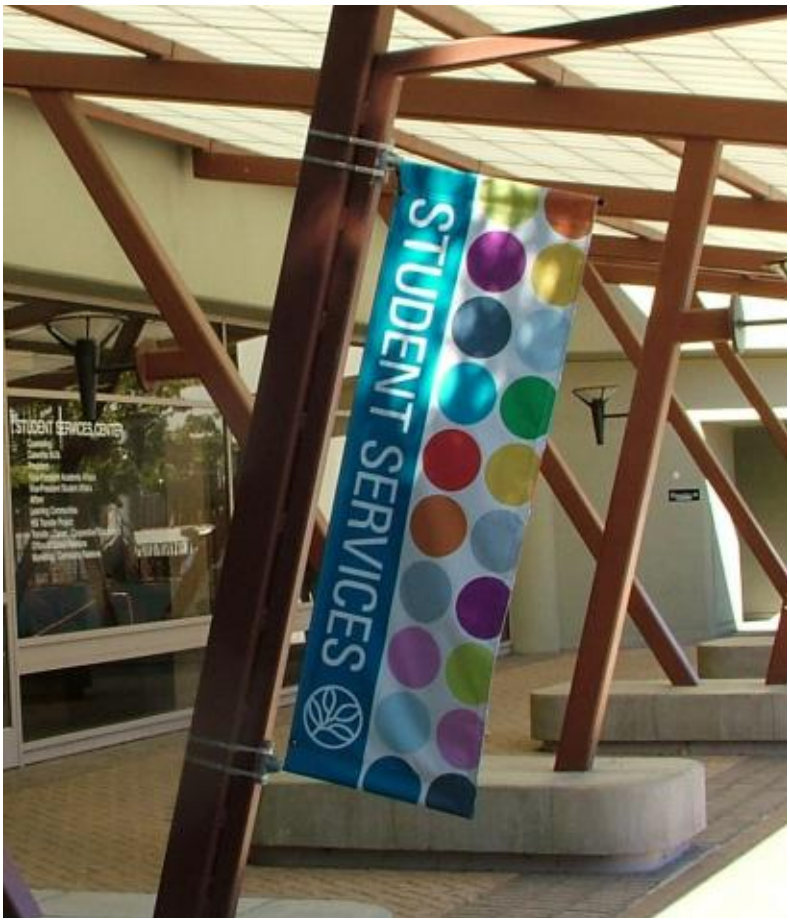
The existing Evergreen Valley College campus edges and entries lack a branded arrival experience. The campus wayfinding signage is a digital notification display. The digital display was likely implemented in response to specific needs and campus development, however, is not representative of the new Evergreen Valley College graphic standards.

ARRIVAL: PRIMARY GATEWAY (CEREMONIAL & FUNCTIONAL)

The primary entrance to Evergreen Valley College is a west approach via San Felipe Road to Paseo De Arboles. A second entrance is a south approach via Yerba Buena Road to Valle Del Laeo that leads to the East Circle. Currently there are digital notification displays at both entrances with relatively small letters for campus identification. The landscape planting is not distinguished and does not indicate your arrival onto campus.

ARRIVAL: CAMPUS CORNERS & SECONDARY GATEWAYS

The secondary entrance to Evergreen Valley College is an east approach via Yerba Buena Road that leads to student and staff parking. This entrance is not identified with a campus entry sign.



VEHICULAR WAYFINDING & PARKING

A variety of vehicular direction signs exist throughout the campus. There are signs for direction, traffic/parking rules, and parking identification for staff, students, and buses. Consistent use of color and typography in the signage exist campus-wide. Signs, however, are outdated and are not representative of the new Evergreen Valley College graphic standards.

EXISTING PEDESTRIAN WAYFINDING

The images below document the wide variety of pedestrian signs used throughout campus.

EXISTING BUILDING IDENTITY

The images below document the building identity used on campus. Typically the building signs use a Helvetica typeface in aluminum finish. Both pedestal signs and identification mounted on the buildings are used.

PART B

SIGN OVERVIEW

INTRODUCTION

Based on assessment work which took pertinent conditions of the Evergreen Valley College campus into account, the following wayfinding program recommendations have been developed. The program that follows is a visual reference based on need and the environment in which the signs will be placed. The signs included here are indications of what each should include in terms of program hierarchy and structure, message type, basic construction, materials and general dimensions.

The purpose of the campus wide wayfinding program is to establish a comprehensive wayfinding philosophy and design approach for Evergreen Valley College. The new program has been developed to bring consistency, clarity and identity to the campus. Once implemented, the new sign program will enhance the user experience by providing logical and intuitive routes and ease of navigation throughout the campus.

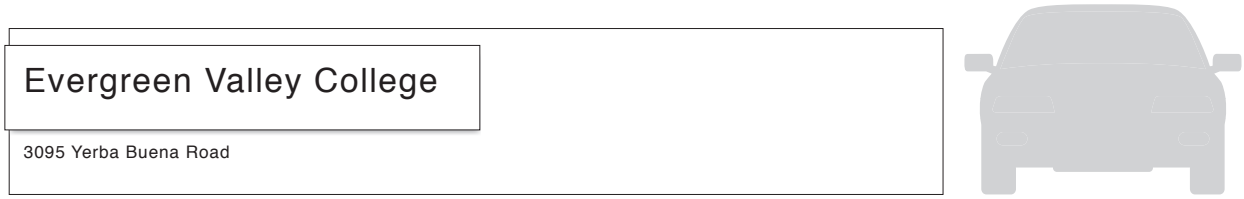
This document includes both wayfinding and identification signage. The campus buildings are a mix of architectural styles that have been put in place over years; therefore the wayfinding program recommendation was developed to provide a cohesive overall style that unifies and promotes a sense of place.

The wayfinding signage design concepts included here have been developed to be cost effective to fabricate and install, simple to update and maintain, in addition to being aesthetically pleasing.

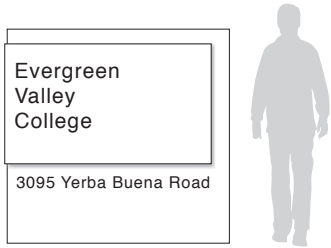
This wayfinding program creates a signage framework that ensures a visually cohesive campus environment that reflects, rather than detracts from, the quality of the college. The wayfinding program will establish a sense of place and a unique identity for the students and faculty and all who visit the Evergreen Valley College campus. The wayfinding recommendations have been developed to integrate with other campus enhancements including architecture, landscape and lighting.

I. SUMMARY OF SIGNS

CAMPUS IDENTIFICATION

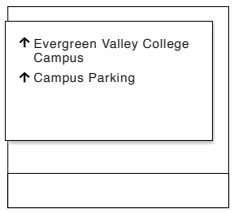


1 PRIMARY CAMPUS SITE MONUMENT AT ROADWAY



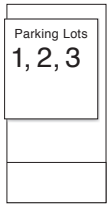
A SECONDARY CAMPUS SITE MONUMENT AT ROADWAY

CAMPUS VEHICULAR DIRECTIONAL SIGN TYPES

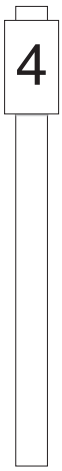


B PRIMARY VEHICULAR DIRECTIONAL

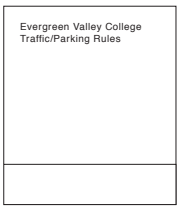
C SECONDARY VEHICULAR DIRECTIONAL



D PRIMARY PARKING LOT ID



E SECONDARY PARKING LOT IDENTIFICATION

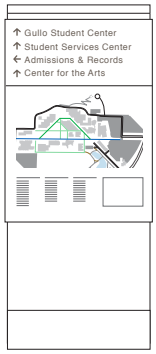


F VEHICULAR REGULATORY

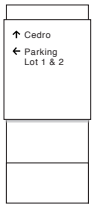
I. SUMMARY OF SIGNS (CONTINUED)

CAMPUS IDENTIFICATION / PEDESTRIAN DIRECTIONAL SIGN TYPES

G CAMPUS THRESHOLD/ GATE

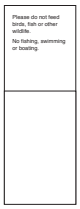


H PRIMARY PEDESTRIAN DIRECTIONAL/MAP



I SECONDARY PEDESTRIAN DIRECTIONAL

J CAMPUS LOCATION/ AREA ID



K PEDESTRIAN REGULATORY

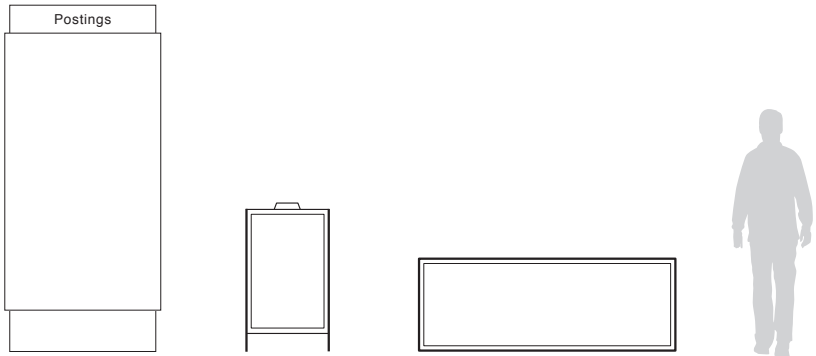
L INFO/HISTORY PLAQUE

LIBRARY
EDUCATIONAL
TECHNOLOGY
CENTER

M BUILDING IDENTIFICATION

TEMPORARY STUDENT / CAMPUS SIGN TYPES

These sign types have been provided to allow students the freedom to promote campus events and activities within signs that share a unified design style with the Evergreen Valley College sign program.

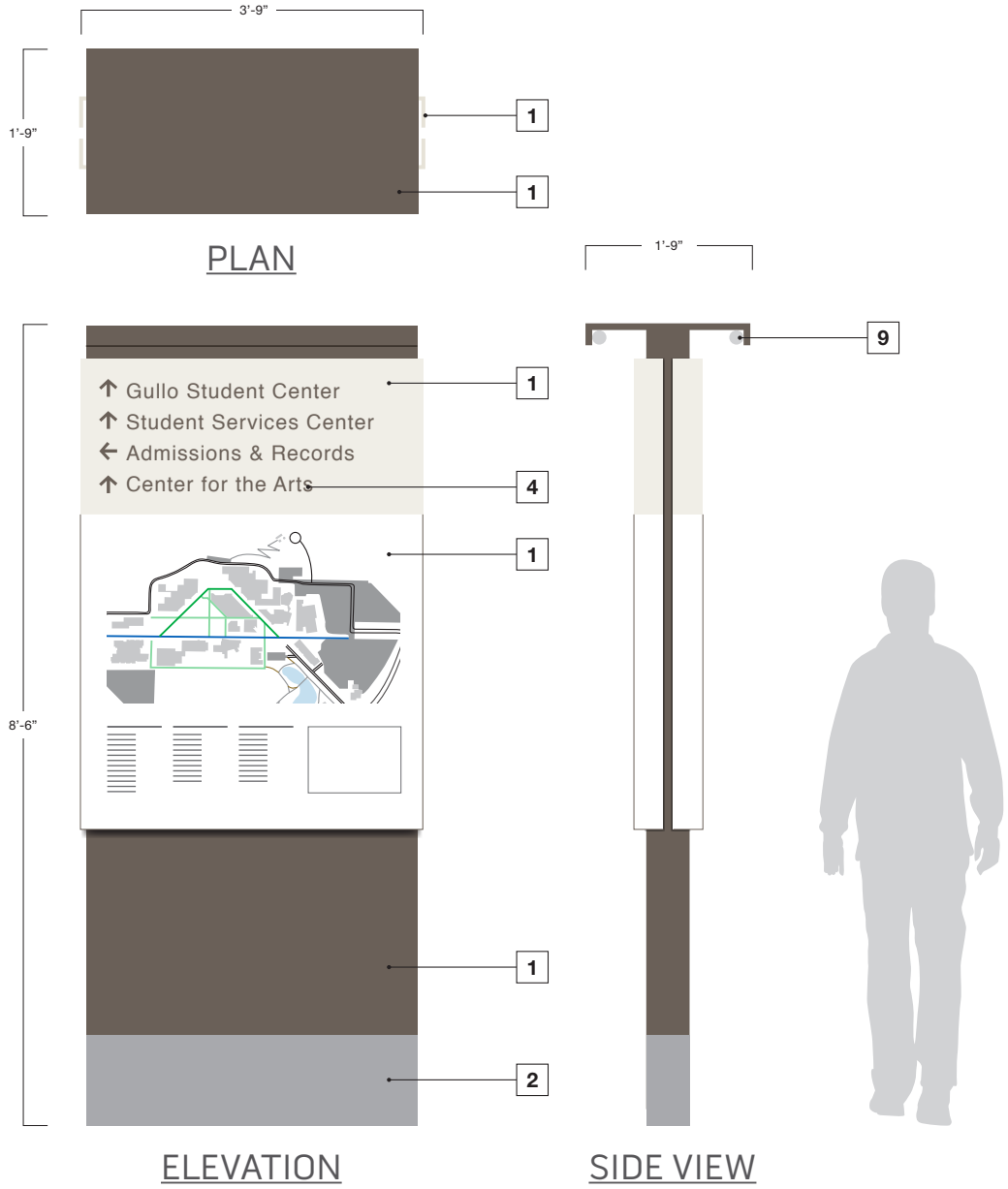


POSTING KIOSK

TEMPORARY SIGN STAND/HOLDER

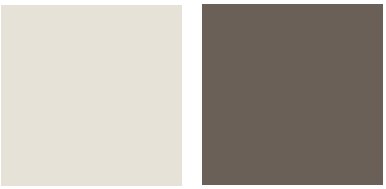
BANNER FRAME

II. COLOR PALETTE, MATERIALS, + FINISHES



COLOR PALETTE

The color specification has been provided as a recommendation for the design of Evergreen Valley College sign program. The colors are intended to be based in natural earth tones to form a more natural palette and integrate with the landscape around them.



MATERIALS + FINISHES	
1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8” thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

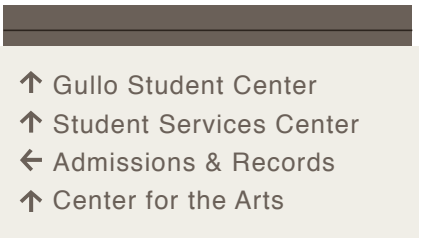
INSTALLATION
- Painted aluminum
- Color-integrated concrete
- Corten-look finished steel

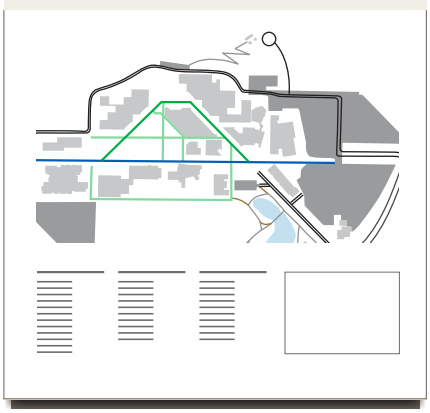
NOTES

PART C

SIGN TYPES

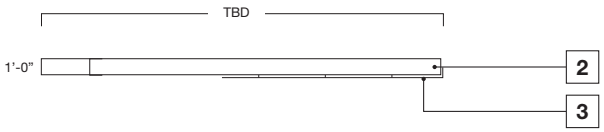
I. DESIGN



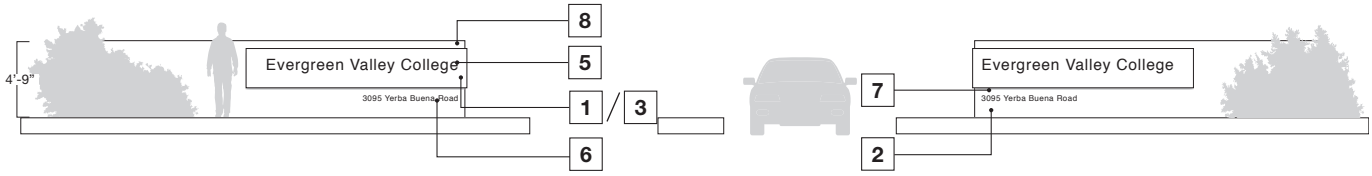


The wayfinding for EVC utilizes a kit-of-part approach for the design and layout of each sign. The repetition of color, typography, and materials creates a consistent appearance that allows a user to easily identify wayfinding elements throughout the campus environment. This section provides the design and general specification call-outs for all signs in the summary of sign types.

1	Sign Category: Primary Gateway	Sign Type: Campus Site Monument at Roadway (Yerba Buena & San Felipe entry)



PLAN



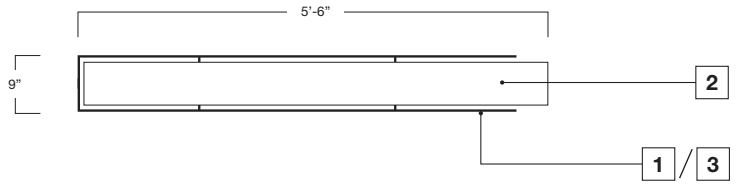
ELEVATION

MATERIALS + FINISHES	
1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8" thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

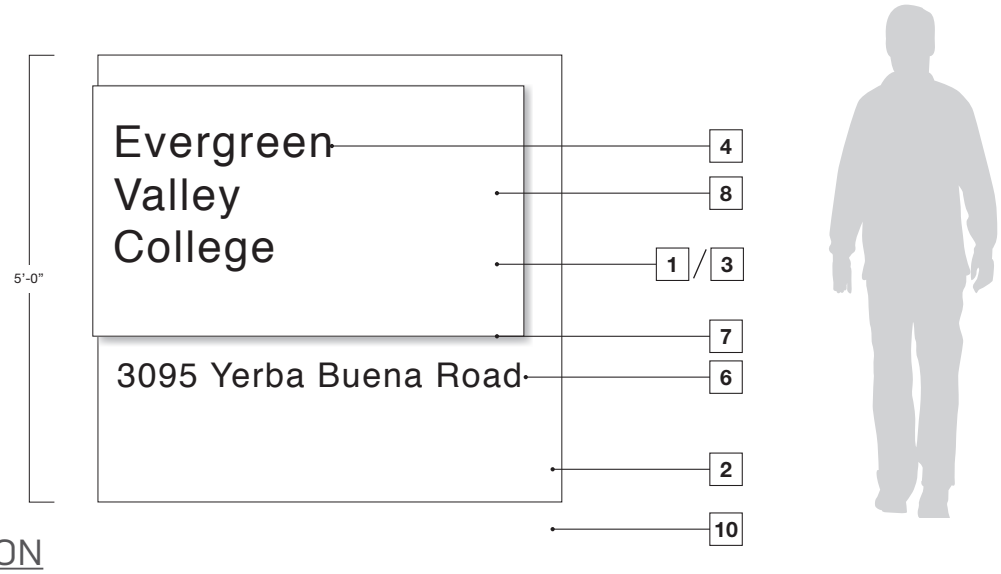
INSTALLATION
- Concrete form wall
- Direct burial post foundation
- Supply electrical for lighting

NOTES
- 2 walls at Yerba Buena entrance

A	Sign Category: Vehicular	Sign Type: Secondary Site ID at Roadway



PLAN



ELEVATION

MATERIALS + FINISHES

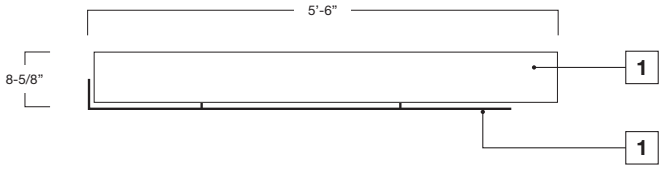
1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8" thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

INSTALLATION

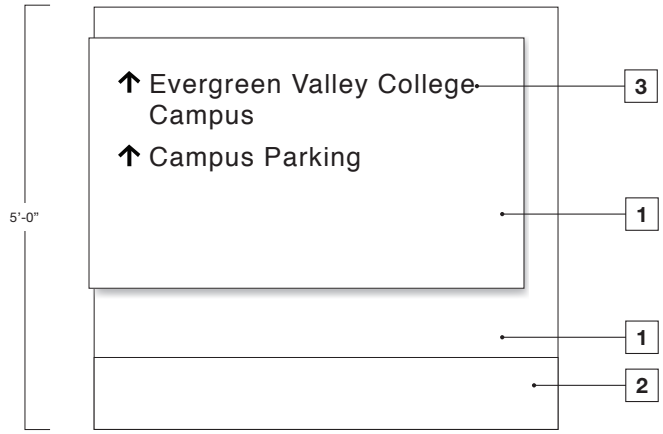
- Concrete form wall
- Direct burial post foundation
- Supply electrical for lighting

NOTES

B	Sign Category: Vehicular	Sign Type: Primary Vehicular Directional



PLAN



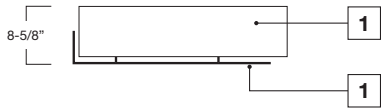
ELEVATION

MATERIALS + FINISHES	
1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8" thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

INSTALLATION
- Concrete base
- Direct burial post foundation
- Flush-mounted LED linear sign light
- Supply electrical for lighting

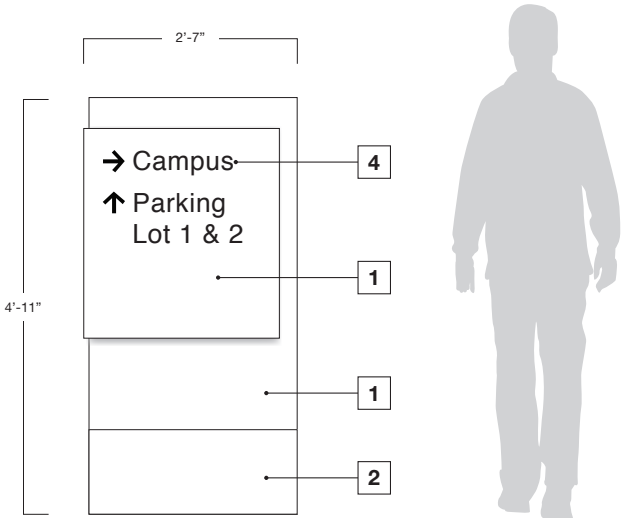
NOTES

C	Sign Category: Vehicular	Sign Type: Secondary Vehicular Directional



existing sign to be replaced

PLAN



ELEVATION

MATERIALS + FINISHES

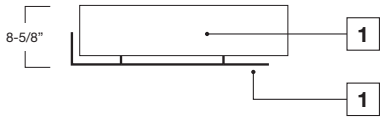
1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8" thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

INSTALLATION

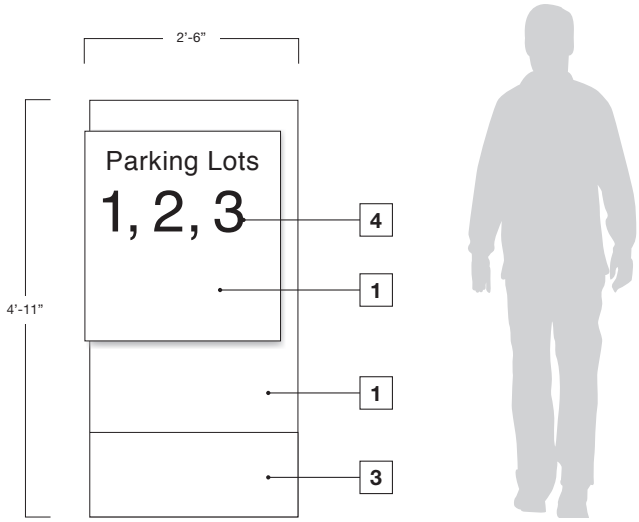
- Concrete base
- Direct burial post foundation
- Flush-mounted LED linear sign light
- Supply electrical for lighting

NOTES

D	Sign Category: Vehicular	Sign Type: Primary Parking Lot Identification



PLAN



ELEVATION

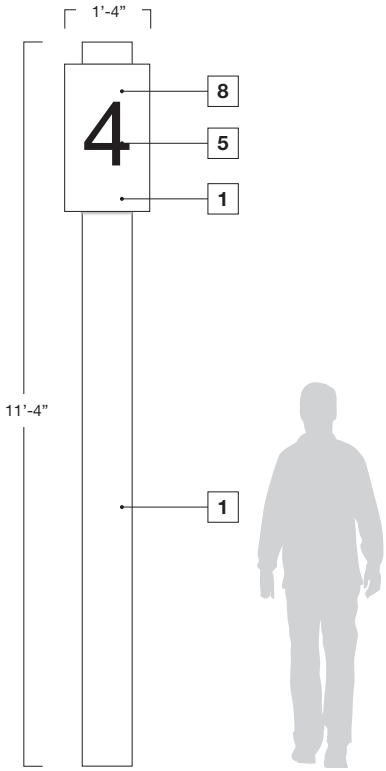
MATERIALS + FINISHES	
1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8" thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

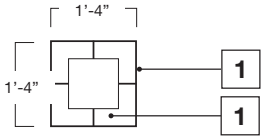
INSTALLATION
- Concrete base
- Direct burial post foundation
- Flush-mounted LED linear sign light
- Supply electrical for lighting

NOTES

E	Sign Category: Vehicular	Sign Type: Secondary Parking Lot Identification

existing sign to be replaced





PLAN

ELEVATION

MATERIALS + FINISHES

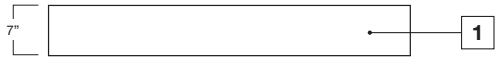
1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8" thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

INSTALLATION

- Concrete base
- Direct burial post foundation
- Supply electrical for lighting

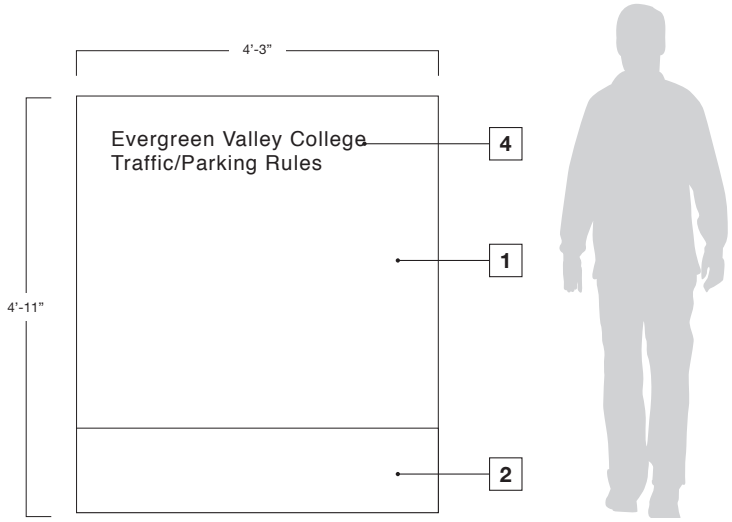
NOTES

F	Sign Category: Vehicular	Sign Type: Vehicular Regulatory



existing sign to be replaced

PLAN



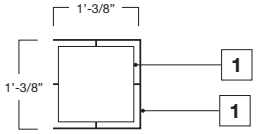
ELEVATION

MATERIALS + FINISHES	
1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8" thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

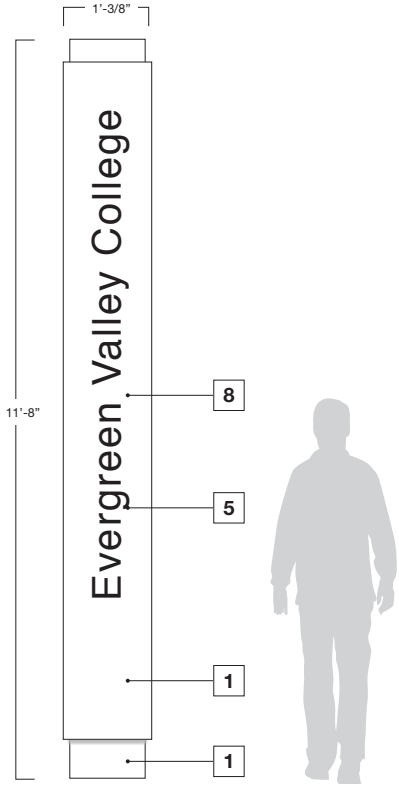
INSTALLATION
- Concrete base
- Direct burial post foundation

NOTES

G	Sign Category: Pedestrian	Sign Type: Campus Threshold/Gate



PLAN



ELEVATION

MATERIALS + FINISHES

1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8" thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

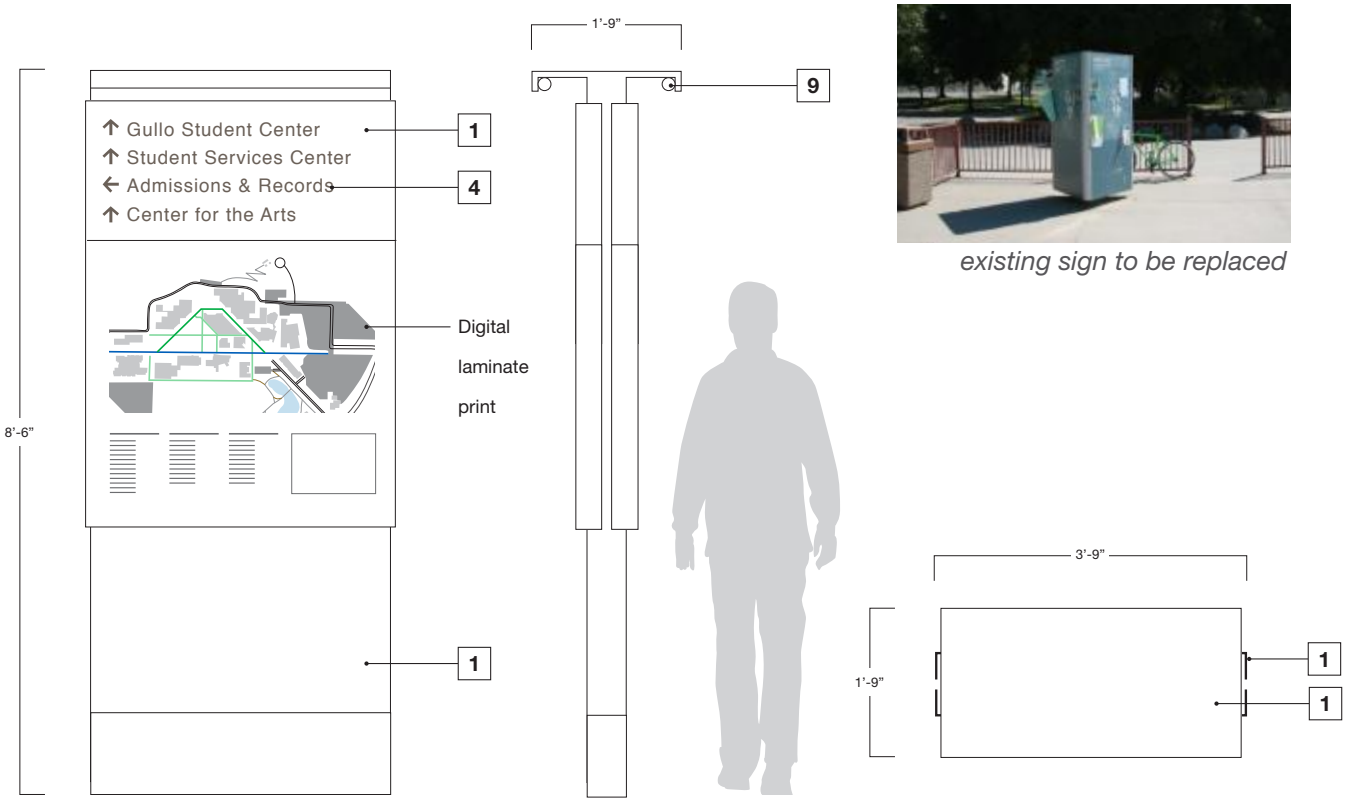
INSTALLATION

- Concrete base
- Direct burial post foundation
- Supply electrical for lighting

NOTES

- Opportunity for integrated security

H	Sign Category: Pedestrian	Sign Type: Primary Pedestrian Directional / Map



existing sign to be replaced

ELEVATION

SIDE VIEW

PLAN

MATERIALS + FINISHES

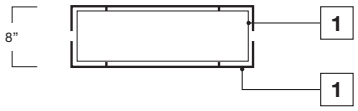
1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8" thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

INSTALLATION

- Concrete base
- Direct burial post foundation
- Supply electrical for lighting

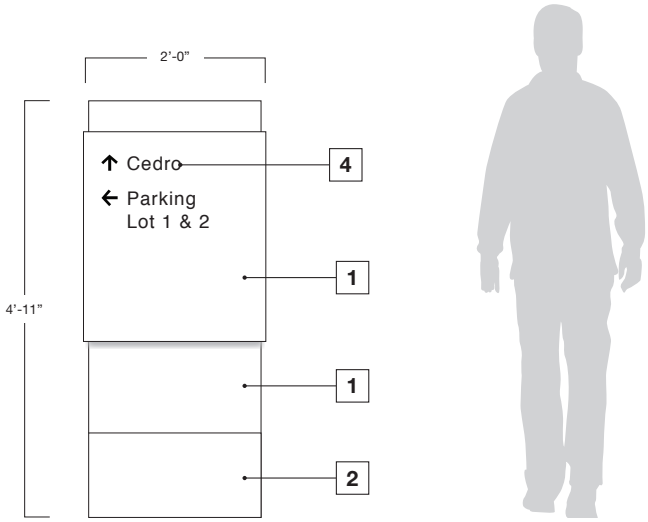
NOTES

I	Sign Category: Pedestrian	Sign Type: Secondary Pedestrian Directional



existing sign to be replaced

PLAN



ELEVATION

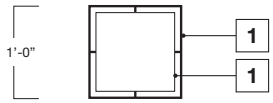
MATERIALS + FINISHES	
1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8” thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

INSTALLATION
- Concrete base
- Direct burial post foundation

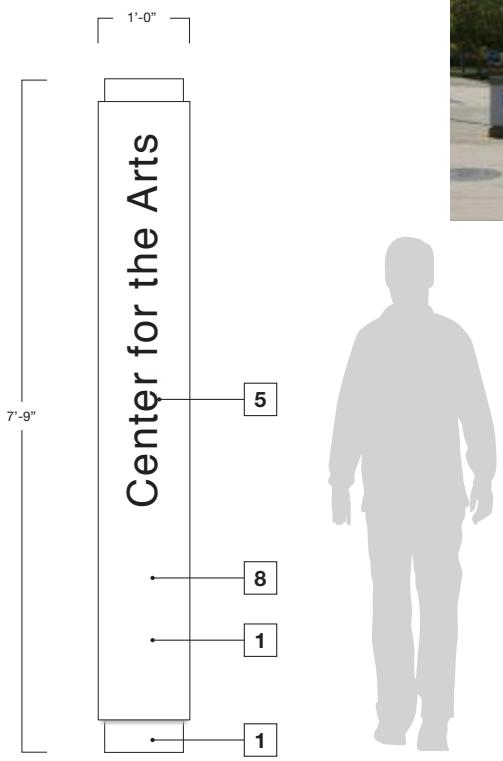
NOTES

J	Sign Category: Pedestrian	Sign Type: Campus Location / Area Identification

existing sign to be replaced



PLAN



ELEVATION

MATERIALS + FINISHES

1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8" thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

INSTALLATION

- Concrete base
- Direct burial post foundation
- Supply electrical for lighting

NOTES

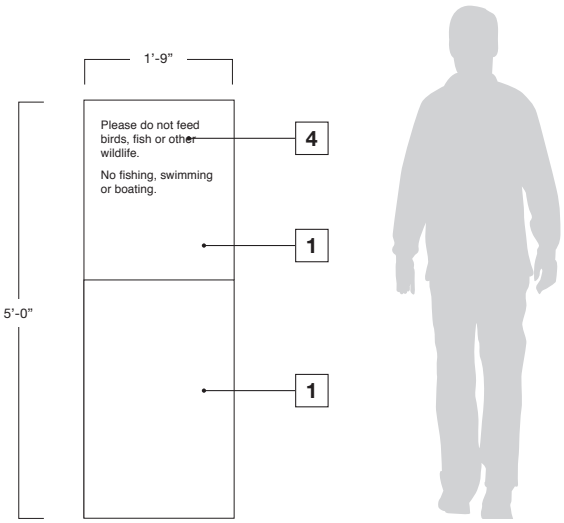
- Opportunity for integrated security

K	Sign Category: Pedestrian	Sign Type: Pedestrian Regulatory

existing sign to be replaced

PLAN

ELEVATION



MATERIALS + FINISHES

1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8” thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

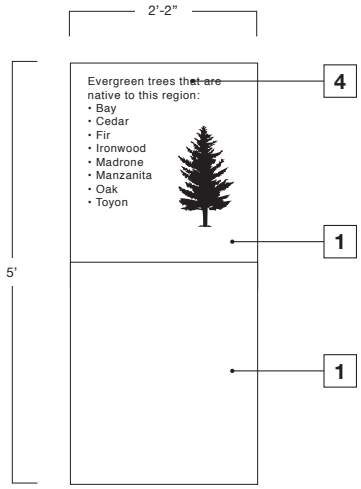
INSTALLATION

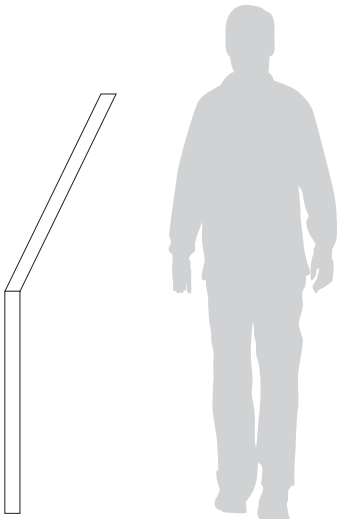
- Concrete base
- Direct burial post foundation

NOTES

L	Sign Category: Pedestrian	Sign Type: Info / History Plaque

existing sign to be replaced





ELEVATION

SIDE VIEW

MATERIALS + FINISHES

1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8" thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

INSTALLATION

- Concrete base
- Direct burial post foundation

NOTES

M N	Sign Category: Pedestrian	Sign Type: Building Identification Building Identification - Proposed

1/2"

existing sign to be retained

PLAN

12"

LIBRARY EDUCATIONAL TECHNOLOGY CENTER

1

ELEVATION

MATERIALS + FINISHES

1	Painted aluminum
2	Color-integrated concrete
3	Corten-look finished steel
4	Applied vinyl lettering
5	Cut and pushed-thru acrylic lettering
6	1/8" thick cut and painted applied aluminum letters
7	LED light strip
8	Internally lit cabinet
9	Integrated LED lighting
10	LED uplighting

INSTALLATION

NOTES

QTY	Building Identification - Proposed
1	Campus Police
1	Admissions & Records / Assessment & EOPS
2	Physical Education
2	Gullo II
1	Gullo Student Center
1	Library Educational Technology Center
1	Cedro

PART D
SIGN LOCATIONS

SIGN LOCATIONS PART D

The following pages illustrate recommended sign programming throughout the campus. This programming applies to those signs that have been included in the wayfinding recommendations for the Evergreen Valley College campus in previous pages of this document.

Individual parking regulatory signs have not been included here, just as they have not been included in the sign typology and specifications. Individual parking regulatory signs must be identified and programmed based on specific parking areas and needs.

Two distribution options have been included. The first, A, guides users through campus wide wayfinding. The second, B, guides users campus-wide based on a plan to organize areas of the campus into “neighborhoods.”

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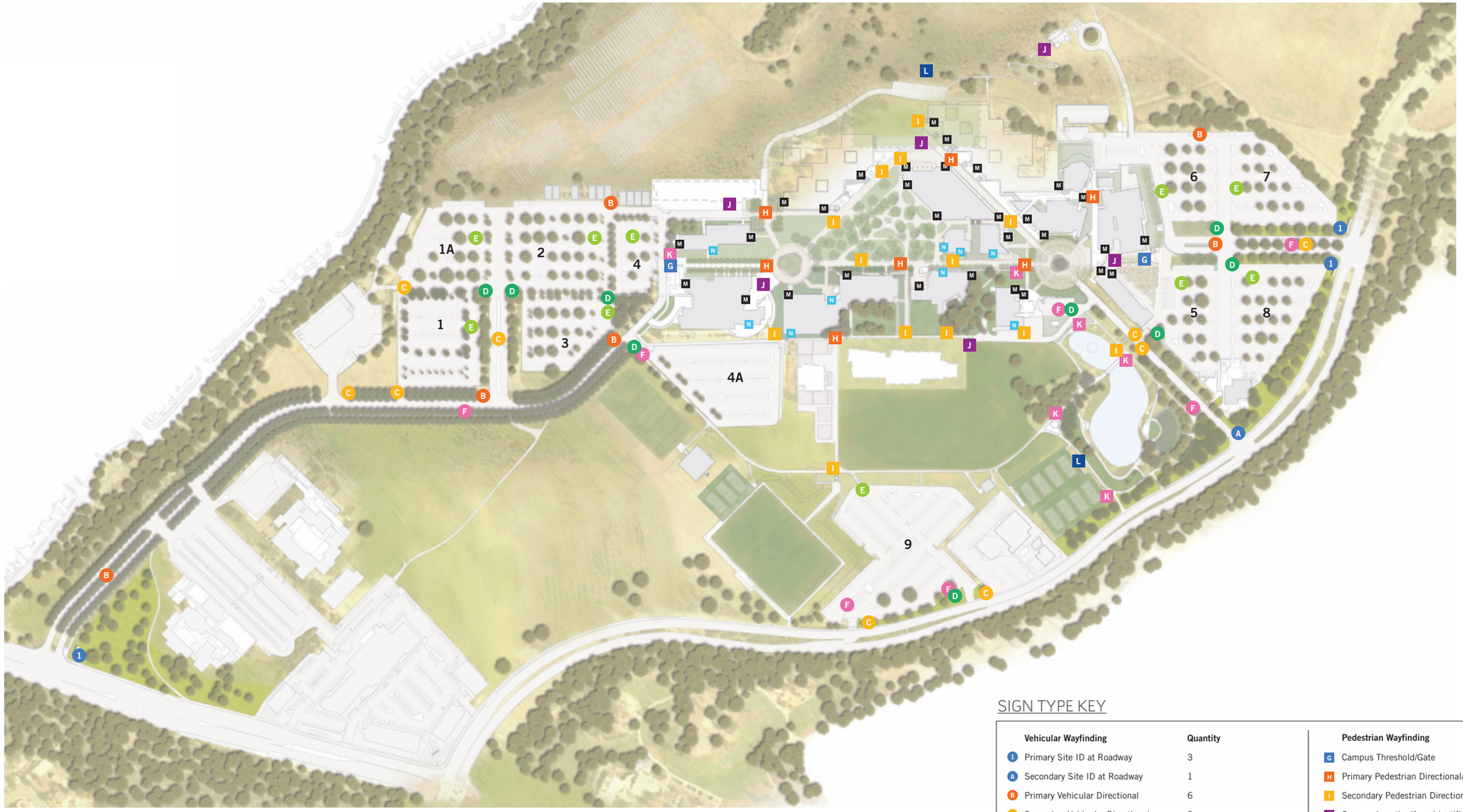

SIGN TYPE KEY

Vehicular Wayfinding	Quantity
1 Primary Site ID at Roadway	3
A Secondary Site ID at Roadway	1
B Primary Vehicular Directional	6
C Secondary Vehicular Directional	9
D Primary Parking Lot Identification	9
E Secondary Parking Lot Identification	10
F Vehicular Regulatory Sign	7

Pedestrian Wayfinding	Quantity
G Campus Threshold/Gate	2
H Primary Pedestrian Directional/Map	7
I Secondary Pedestrian Directional	13
J Campus Location/Area Identification	8
K Pedestrian Regulatory Sign	6
L Info/History Signs	2
M Building Identification-Existing	28
N Building Identification-Proposed	9

WAYFINDING SIGN LOCATION PLAN A

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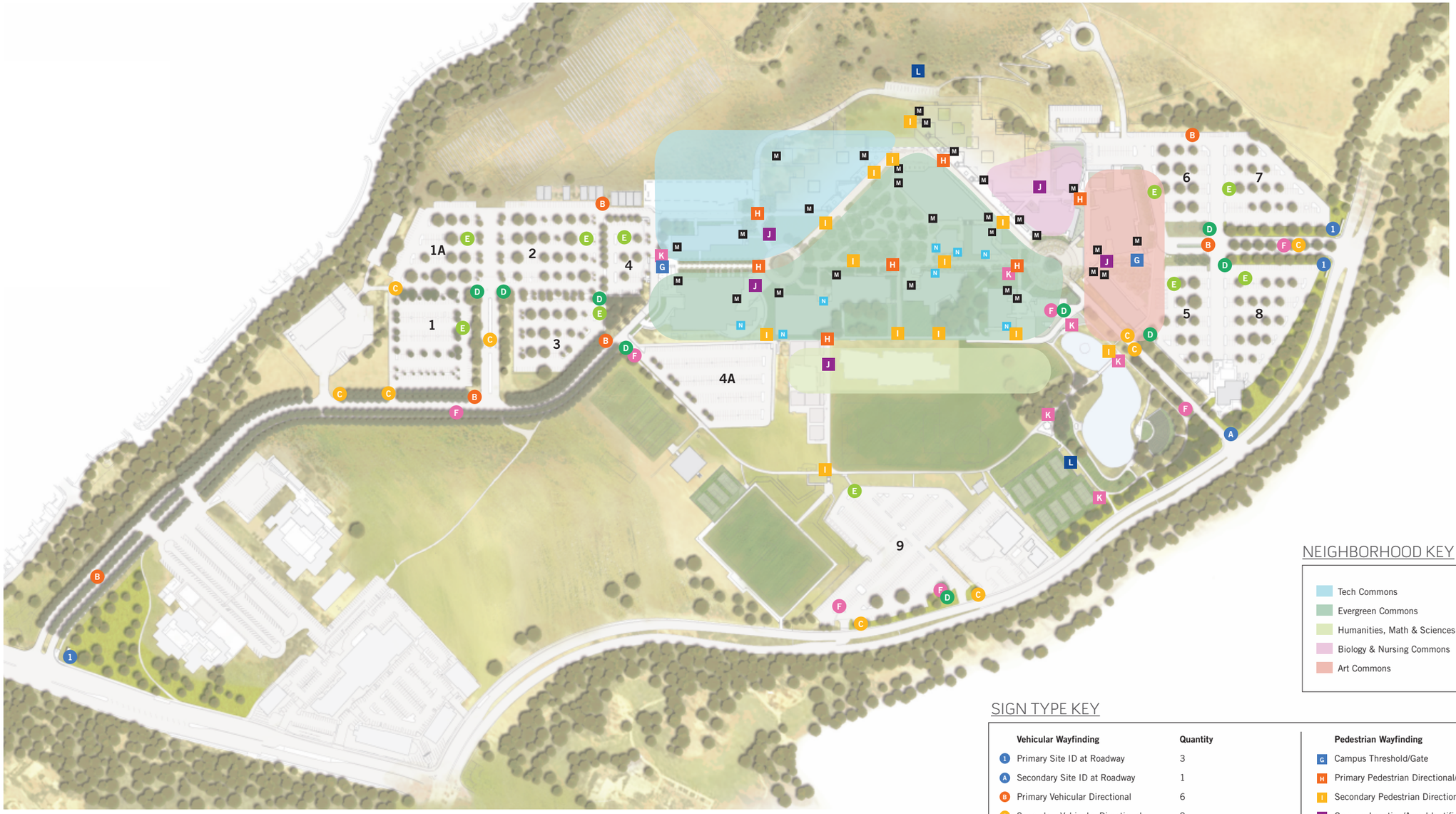

NEIGHBORHOOD KEY

- Tech Commons
- Evergreen Commons
- Humanities, Math & Sciences Commons
- Biology & Nursing Commons
- Art Commons

SIGN TYPE KEY

	Vehicular Wayfinding	Quantity
I	Primary Site ID at Roadway	3
A	Secondary Site ID at Roadway	1
B	Primary Vehicular Directional	6
C	Secondary Vehicular Directional	9
D	Primary Parking Lot Identification	9
E	Secondary Parking Lot Identification	10
F	Vehicular Regulatory Sign	7

	Pedestrian Wayfinding	Quantity
G	Campus Threshold/Gate	2
H	Primary Pedestrian Directional/Map	7
I	Secondary Pedestrian Directional	13
J	Campus Location/Area Identification	8
K	Pedestrian Regulatory Sign	6
L	Info/History Signs	2
M	Building Identification-Existing	28
N	Building Identification-Proposed	9

This plan focuses on “neighborhoods” indicated and identified through wayfinding

WAYFINDING SIGN LOCATION PLAN B

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END OF SECTION 4 - EVERGREEN VALLEY COLLEGE

SECTION 4

SAN JOSÉ CITY COLLEGE

PART A

EXISTING CONDITIONS

I. GENERAL REVIEW & PHOTO DOCUMENTATION

The existing San Jose City College campus is framed by three major boulevards. The campus is situated in a city setting and provides multiple entrances for vehicles and pedestrians. The campus wayfinding signage is outdated, inconsistent, and does not represent the new San Jose City College graphic standards.

ARRIVAL: PRIMARY GATEWAY (CEREMONIAL & FUNCTIONAL)

Three vehicular entries - west approach via South Bascom Avenue to Kingman Avenue, east approach along Leigh Avenue, and northwest approach via Moorpark Avenue to Laswell Avenue - are identified by a high sign with yellow Helvetica block letters. The entry sign on South Bascom Avenue is among many business signs and is difficult to spot. The north approach from Moorpark Avenue and Leland Avenue has a digital sign with college identification in white on a purple background.

ARRIVAL: CAMPUS CORNERS & SECONDARY GATEWAYS

A pedestrian entry to San Jose City College is located at the east end of the main pedestrian spine at the intersection of Moorpark Avenue and Leigh Avenue. This corner entry point of the curved Promenade is identified with a campus entry sign.

VEHICULAR WAYFINDING & PARKING

A variety of vehicular direction signs exist throughout the campus. There are signs for direction, traffic/parking rules, and parking identification for staff and students. Inconsistent use of color, shape, and typography in the signage exist campus-wide.

EXISTING PEDESTRIAN WAYFINDING

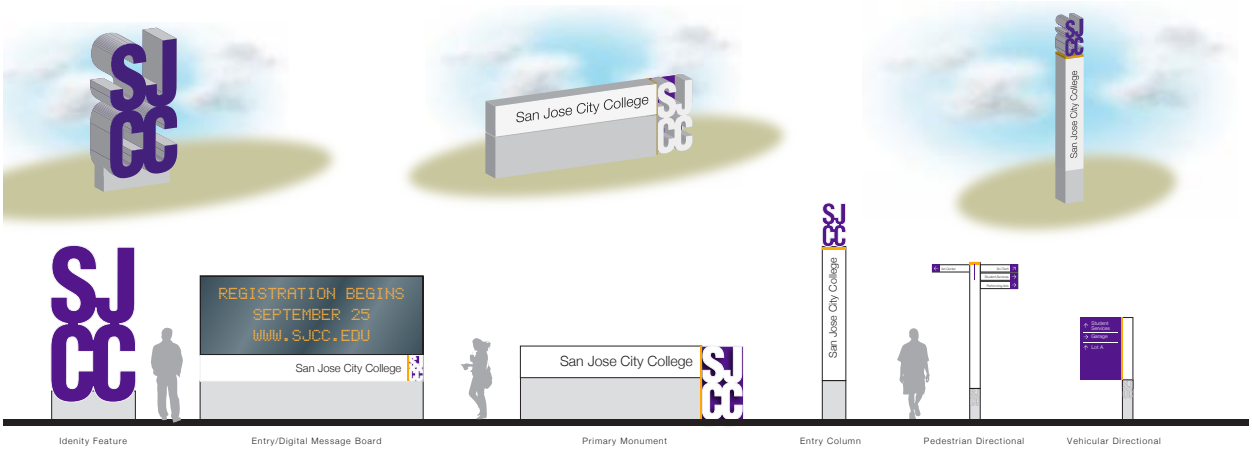
The images below document the wide variety of pedestrian signs used throughout campus.

EXISTING BUILDING IDENTITY

The images below document the building identity used on campus. Typically the building signs use a Helvetica typeface in aluminum finish mounted onto the building facade. In a few cases the building signs have a colored appearance.

PART B

SIGN OVERVIEW

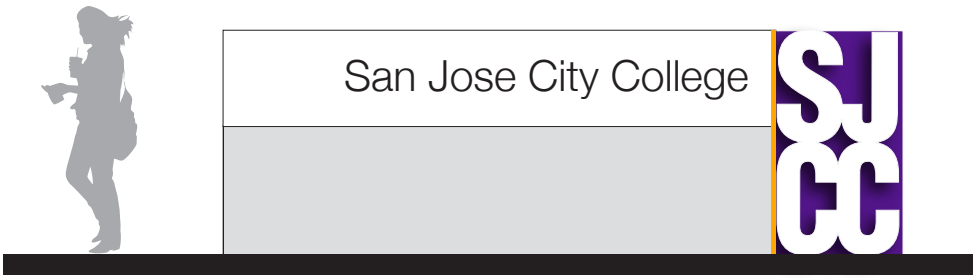


INTRODUCTION

The proposed schematic wayfinding program provides a uniform family of sign types for campus entries, as well as vehicular and pedestrian wayfinding. The design is currently in the design development phase. When the campus-wide wayfinding program is fully developed, a comprehensive wayfinding philosophy and design approach will be established. The implementation of these sign types will improve the campus circulation and accommodate growth for years to come. The sign program design communicates the SJCC brand and college fabric by using the newly implemented brand guidelines. Together with lighting, landscape and architecture, the wayfinding program will express the high quality and reputation of San Jose City College to the community, students, faculty, visitors, and new recruits.

I. SUMMARY OF SIGNS

CAMPUS IDENTIFICATION

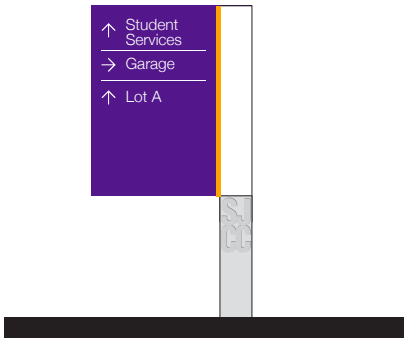


Primary Monument

Idenity Feature

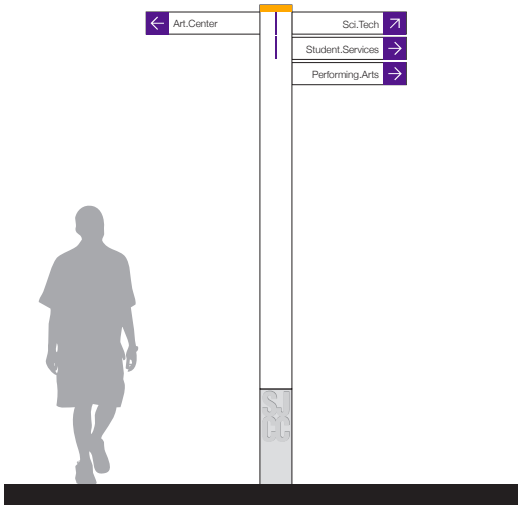
Entry/Digital Message Board

CAMPUS VEHICULAR DIRECTIONAL SIGN TYPES

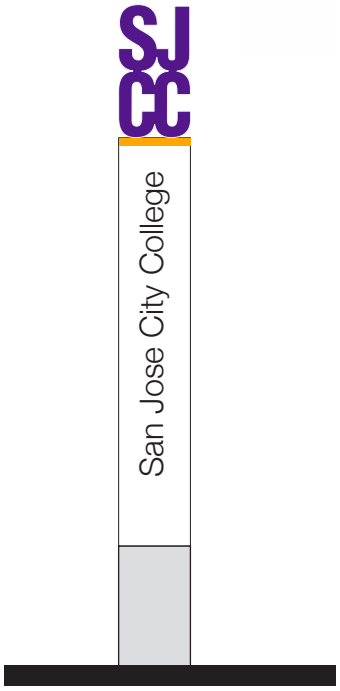


Vehicular Directional

CAMPUS IDENTIFICATION / PEDESTRIAN DIRECTIONAL SIGN TYPES



Pedestrian Directional



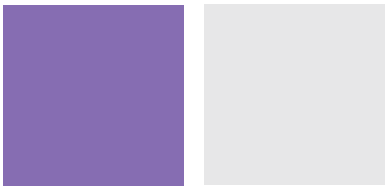
Entry Column

II. COLOR PALETTE, MATERIALS, + FINISHES

Idenity Feature

COLOR PALETTE

The color specification has been provided as a recommendation for the design of San Jose City College sign program. The colors are intended to match campus logo and college colors. Final finish and material selection is yet to be determened and college approved.



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5 BUILDING DESIGN GUIDELINES

INTRODUCTION

The building design guidelines presented within are not intended to be substantially prescriptive for a specific design outcome. The intent is to define parameters within which a compatible design can be achieved. The guidelines point the project design team and the user representatives toward an understanding of the physical characteristics of a building design, which will be acceptable within the San José • Evergreen Community College District context.

The goal of the design guidelines is to improve the overall aesthetic character and visual unity of each College as a whole. They represent the College's commitment for future buildings to create a more cohesive, attractive, productive and sustainable campus environment.

The guidelines will enable future buildings at Evergreen Valley College and San José City College to integrate with, but not mimic, the architectural vernacular on campus in order to create a unified atmosphere for generations of students, staff, and community to come. The guidelines are the result of a study of the existing aesthetics and style of buildings on each campus as well as an analysis of how buildings interact with exterior spaces.

Lastly, they identify material and colors that are compatible with those used in the earliest and most current campus buildings.

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SECTION 5

EVERGREEN VALLEY COLLEGE

PART A

EXISTING CAMPUS ARCHITECTURE

CAMPUS DESIGN

Evergreen Valley College is a community college located on 175 acres in the southeastern foothills of San Jose. This location at the foot of the Diablo Range and against the grassy hillside provides a spectacular backdrop for the campus. The core of the campus spans the space between the hillside and the athletic fields. Within the core of the campus, several large specimen trees accent the buildings, provide valuable shade, and give the campus a distinct character and sense of place.

Evergreen Valley College has existed in its current location for more than 30 years. The initial planning began in 1969 by Skidmore, Owings, and Merrill (SOM), and the first construction on site began in 1973, which included the Administration/Student Services Center, clusters Acacia and Roble, and the Physical Education Building. Since then, the campus has grown and developed with more density. Today, the campus continues to expand.

EXPRESSION OF VOLUME

The college buildings have a modulation and rhythm of planes composed in an asymmetrical arrangement. Structure, function and siting, and climatic and site specific conditions are leading elements that determine the shape and look of the building.

CONNECTION TO SURROUNDINGS

The campus should, at every stage in its growth, be a cohesive fabric composed of buildings and the open spaces they create. Each new building should contribute to the creation of at least one distinct outdoor room. Building design should pay special attention to facades that open onto the outdoor room. The indoor/outdoor relationship of buildings on campus humanizes spaces and creates comfortable buildings that are connected to their site. All new construction should make significant improvements to the campus that reinforces sense of place within the natural setting.

The Master Plan conceptually identifies three spines for pedestrian circulation. Together these spines connect and define the core of campus. The intersections of these spines create opportunities for specialty gardens and outdoor plazas that act as informal gathering spaces. Additionally, pedestrian circulation is recommended to link the main campus to the amphitheater and lake area and the adjacent hillside.

BUILDING FABRIC

There is an assortment of building exterior materials used during the four decades of expansion. These materials include concrete, stucco, aluminum storefront and curtain wall systems, and metal wall panels.

PART B

EXISTING MATERIALS + COLOR PALETTE

EXISTING MATERIALS + COLOR PALETTE PART B

As tools for campus development, the intentions of these guidelines are to identify the range of materials and features that are shared by the collection of buildings; to limit and exclude materials and features which are visually disruptive to the recognition of cohesive campus places.

STUCCO

CONCRETE

METAL WALL PANELS

ALUMINUM STOREFRONT + CURTAIN WALL SYSTEMS

PART C

FUTURE MATERIALS + COLOR PALETTE

FUTURE MATERIALS

Materials and colors selected for future projects should be appropriate to both the design concepts of the individual projects as well as to the campus as a whole. Appropriateness can be loosely defined by how well the materials and colors contribute to creating harmony in mass, scale, form, color, and context thus establishing desirable learning environments and experiences.

STUCCO

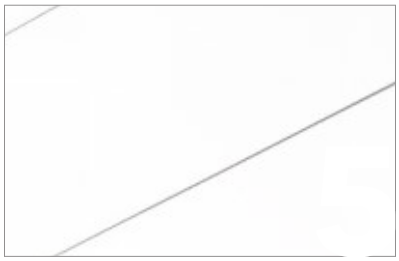
- Finish as approved by College
- Use as secondary/accent material

CONCRETE

- Fair faced natural concrete finish w/ reveals

CORRUGATED METAL PANEL

SOLID PHENOLIC PANELS W/ WOOD GRAIN FINISH



COMPOSITE METAL PANEL

GLAZING

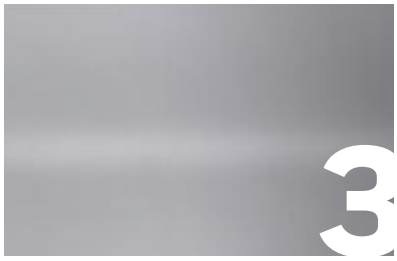
- Color neutral, green or blue as approved by College
- High performance coated frames and mullions in silver color as approved by College and compatible with existing conditions
- Double-glazed
- Frit patterns, diffusion panels or etched glass as approved by College

FUTURE COLOR PALETTE

A simple, consistent color palette can do more to provide a sense of visual unity across a campus that any other element. It is closely tied, of course, to the actual materials but a variety of materials and textures can be unified by sharing a common color.

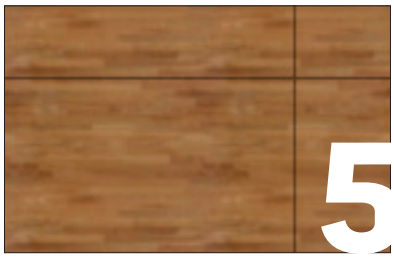
PRIMARY PALETTE

The following colors are suggested for primary exterior surfaces of buildings on the Campus:



ACCENT PALETTE

The following colors are suggested for secondary exterior surfaces of buildings on Campus. Because they are accent colors, they should only be used sparingly.



**Note: Colors as printed in this document are an approximation, at best, of the actual paint colors.*

END OF SECTION 5 - EVERGREEN VALLEY COLLEGE

SECTION 5

SAN JOSÉ CITY COLLEGE

PART A

EXISTING CAMPUS ARCHITECTURE

CAMPUS DESIGN

Located in downtown San Jose, San Jose City College was first established in 1921 as the San Jose Junior College. In 1953, the San Jose Unified School District began to oversee the College and relocated the College to its present site along Moorpark Avenue. The initial campus facilities were constructed in the 1950's, and in 1958 the campus' name was changed to San Jose City College. Over the past ten years, the campus has begun a transformation from what was originally a technical high school campus to what is now a comprehensive community college campus.

After fifty years of expansion, the campus building styles vary with landscape and open space design acting as a unifying element. Over the last decade, the campus had grown by leaps and bounds, and it has become apparent that future campus improvements shall clearly define the role of the campus in the community and establish an individual identity for the College.

EXPRESSION OF VOLUME

The college buildings have a modulation and rhythm of planes composed in an asymmetrical arrangement. Structure, function and siting, and climatic and site specific conditions are leading elements that determine the shape and aesthetic of the buildings.

CONNECTION TO SURROUNDINGS

The campus should, at every stage in its growth, be a cohesive fabric composed of buildings and the open spaces they create. Building design should pay special attention to facades that open onto the outdoor room. The indoor/outdoor relationship of buildings on campus humanizes spaces and creates comfortable buildings that are connected to their site. Large quads serve as urban gathering spaces and focal points for varied campus activities. Smaller gardens serve as more intimate spaces designed for passive use and/or quiet reflection. Furthermore, there is an opportunity to create outdoor classrooms or instructional spaces.

The Master Plan conceptually identifies a pedestrian promenade that defines the primary pedestrian route through the campus. This curved spine connects with secondary pedestrian pathways, and assists in wayfinding and student orientation throughout the campus. Together these pedestrian walks connect and define the core of the SJCC campus. They act as edges to major open spaces and create opportunities for specialty gardens and outdoor plazas along them. Additionally, the pedestrian walks provide important connections from parking to the athletic fields.

BUILDING FABRIC

There is an assortment of building exterior materials used during the five decades of expansion. These materials include concrete masonry unit, stucco, brick veneer, aluminum storefront and curtain wall systems, structural glass wall systems, and metal wall panels. The earlier buildings, 100, 200, and 300 Wings were constructed with full window walls that allow natural light in and have a direct connection to the outside. Although these buildings are planned for demolition, the character of the buildings is reflected in buildings elsewhere on campus.

PART B

EXISTING MATERIALS + COLOR PALETTE

EXISTING MATERIALS + COLOR PALETTE PART B

As tools for campus development, the intentions of these guidelines are to identify the range of materials and features that are shared by the collection of buildings; to limit and exclude materials and features which are visually disruptive to the recognition of cohesive campus places.

STUCCO

CONCRETE

CONCRETE MASONRY

BRICK VENEER

METAL WALL PANELS

ALUMINUM STOREFRONT + CURTAIN WALL SYSTEMS

PART C

FUTURE MATERIALS + COLOR PALETTES

FUTURE MATERIALS

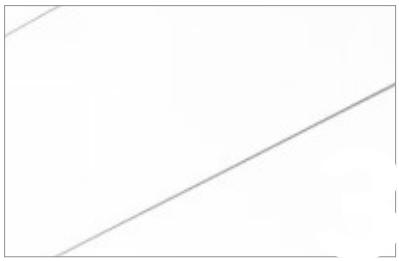
Materials and colors selected for future projects should be appropriate to both the design concepts of the individual projects as well as to the campus as a whole. Appropriateness can be loosely defined by how well the materials and colors contribute to creating harmony in mass, scale, form, color, and context thus establishing desirable learning environments and experiences.

STUCCO

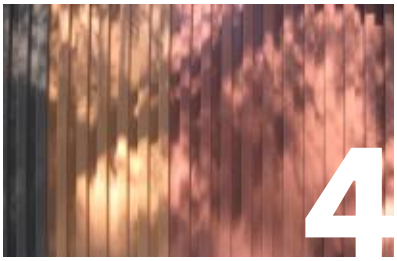
- Finish as approved by College
- Use as secondary/accent material

CONCRETE

- Fair faced natural concrete finish w/ reveals



COMPOSITE METAL PANEL



CORRUGATED METAL PANEL

TRANSLUCENT PANEL

GLAZING

- Color neutral, or blue as approved by College
- High performance coated frames and mullions in silver color as approved by College and compatible with existing conditions
- Double-glazed
- Frit patterns, diffusion panels or etched glass as approved by College

FUTURE COLOR PALETTE

A simple, consistent color palette can do more to provide a sense of visual unity across a campus that any other element. It is closely tied, of course, to the actual materials but a variety of materials and textures can be unified by sharing a common color.

PRIMARY PALETTE

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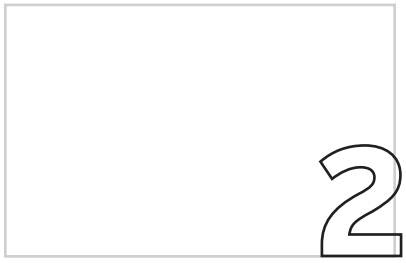

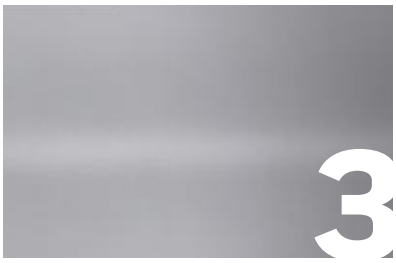

ACCENT PALETTE

The following colors are suggested for secondary exterior surfaces of buildings on Campus. Because they are accent colors, they should only be used sparingly.

**Note: Colors as printed in this document are an approximation, at best, of the actual paint colors.*

END OF SECTION 5 - SAN JOSÉ CITY COLLEGE

6 LIGHTING GUIDELINES

INTRODUCTION

The primary goal of establishing lighting guidelines for the District and each college is to create a more unifying experience as a person travels through each campus, as well as utilizing organized zones of lighting language and treatments to assist with campus identity and wayfinding.

District benefits include:

- Support student activity and safety at all times
- Common implementation of campus planning principles
- Gain cost savings with common maintenance requirements
- Gain cost savings with energy efficient lighting

PART A

OVERVIEW + OBJECTIVES

I. OVERVIEW

By implementing lighting guidelines and a site lighting master plan, each campus will become more unified through a consistent lighting design that utilizes light to create areas of visual hierarchy and interest. In doing so, people will thus be more effectively drawn through the heart of the campus letting their eye guide them on their journey to their final destination.

I. OVERVIEW (CONT'D)

OBJECTIVES

- Improve campus safety by utilizing high rendering lamp sources, providing appropriate and uniform light levels on the ground, and lighting key elements surrounding the site.
- Support safety and nighttime activities with light fixtures that minimize glare.
- Utilize energy efficient lamp sources.
- Support the maintenance staff by incorporating long-life lamp sources which require less frequent re-lamping and minimize number of lamp types utilized throughout the site and District.
- Support environmental concerns by utilizing cut-off lighting fixtures to assist in possible future Leadership Energy and Environmental Design (LEED) aspirations.
- Support visual acuity with minimum illumination level recommendations outlined in PART section II.
- Create visual interest while accentuating key landscape and architectural features.
- Support campus identity with consistency of lighting fixture approach, including creation of a campus fixture family.
- Improve consistency of fixture lamping, including color temperature and wattage.
- Assist wayfinding with unified zones of hierarchy throughout the campuses within the District.

II LIGHTING OBJECTIVES

The primary Lighting Objectives were developed in concert with District Standards Development Committee and are summarized below.

A. IMPROVE VISIBILITY, SAFETY, AND COMFORT

Lighting systems should provide adequate illumination for safe and comfortable access and use of each campus from dusk to dawn. All site and building illumination should provide a well organized and legible illuminated pedestrian pathway system that guides circulation to defined improved pathways, and aligns with each specific campus master plan to facilitate the appropriate use of the campus at night. Lighting is a form of communication and should therefore align with wayfinding and building egress systems.

1. Lighting Equipment
   - Lighting systems are technological advancements derived from research and development of new applied electrical, optical, and material science technology. Lighting Guidelines should foster the implementation of best practices in both new lighting building standards and application of more efficient and sustainable technology.

2. Performance Criteria for a Quality Luminous Environment
   - Lighting should serve the human needs of the users occupying the space balanced with the architectural context and factors of economics and the environment. Human needs encompass human emotions, actions, perceptions, and health as well as aesthetic judgment and social communication.

Lighting will serve a role in social communication and a aesthetic judgment of an interior or exterior space by responding to its natural or architectural environment. Lighting elements will relate to and support architectural context by way of its formal presence, its integration into the architectural or natural landscape, and the expression of aesthetic style.

II. LIGHTING OBJECTIVES (CONT'D)

B. SENSE OF PLACE

Lighting will improve the sense of place within each campus through alignment with the broad principles of each campus master plan, including the following wayfinding and hierarchal principles:

3. Accentuate Gateways:
   - Light will inform about arrival to each campus through pronounced and unique color, brightness, and pattern of light to accentuate and mark the landscape and buildings which form the major campus entry gateways.

4. Hierarchy of Corridor and Circulation:
   - Light intensity and the type and scale of light fixtures will define and communicate the order and significance of various circulation systems on each campus. Brightness and scale will be aligned with a ranked order of significance for types of spaces on campus. This method will clearly distinguish ceremonial and major cross campus and intercampus circulation pathways from subordinate building access and service paths.

5. Hierarchy of Public Spaces
   - The plaza space within the major public spaces will be illuminated to create a sense of destination within each campus. Intensity of light, scale, and style of light fixtures are differentiated from adjacent circulation spaces to create a unique, but coordinated, identity.

6. Adequately Illuminate Building Entries and Circulation:
   - Building site illumination standards must provide an ordered and ranked system of defining building site circulation including more prominent definition of major and after hours building entrances, plazas and major public spaces, emergency egress exits, and loading and service paths.

C. IMPLEMENTATION PROCESS

The means and methods of implementation are essential to the long-term success of these lighting guidelines. These guidelines define both desired outcomes and the design review process to achieve these results. The standard also provides for periodic updates and revisions to these guidelines to incorporate best practices and new technologies as these become available.

1. Define Desired Outcomes:
   - The Lighting Guidelines establish minimum performance standards for site and building improvement projects. Each component of each campus lighting master plan is defined to achieve incremental improvement over the long range phased development of new projects on each campus.

2. Design Review Process:
   - The key ingredient to achieve the desired outcomes of the lighting is a methodology of review for new project submittals. The Lighting Guidelines define the precise methods, documents and procedures required for this review process.

D. SUSTAINABLE LIGHTING PROGRAM

Establishing New Precedents:

These guidelines include a procedure to incorporate first phase segments of the implementation plan at each campus as the new standard for future developments of that same campus plan component.

1. Guidelines Updates:
   - Periodic updates to the lighting master plan at each campus should be scheduled to incorporate new technology standards, new building code requirements, and evolutions to the campus urban plan.

2. Long Term Management:
   - Management of the Lighting System should include the implementation of a systematic and manageable maintenance program to anticipate capital expenses and document system performance.

END OF SECTION 6

SECTION 6

EVERGREEN VALLEY COLLEGE

PART A

PROPOSED EXTERIOR LIGHTING EQUIPMENT PALETTE

I. EXTERIOR LIGHTING MASTER PLAN

Exterior lighting is an important part of the campus outdoor environment. It lights the space for nighttime use and helps organize and define the visual nighttime environment. Lighting helps define the character of the campus, strengthening the campus image and providing an increased sense of community.

At EVC the existing campus lights have significant problems and it is recommended that upgrades be made as improvements are executed on campus. The campus has 10 different pole lights in use, each with a different style and lamp. This is burdening maintenance and creates a distinct lack of character or design identity.

The new lighting standards provide a hierarchy, or family, of fixtures to address the lighting of pathways, plazas, courtyards, stairs and other pedestrian landscaped areas. The main pole mount fixture is provided in two distribution patterns to address different landscape configurations. Of the 10 existing poles on campus, only one was determined to be worthy of salvaging. The Invue fixture (type 2) will be retrofitted with an LED source, and reused on the pathway south of the soccer field.

The campus intends to add a campus-wide building management system (BMS) and may use it to monitor and control the site lighting. It is recommended that new control panels be installed and be compatible with the selected BMS in order to allow for full integration.
Upgrades to the exterior lighting will provide better uniformity of light which will improve public safety and security, reduce energy and maintenance costs and help strengthen the campus image.

Note: The accompanying site plan is a conceptual plan only. Fixture layouts for specific upgrade projects will need to be calculated.

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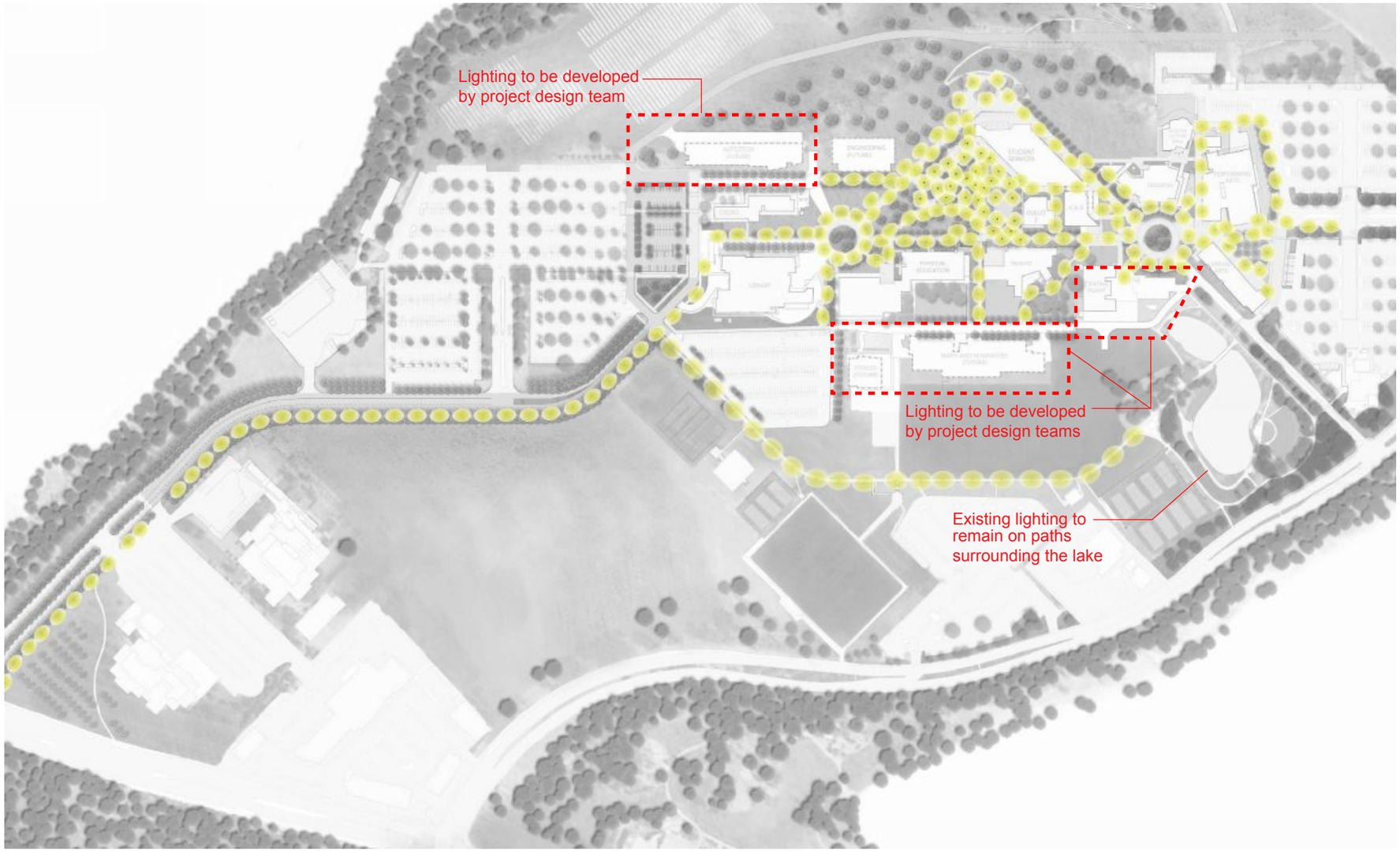

0 ft 120 ft 240 ft

SCALE: 1” = 400’-0”

EXTERIOR LIGHTING MASTER PLAN

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II. EXTERIOR LIGHTING EQUIPMENT PALETTE

PATHWAYS & COURTYARDS

TYPE F1

Direct Asymmetric LED Pole Mount Fixture on 12 ft Pole

- Manufacturer: Bega #7186LED-K4-BLK (Fixture), #906HR (Pole)
- Lamps: Integral LED System
- Watts: 80.4
- Voltage: By Electrical Engineer

TYPE F1A

Direct Symmetric LED Pole Mount Fixture on 12 ft Pole

- Manufacturer: Bega #7185LED-K4-BLK (Fixture), #906HR (Pole)
- Lamps: Integral LED System
- Watts: 83.6
- Voltage: By Electrical Engineer

TYPE F2

39 inch tall LED bollard

- Manufacturer: Bega #8554LED-K4-BLK
- Lamps: Integral LED system
- Watts: 24.6
- Voltage: By Electrical Engineer

II. EXTERIOR LIGHTING EQUIPMENT PALETTE (CONTINUED)

CHEEK WALL

TYPE F3

Recessed 7.5 inch diameter LED steplight

- Manufacturer: Bega #2220LED-K4-BLK
- Lamps: Integral LED System
- Watts: 4.7
- Voltage: By Electrical Engineer

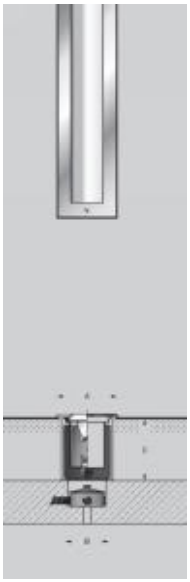
STAIRS

TYPE F4

Linear LED Steplight

- Manufacturer: Bega #8301-K4
- Lamps: Integral LED System
- Watts: 2
- Voltage: By Electrical Engineer

SIGNAGE



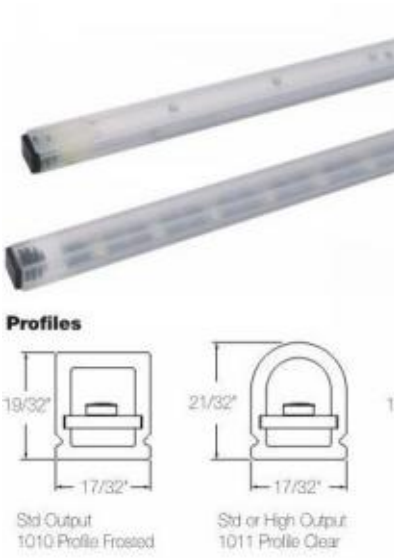
TYPE F5

Asymmetric Ingrade LED Sign Light with Integral Driver

- Manufacturer: Bega #8849LED-K4
- Lamps: Integral Led System
- Watts: 44
- Voltage: By Electrical Engineer

PROPOSED EXTERIOR LIGHTING EQUIPMENT PALETTE PART A

SIGNAGE



TYPE F6

Linear Wet Label LED Sign Light with Remote Power Supply

- Manufacturer: Tivoli #ILT-1010-35-01-12-X
- Lamps: Integral LED System
- Watts:
- Voltage: By Electrical Engineer

FLOODLIGHTING

TYPE F7

Adjustable LED Floodlight

- Manufacturer: Bk Lighting #DE-LED-X22-FL-BLP-9
- Lamps: Integral LED System
- Watts: 15
- Voltage: By Electrical Engineer

PATHWAY

TYPE F8

Existing M.H. Pole Fixture (Type 2 (06))

- Manufacturer: Invue # ICM-150-MP-DT-35-BK-PRCSR-F
- Lamps: (1) 150W
- Watts: 168
- Voltage: By Electrical Engineer

PART B

EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS

EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS PART B

ACACIA		
TYPE	**LOCATION**	**COMMENT**
12" Square Semi-Recessed	Exterior Ceiling Canopy	• Built in the period of 1970 - 1979. • No lighting retrofit needed as the building to be demolished.
2 Lamp Industrial Fluorescent Pendant	Computer Lab	

ADMINISTRATION/STUDENT CENTER		
TYPE	**LOCATION**	**COMMENT**
Decorative Wall Scone	Exterior	• Built in the period of 1970 - 1979. • Renovated the last five years or more. • Exterior lighting is still in good condition. No lighting retrofit needed. • Montgomery Hall Theater lighting does not require lighting retrofit. • The luminaires in remaining spaces are still in good condition and do not require lighting retrofit.
Trapezoid Sconce	Exterior	
2'x2' Recessed Parabolic Troffer	Corridor / Student Lounge	
2'x4' Recessed Parabolic Troffer	Offices	
6" Round Compact Fluorescent Recessed Downlights	Montgomery Hall Lobby / Student Lounge	
6" Round PAR 38 Recessed Downlights Cans	Montgomery Hall	
6"x4' Linear Recessed Fluorescent	Montgomery Hall	
Linear Uplight Integrated to custom Architectural beam	Counseling	
Decorative Pendant	Student Lounge	

ADMISSIONS & RECORDS / EOPS & S		
TYPE	**LOCATION**	**COMMENT**
HID Square Wall pack	Exterior	• Built in the period of 1970 - 1979. • Exterior luminaires are old and have yellowed lenses. Recommend replace with new LED surface wall mount wallpack luminaires, controlled by photocell and timer with any luminaires below 24 feet from the ground to also be controlled by motion sensor capable of reducing the lighting power per code requirements. IESNA recommends at least 5 footcandles in outdoor transition spaces. • The luminaires in the lobby area are still in fairly good condition. Recommend maintenance cleaning . • The lighting in the open office is still in fairly good condition. No lighting retrofit needed.
12" Cylinder Surface Mount	Exterior Ceiling Canopy	
2'x4' Recessed Troffer with Prismatic lens	Lobby / Computer Lab	
Direct / indirect Linear Pendant	Admission & Record Office	

EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS

CEDRO		
TYPE	**LOCATION**	**COMMENT**
12” Square Surface	Exterior Ceiling Canopy	• Built in the period of 1980 - 1989. • Recently renovated and completed in 2011. No lighting retrofit needed.
6”x4’ Recessed Slotlights	Lobby	
2’x4’ Recessed Indirect Troffer	Corridor	
1’x4’ Linear Surface Pendant	Classroom	
12” Round Surface	Classroom	

CEDRO PORTABLES		
TYPE	**LOCATION**	**COMMENT**
Square Wall packs	Exterior	• Built in the period of 2000 - 2009. • No lighting retrofit needed as the building to be removed.
2’x4’ Recessed Troffer	Classroom	

CHILD DEVELOPMENT CENTER		
TYPE	**LOCATION**	**COMMENT**
Not Applicable	Not Applicable	• Built in the period of 1980 - 1989. • Survey didn’t occur due to lack of building access.

GULLO STUDENT CENTER		
TYPE	**LOCATION**	**COMMENT**
Metal Halide Uplights	Lobby / Dining Hall	• Built in the period of 2000 - 2009. • Exterior lighting is in fair condition and does not require lighting retrofit. • Throughout the interior of the building are extremely large, yoke mounted metal halide fixtures that provide indirect illumination via the ceiling spaces. These fixtures appear over sized and do not aesthetically relate to the space. Recommend upgrading to smaller, more efficient LED wide beam spotlight dimmable luminaires for indirect lighting on time clock, motion sensor and daylight sensor control. IESNA reccomends a footcandle level of 3 times adjacent area but <= 10 fc for cafeteria areas at the table height. • Dining Area lighting consists of continuous rows of lensed, louvered luminaires, side mounted to the structural beams. The luminaires are in poor condition, having dirty or yellowed lenses and several warped or damaged louvers. Recommend upgrading to a surface mounted continuous linear dimmable LED extrusion on time clock, daylight sensor and motion sensor control. IESNA reccomends a footcandle level of 3 times adjacent area but <= 10 fc for cafeteria areas at the table height. • Conference, Kitchen, and Student Lounge luminaires are either showing signs of wear or are in poor condition. Recommend upgrading to suspended linear direct/indirect dimmable LED fixtures in the Conference and Student lounge, controlled via motion sensor and dimmer switch. IESNA recommends levels of 30 fc for the student lounge and conference room. The kitchen shall be illuminated to lighting levels of 50 fc at food prep areas and 20 fc elsewhere. Luminaires shall be sealed kitchen type, LED on occupancy sensor control switch. • Campus Bookstore pendant hung direct / indirect linear fluorescent luminaires provide light levels that are appropriate for the space, are in good condition and do not require upgrading. However, it is recommended that the strip fluorescents, that are integrated into and illuminate the vertical face of the wall mounted shelving units, be either equipped with asymmetrical reflectors or replaced with similar new strip fixtures with asymmetrical reflectors, to deliver more uniform vertical illumination to the stacks. • The existing 2'x2' Recessed Parabolic fixtures in office spaces are dated, inefficient, and have poor uniformity. Recommended upgrading to recessed LED luminaires controlled via motion sensor switch. Any areas over 100s.ft to be dimmable, any daylight areas to be controlled via daylight sensor. IESNA recommends levels of 30 fc at working plane for offices.
Asymmetric Linear Wall Wash with Louver	Lobby	
1'x4' Linear Surface with Louvers	Dining Hall	
20" Diameter Metal Halide Industrial Stem Mount	Dining Hall / Conference / Faculty Lounge / Cafeteria / Student Lounge	
Track Head Lights	Dining Hall / Conference	
T8 Linear Fluorescent Surface	Cafeteria	
2'x4' Recessed Troffer with Prismatic lens	Cafeteria	
Round Recessed Downlight	Video Arcade	
Linear Surface Wraparound Squares with Prismatic lens	Student Lounge	
Jelly Jar Surface Mount with Wire Guard	Student Lounge	
Direct / Indirect Linear Pendant	Campus Store	
2'x2' Recessed Parabolic Troffer	Campus Store	
Linear Surface Fluorescent Book Stacks Luminaire	Campus Store	

EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS

GULLO II		
TYPE	**LOCATION**	**COMMENT**
Trapezoid Wall Sconce	Exterior	• Built in the period of 2000 - 2009. • Exterior lighting is still in good condition. No lighting retrofit needed. • Multipurpose lighting is still in good condition, but one luminaire is missing a diffuser lens. With the exception of one luminaire to be repaired, no lighting retrofit needed. • The luminaires in the remaining spaces are still in good condition. No lighting retrofit needed.
Jelly Jar Surface Mount with Wire Guard	Exterior Ceiling Canopy	
Metal Halide High Bay Pendant	Multipurpose Area	
2'x2' Recessed Troffer	Vestibule / Restroom	

LIBRARY		
TYPE	**LOCATION**	**COMMENT**
12" Square Surface	Exterior Ceiling Canopy	• Built in the period of 2000 - 2009. • Exterior ceiling canopy surface luminaires have very yellowed lenses and are in poor repair, with one fixture completely broken. Recommend maintenance cleaning of the luminaires and replace the broken fixture. • The interior lighting is still in good condition and light level are appropriate for the application per space. No lighting retrofit needed.
6" Round Recessed Downlight	Lobby	
2'x4' Recessed Parabolic with Metal Louvers	Mishra Community Room	
2'x4' Recessed Troffer Direct / Indirect	Classroom	
1'x4' Linear Surface	Study Room	

MONTGOMERY HILL OBSERVATORY		
TYPE	**LOCATION**	**COMMENT**
Metal Halide Quarter Sphere Sconce	Exterior	• Built in the period of 2000 - 2009. • All exterior lighting is new and in good condition. • All interior lighting is new and in good condition. Recommend removal and cleaning of lenses on surface mounted 4'-0" fixtures.
Area Bollard	Exterior	
1"x4' Linear Surface Mount Wraparound Squares with Prismatic lens	Classroom	
Under cabinet Surface Mount	Classroom	
Red light Jelly Jar Wall Mount	Classroom	

PERFORMING ARTS		
TYPE	**LOCATION**	**COMMENT**
Not Applicable	Not Applicable	• Built in the period of 2000 - 2009. • No lighting retrofit needed as the building recently constructed.

PHYSICAL EDUCATION		
TYPE	**LOCATION**	**COMMENT**
2'x4' Recessed Troffer with K12 Acrylic	Gym Lobby	• Built in the period of 1970 - 1979. • Recently renovated within the last 5 years or more. • Lighting in the gym is in good condition. No lighting retrofit needed for this area. • Locker room lighting is in poor condition. Luminaire are generally old and have yellowed and/or broken lenses. • The existing Metal Halide Drum Pendant in a classroom - tactical is dated, inefficient, and do not aesthetically relate to the space. Recommend upgrading to recessed 2'x2' or 2'x4' dimmable LED luminaires controlled via motion sensor and dimmable switch. Any daylight areas to be controlled via daylight sensor. IESNA recommends levels of 40 fc at working plane for general classrooms. • Lighting luminaires on the 2nd floor have been recently upgraded. No lighting retrofit needed.
6" Round Downlight	Gym Lobby	
Metal Halide High Bay Pendant	Gym	
Metal Halide Drum Pendant	Classroom - Tactical	
6"x4' Recessed Linear Slotlight	Classroom - Exercise	
Linear Surface Cove Luminaire	Classroom - Exercise	
2'x2' Recessed Direct / Indirect Troffer	Corridor - First Floor	
Direct / Indirect Pendant	Corridor	
Linear Surface Continuous Wraparound Lens	Locker Room	

PE PORTABLES		
TYPE	**LOCATION**	**COMMENT**
Square Wall packs	Exterior	• Built in the period of 2000 - 2009. • No lighting retrofit needed as the building to be removed.
2'x4' Recessed Troffer	Classroom	

REPROGRAPHICS		
TYPE	**LOCATION**	**COMMENT**
Metal Halide Square Wall packs	Exterior	• Built in the period of 1970 - 1979. • No lighting retrofit needed as the building to be demolished.
12" Square Surface Mount	Exterior Canopy	
Cylinder Linear "Teardrop" Surface Mount	Exterior Ceiling Canopy	
Linear Surface Mount	Exterior Ceiling Canopy	
Cylinder Can flush into wooden grid ceiling	Reprographics	
Square Surface below wooden grid ceiling	Reprographics	
2'x4' Recessed Troffer with Acrylic Prismatic lens	Reprographics	

ROBLE		
TYPE	**LOCATION**	**COMMENT**
12" Square Surface Mount	Exterior Ceiling Canopy	• Built in the period of 1970 - 1979. • No lighting retrofit needed as the building will be demolished.
2'x4' Recessed 4-Lamp Troffer with K12 Acrylic lens	Classroom	
2'x4' Recessed 4-Lamp Troffer with K12 Acrylic lens	Faculty Office	

SEQUOIA		
TYPE	**LOCATION**	**COMMENT**
Decorative Pendant with Seismic Cable	Staircase	• Built in the period of 2000 - 2009. • All exterior and interior lighting is in good condition, with the exception on the Conference Room (S219). Dean complained of low light level. With the exception on the Conference Room (S219), no lighting retrofit needed for the remaining spaces. • IESNA recommended lighting levels for Conference Rooms is 30 fc at the workplane (2'6") • Recommend to replace linear fluorescent troffer with LED strip lighting and recessed downlights with dimmable LED recessed downlights controlled by motion sensor with override dimmer switch for presentations.
Round Recessed Downlight	Corridor / Conference Room	
Linear Surface Cove Luminaire	Conference Room	
1'x4' Indirect Linear Fluorescent Pendant	Office	

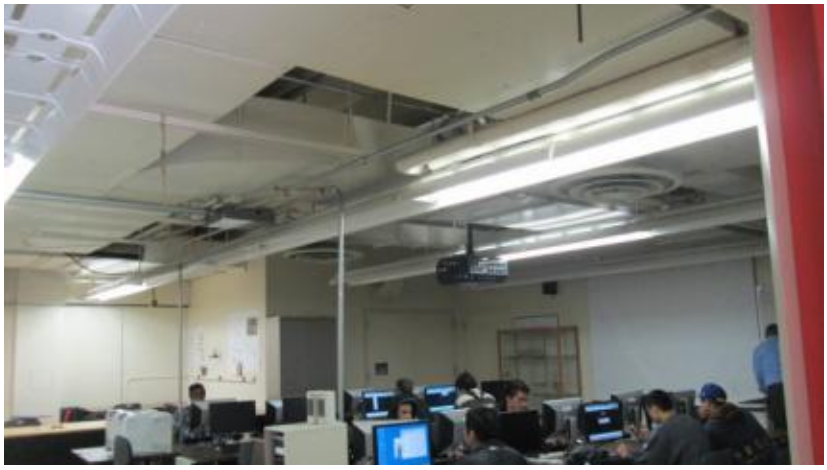
SEQUOIA LECTURE HALL		
TYPE	**LOCATION**	**COMMENT**
Round Recessed Downlight	Exterior Ceiling Canopy	• Built in the period of 2000 - 2009. • All exterior and interior lighting is in fairly good condition. No lighting retrofit needed.

VISUAL ARTS		
TYPE	**LOCATION**	**COMMENT**
Not Applicable	Not Applicable	• Built in the period of 2000 - 2009. • No lighting retrofit needed as the building recently constructed.

ACACIA

EXTERIOR CEILING CANOPY

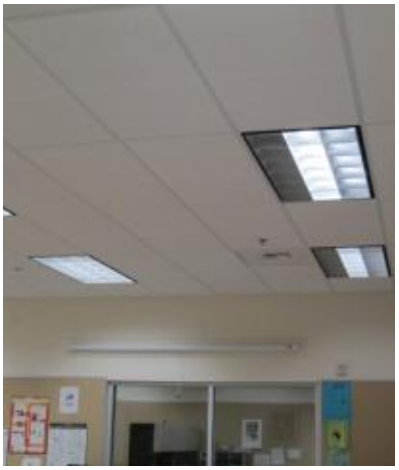
COMPUTER LAB



ADMINISTRATION/ STUDENT CENTER

EXTERIOR

CORRIDOR



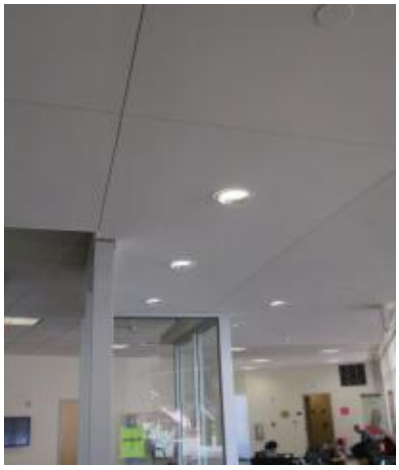
EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS PART B

MONTGOMERY HALL LOBBY

MONTGOMERY HALL

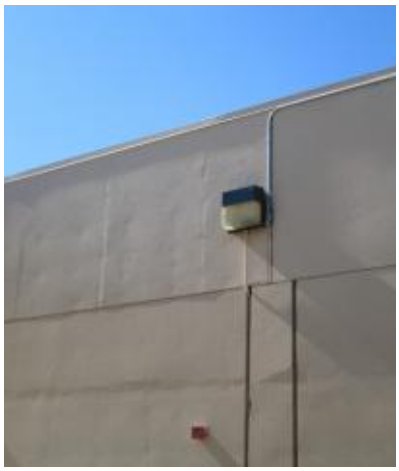
COUNSELING

STUDENT LOUNGE

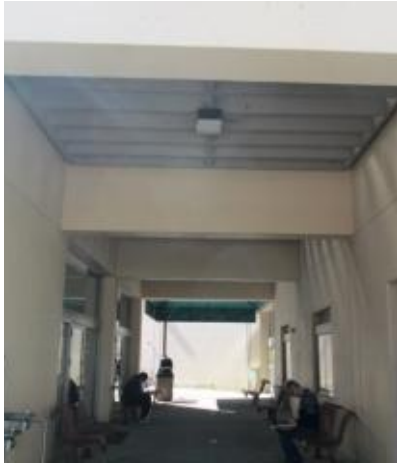


ADMISSIONS + RECORDS / EOPS + S

EXTERIOR

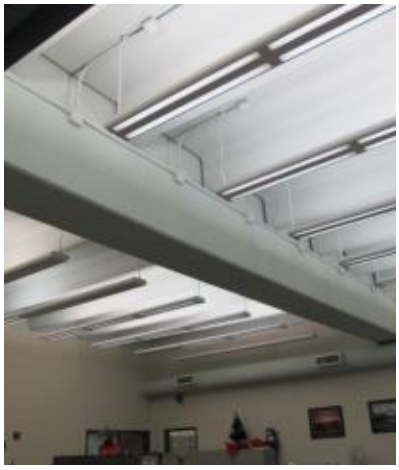


EXTERIOR CEILING CANOPY

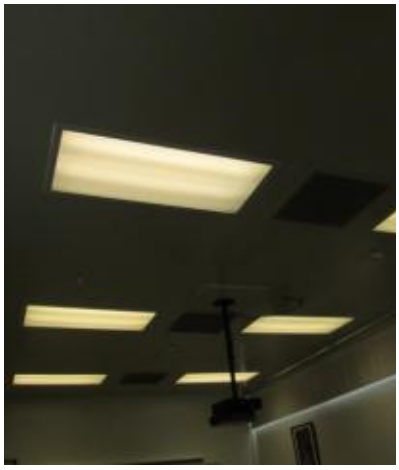


LOBBY

A+R OFFICE



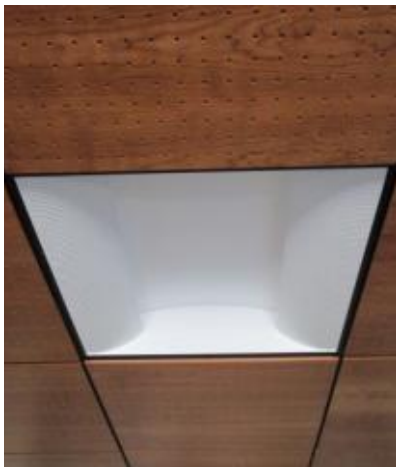
COMPUTER LAB



CEDRO

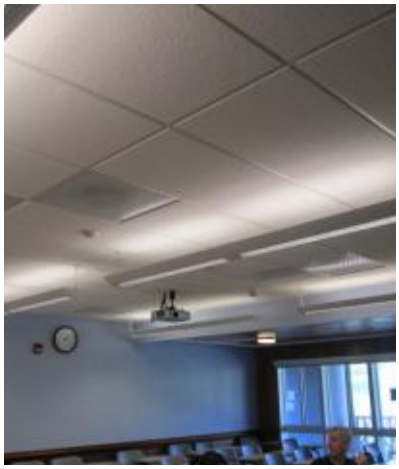
EXTERIOR CEILING CANOPY

CORRIDOR



LOBBY

CLASSROOM



CEDRO PORTABLES

EXTERIOR

CLASSROOM

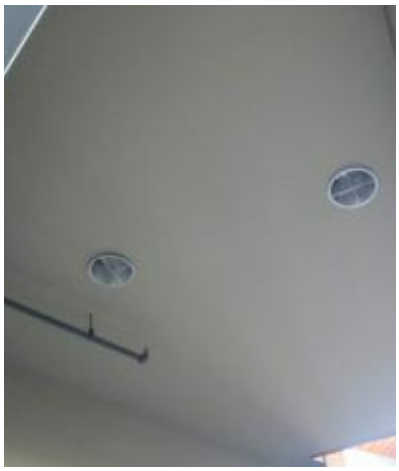
MONTGOMERY HILL OBSERVATORY

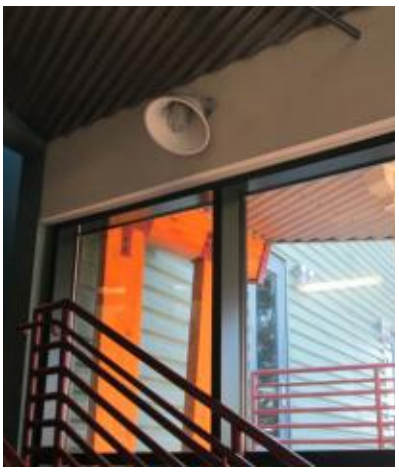
EXTERIOR

CLASSROOM

GULLO STUDENT CENTER

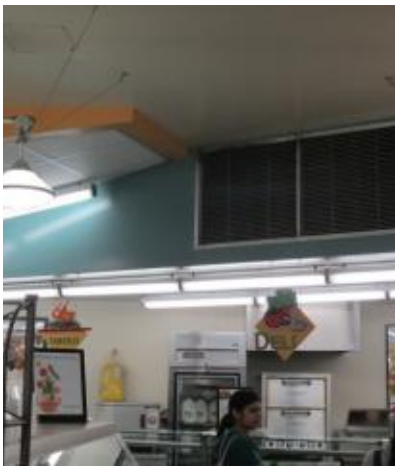
LOBBY



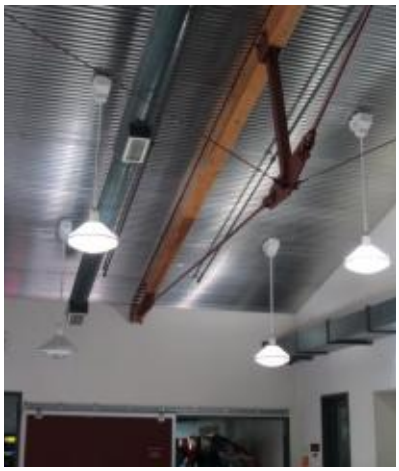


EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS PART B

CAFETERIA



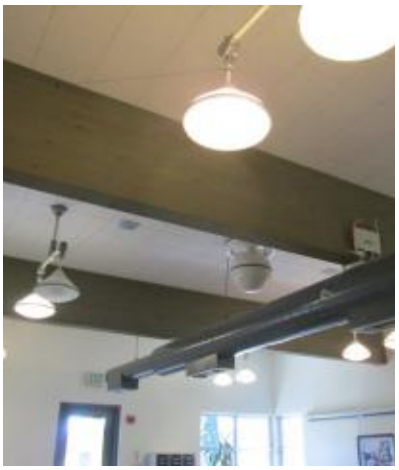
DINING HALL



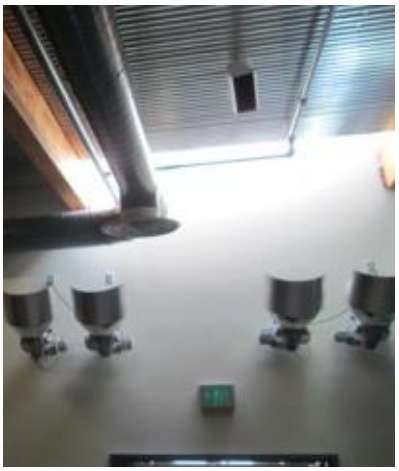
VIDEO ARCADE

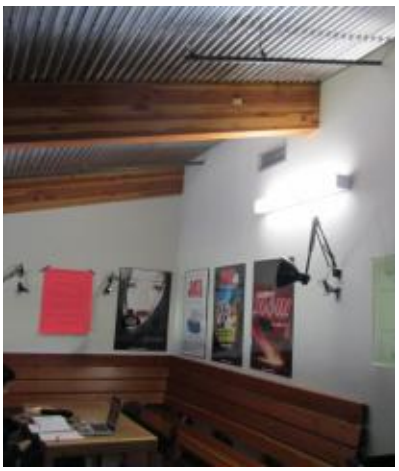
GULLO STUDENT CENTER (CONTINUED)

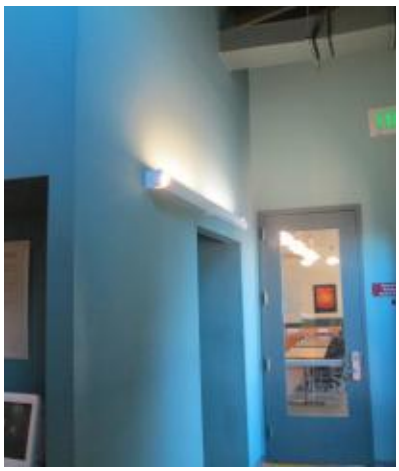
FACULTY LOUNGE



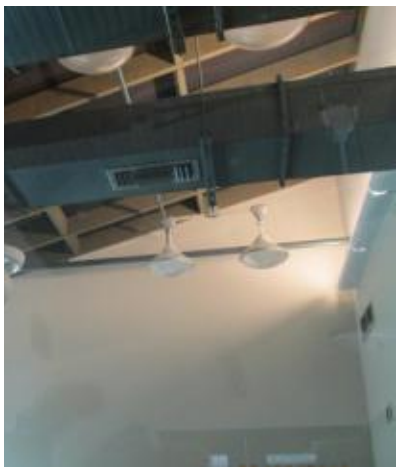
STUDENT LOUNGE







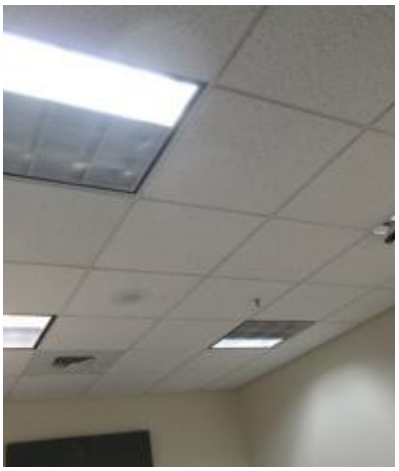
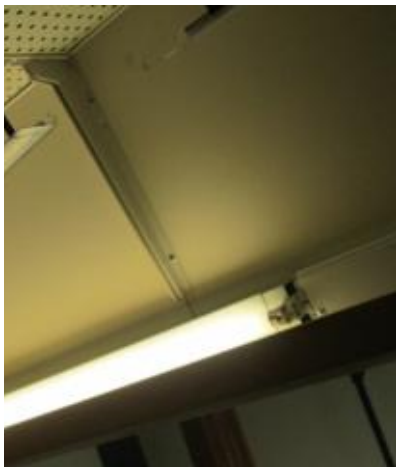
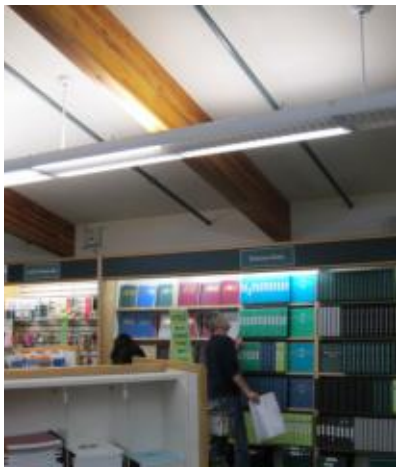
SMALL CONFERENCE



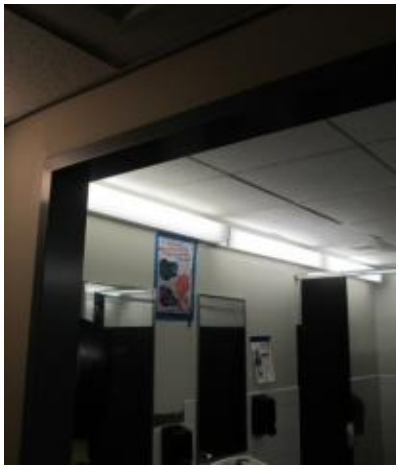
EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS PART B

CAMPUS STORE



RESTROOM

GULLO II

EXTERIOR

EXTERIOR CEILING CANOPY

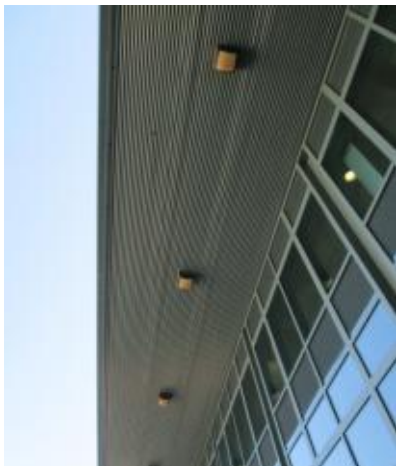
VESTIBULE

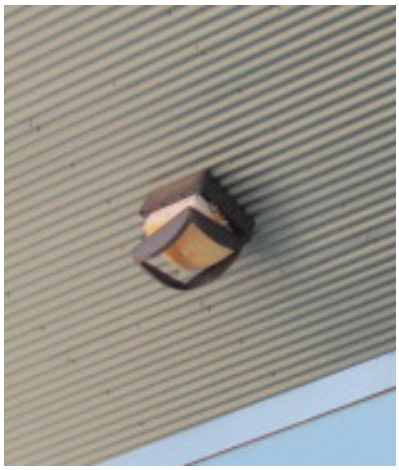
MULTIPURPOSE AREA

RESTROOM

LIBRARY / EDUCATIONAL TECHNOLOGY

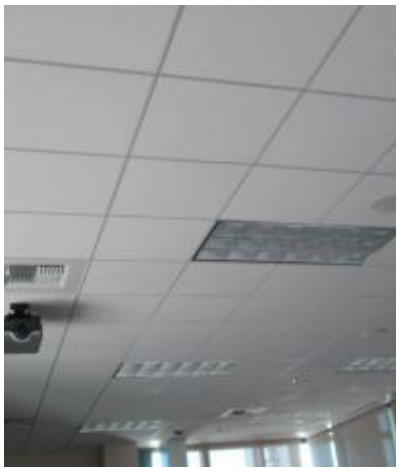
EXTERIOR CEILING CANOPY



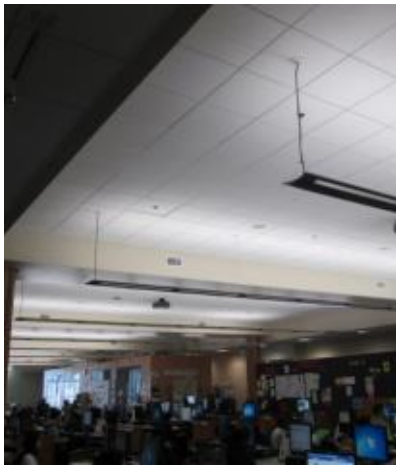


LOBBY

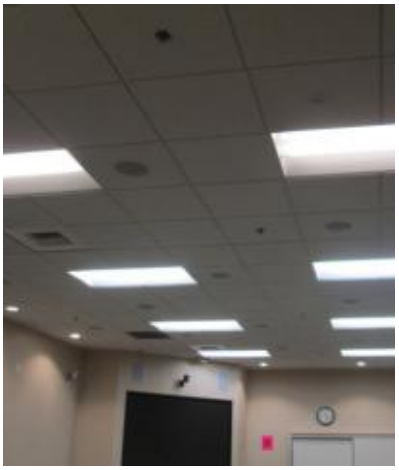
MISHRA COMMUNITY ROOM



COMPUTER LAB

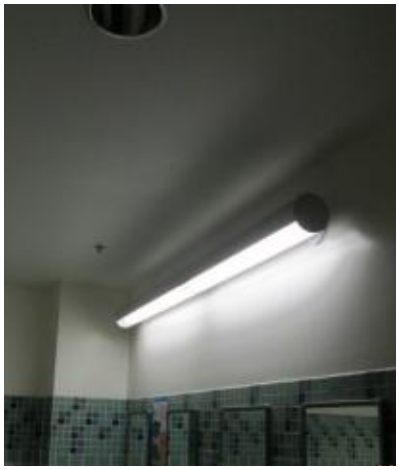


CLASSROOM



STUDY ROOM

MEN'S RESTROOM

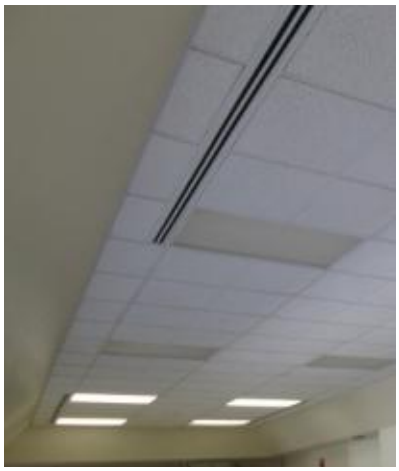


PERFORMING ARTS

EXTERIOR

PHYSICAL EDUCATION

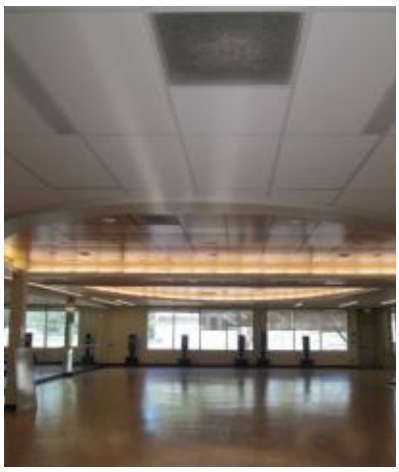
GYMNASIUM LOBBY



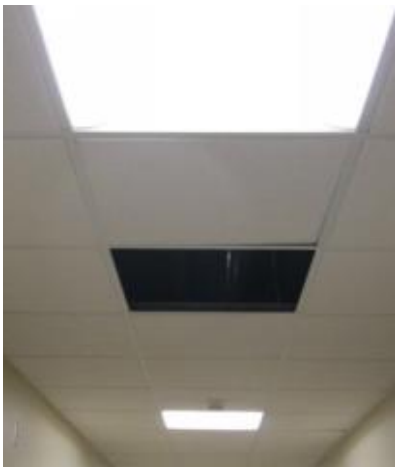
GYMNASIUM

CLASSROOM - TACTICAL

CLASSROOM - EXERCISE

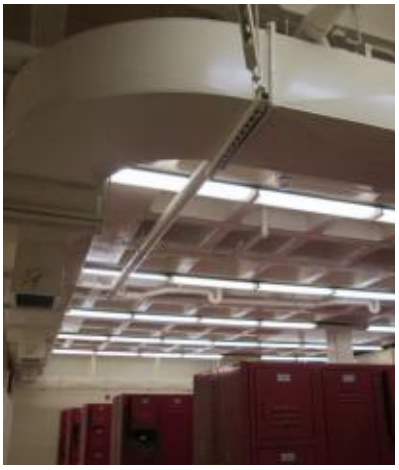


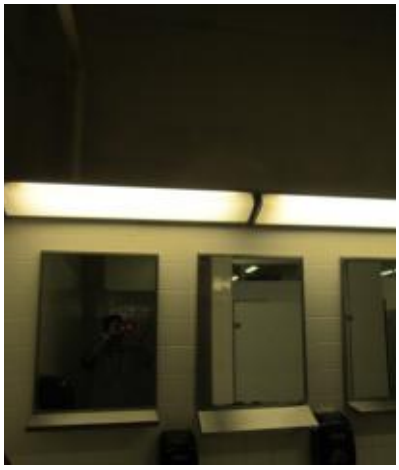
CORRIDOR - FIRST FLOOR



CORRIDOR - SECOND FLOOR

MEN'S LOCKER ROOM





PHYSICAL EDUCATION PORTABLES

EXTERIOR

CLASSROOM

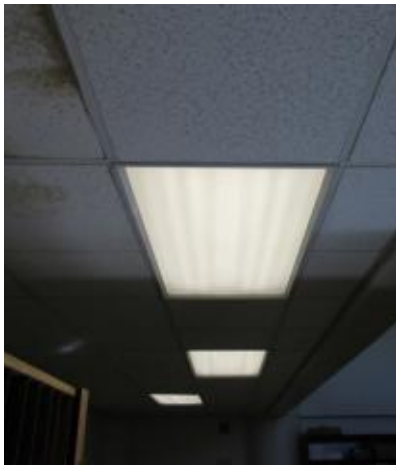
REPROGRAPHICS

EXTERIOR

EXTERIOR CANOPY

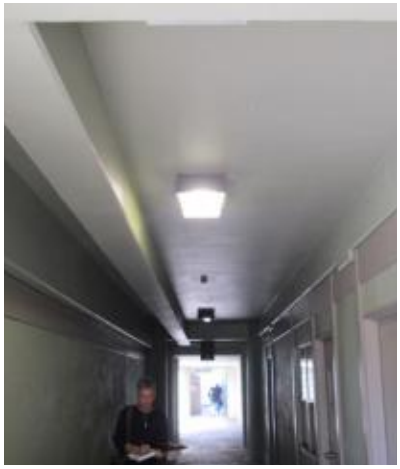
EXTERIOR CEILING CANOPY

REPROGRAPHICS

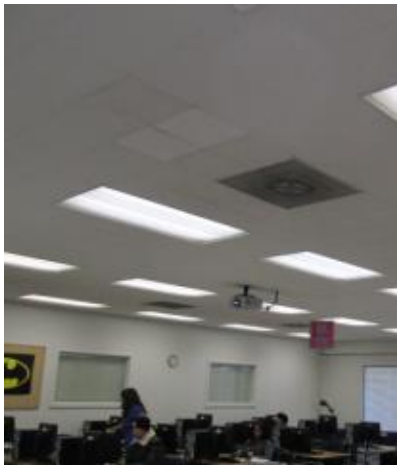


ROBLE

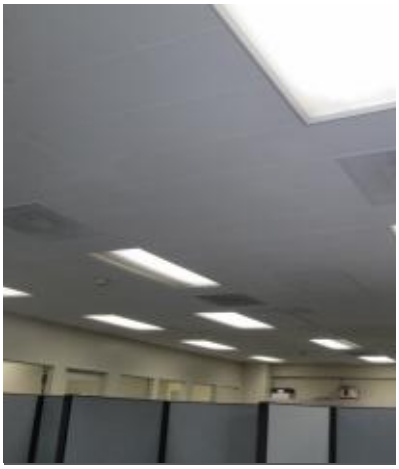
EXTERIOR CEILING CANOPY



CLASSROOM



FACULTY OFFICE

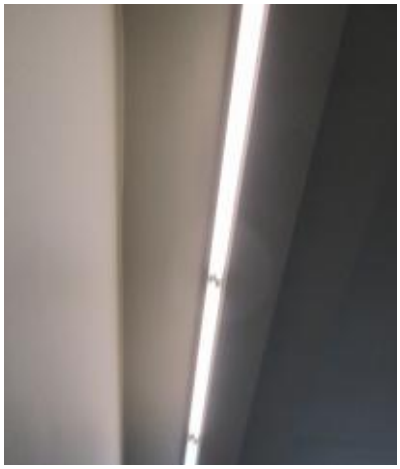


SEQUOIA

STAIRCASE

CORRIDOR

CONFERENCE ROOM



OFFICE

SEQUOIA LECTURE HALL

EXTERIOR CEILING CANOPY

VISUAL ARTS

LOBBY

CORRIDOR

PART C

PROPOSED BUILDING + INTERIOR LIGHTING EQUIPMENT PALETTE

ADMISSIONS + RECORDS / EOPS + S

EXTERIOR

Recommended Fixture:
Philips Gardco 101 LED Trapezoidal Wedge High Performance Sconce Luminaire

EXTERIOR CEILING CANOPY

Recommended Fixture:
Bega US 5112 LED Surface Wall and Ceiling LED with 3-Ply Opal Glass

COMPUTER LAB / LAB

Recommended Fixture:
Philips Ledalite Vectra Series - 2'x4' Recessed

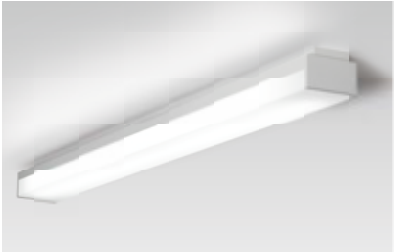
PROPOSED BUILDING + INTERIOR LIGHTING EQUIPMENT PALETTE

GULLO STUDENT CENTER

LOBBY

Recommended Fixture:
The Lighting Quotient Elliptipar M402 Small Smooth Surface with Integral Ballast, Metal Halide

DINING HALL



Recommended Fixture:
XAL Evana 4” Wide Surface Mounted

DINING HALL

Recommended Fixture:
Zumtobel Kaveros LED Track Accent Light, Medium

PROPOSED BUILDING + INTERIOR LIGHTING EQUIPMENT PALETTE PART C

DINING HALL

Recommended Fixture:
Kenall Enviropro EPLB Series Low/High Bay Pendant Light

DINING HALL / STUDENT LOUNGE

Recommended Fixture:
The Lighting Quotient Elliptipar M406 Large Ensconce Base Unit with Integral Ballast, Metal Halide with Enclosure

SMALL CONFERENCE / FACULTY LOUNGE

Recommended Fixture:
Zumtobel ICOS Series Suspended Continuous Row System with Indirect/Direct Lighting

GULLO STUDENT CENTER (CONTINUED)

CAFETERIA

Recommended Fixture:
Kenall Enviroseal FES Series - Wall- or Ceiling-Mounted Food Processing Luminaire

KITCHEN

Recommended Fixture:
Kenall Simpleseal CSEGI Series - Recessed Ceiling Mount with Inset Door

CAMPUS STORE - OFFICE

Recommended Fixture:
Philips Ledalite Vectra Series - 2'x2' Recessed

PROPOSED BUILDING + INTERIOR LIGHTING EQUIPMENT PALETTE PART C

CAMPUS STORE - BOOK STACK

Recommended Fixture:
Birchwood Lighting WP System Under Shelf Luminaire

RESTROOM - VESTIBULE

Recommended Fixture:
Philips OM6LED 1500 Omega Revelation 6” LED Architectural Downlighting

RESTROOM - TOP OF MIRROR

Recommended Fixture:
Kenall Millenium Stretch MLHA5 Series - Wall- or Ceiling-Mounted

PROPOSED BUILDING + INTERIOR LIGHTING EQUIPMENT PALETTE

PHYSICAL EDUCATION

GYM LOBBY / CORRIDOR - FIRST FLOOR

Recommended Fixture:
Philips Ledalite Vectra Series - 2'x2' Recessed

CLASSROOM - TACTICAL

Recommended Fixture:
Focal Point Skydome - Surface Mounted

MEN'S LOCKER ROOM

Recommended Fixture:
Philips Day-Brite Lighting 4' Vaporlume Wet Location Industrial Fiberglass Lamp - Surface or Suspended Mounted

MEN'S LOCKER ROOM - TOP OF MIRROR

Recommended Fixture:
Kenall Millenium Stretch MLHA5 Series - Wall- or Ceiling-Mounted

SEQUOIA

CONFERENCE ROOM

Recommended Fixture:
Finelite High Performance 4” Aperture - Recessed (HP-4 R) with linear LED luminaire

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PROPOSED BUILDING + INTERIOR LIGHTING EQUIPMENT PALETTE

SOUTH CAMPUS BUILDING A + B

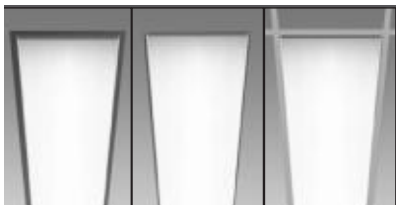
EXTERIOR CANOPY

Recommended Fixture:
Bega-US 4471LED surface wall washers with asymmetrical light distribution

CIRCULATION

Recommended Fixture:
Zumtobel SSR2 Slotlight - 2 1/2” Recessed Flangeless LED

CIRCULATION

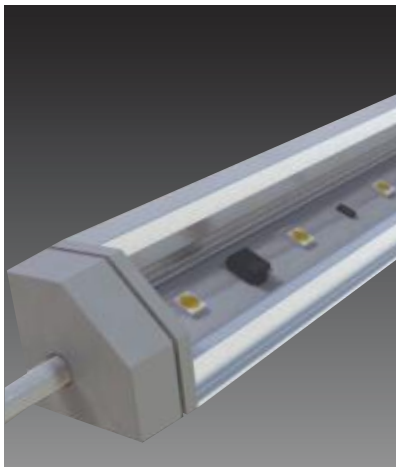


Recommended Fixture:
Zumtobel SIND6 Slotlight - 6” Individual Recessed Flanged/ Flangeless Fluorescent

CIRCULATION

Recommended Fixture:
Zumtobel SCON6 Slotlight - 6” Continuous Recessed Flanged/Flangeless Fluorescent

CIRCULATION



Recommended Fixture:
io Lighting line series .75 Low Voltage Linear Accent Luminaire

MAIN STAIRCASE

Recommended Fixture:
io Lighting luxrail Indoor/ Outdoor LED-based Handrail

SOUTH CAMPUS BUILDING A + B (CONTINUED)

MAIN CONFERENCE ROOM

Recommended Fixture:
Philips Ledalite 39S8 TruGroove Standalone Asymmetric, Linear Recessed

CLASSROOMS / LABS

Recommended Fixture:
Philips Ledalite 3314 Shine 1'x4' Recessed

OFFICES / CONFERENCE ROOMS

Recommended Fixture:
Philips Ledalite 7505 Chopstick Suspended Semi-Indirect

UTILITY ROOMS / STORAGES

Recommended Fixture:
Philips Day-Brite 1FD General Purpose Industrial

RESTROOMS

Recommended Fixture:
Linear Lighting Wall Wash WW4

FITNESS AREA

Recommended Fixture:
Zumtobel SSS2 Slotlight - 2 1/2” Direct Suspended or Surface-Mounted LED

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END OF SECTION 6 - EVERGREEN VALLEY COLLEGE

SECTION 6

SAN JOSÉ CITY COLLEGE

PART A

PROPOSED EXTERIOR LIGHTING EQUIPMENT PALETTE

PROPOSED EXTERIOR LIGHTING EQUIPMENT PALETTE PART A

I. GENERAL GUIDELINES

Existing lighting standards for the campus have been consistently implemented. The following pages outline the fixtures specified and the contexts in which they are located. In addition to serving the purpose of facilitating activities through illumination, lighting is used for reinforcing the character zones across campus and providing a means for wayfinding. Pathways, building entries, and parking lots shall all be clearly illuminated for safety and clear visibility. Limiting the number of types of lighting fixtures makes maintenence more efficient. The fixtures chosen reinforce campus goals for sustainability by reducing the amount of light pollution at night.

II. EXTERIOR LIGHTING EQUIPMENT PALETTE

ACCENT LIGHTING:

Pathway lighting and exterior coutyards where the addition of accent lighting is desired

- Manuf: Selux
- Model: White Louver
- (BSL)
- Color: Silver

WALKWAYS + PLAZAS:

Campus plazas and primary pedestrian walkways

- Manuf: Selux
- Model: Saturn 3
- Catalog No: SA3-10'
- Color: Silver
- Voltage: 277V
- Lamping: 100MH
- Height: 10' pole

PROPOSED EXTERIOR LIGHTING EQUIPMENT PALETTE PART A

PROMENADE:

Main pedestrian walkway throughout campus

- Manuf: Selux
- Model: Saturn Magnum
- Catalog No: SAMG-MR
- Color: Silver
- Voltage: 277V
- Lamping: 150MH
- Height: 14' pole with banner arm

ENTRY LIGHTS:

Site lighting accent for vehicular entries and drop off zones

- Manuf: Selux
- Model: Corral Column
- Catalog No: CCT-14'
- Color: Silver
- Voltage: 277V
- Lamping: 4 T8
- Height: 14' pole

II. EXTERIOR LIGHTING EQUIPMENT PALETTE (CONTINUED)

PARKING LOTS:

- High-level safety lighting for parking lots and roadways
- International Dark Sky Association (IDA) approved “Dark-Sky Friendly”
- Along roadways and entries the addition of a banner arm should be specified.

- Manuf: Gardco Lighting
- Style: Hardtop CA
- Catalog No: CA-22
- Type: III
- Color: Black
- Voltage: 277V
- Lamping: 250MH
- Height: 22’

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PART B

EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS

100 / 200 / 300 CLASSROOMS

TYPE	LOCATION	COMMENT
12” Square Surface Mount	Exterior Ceiling Canopy	• Built in the period of 1950 - 1959. • No lighting retrofit needed as the building will be demolished.
Shoe box Wall Surface Floodlight	Exterior	
2 Lamp Industrial Fluorescent Pendant	Classroom / Classroom Lab	
Metal Halide High Bay Pendant	Classroom Lab	
Compact Fluorescent Pendant	Classroom Lab	
1”x4’ Linear Surface Mount Wraparound Squares with Prismatic lens	Faculty Office	

AUXILIARY GYMNASIUM

TYPE	LOCATION	COMMENT
12” Square Wall pack	Exterior	• Built in the period of 1960 - 1969. • No lighting retrofit needed as the building will be demolished.
Jelly Jar Surface Mount	Exterior Ceiling Canopy	
2’x4’ Recessed Troffer with Prismatic Lens	Women’s Locker Room	
Decorative Direct Surface Wall Mount	Women’s Locker Room	
Metal Halide High Bay Pendant	Gym	

BUSINESS

TYPE	LOCATION	COMMENT
12” Square Surface Mount	Exterior Ceiling Canopy	• Built in the period of 1960 - 1969. • Recently renovated in the period of 2000-2009. • Exterior lighting is still in fairly good condition. • The Lobby Area and Staircase luminaires are old and have yellowed lenses. Recommend upgrading to surface mounted LED 2’x2’ luminaires on daylight sensor and partial on-off motion sensor with auto off control. IESNA recommends 5 fc for typical stairways. • Classroom and Office luminaires are recently upgraded and do not require lighting retrofit.
4’x4’ 4-Lamps Recessed Troffer with Prismatic Lens	Lobby	
1”x4’ Linear Surface Mount Wraparound Squares with Prismatic lens	Staircase Lobby	
2’x4’ Direct / Indirect Recessed Parabolic Troffer	Corridor / Office	
2’x4’ Recessed Troffer	Classroom	
Direct / indirect Linear Pendant	Classroom	
Indirect Linear Pendant	Office	
Direct / indirect Linear Pendant with MR16	Office	

EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS

CAREER TECHNOLOGY		
TYPE	**LOCATION**	**COMMENT**
Metal Halide Wall pack	Exterior	• Built in the period of 2000 - 2009. • All exterior and interior luminaires are still in good condition. No lighting retrofit needed.
Direct Surface Wall Mount	Exterior Ceiling Canopy	
Direct / indirect Linear Pendant with Straight Blade Louvers	Classroom Lab	
2'x4' Recessed Troffer with Prismatic Lens	Reception / Conference Room	
Round Recessed Downlight	Corridor	

CHILD DEVELOPMENT CENTER		
TYPE	**LOCATION**	**COMMENT**
12" Round Wall Mount with Wire Guard	Exterior	• Built in the period of 1970 - 1979. • No recent lighting upgrade since it was built. • All exterior and interior luminaires are dated, and have yellowed lenses. Recommend replacing with new and more efficient luminaires. • Replace exterior lighting on building entry and at canopy with LED exterior luminaires on time control and photocell with the ability to have motion sensor controls for any light less than 24 feet above ground as per code compliance. • Replace interior lighting with new LED fixtures. Offices and conference rooms to have sensor switch control with daylight sensor in required areas, reception lighting to be controlled by time clock, motion sensor with auto off as per code requirements. Any areas over 100 sq.ft to provide dimmable luminaires. IESNA recommends levels of 30 fc at working plane for offices.
6" Round Recessed Downlight	Exterior Ceiling Canopy	
12" Round Wall pack	Exterior	
2'x4' Recessed Troffer with Prismatic Lens	Reception Lobby / Lounge	
2'x2' Semi Recessed Troffer	Office / Conference Room	

COSMETOLOGY		
TYPE	**LOCATION**	**COMMENT**

Metal Halide Direct Decorative Pendant	Lobby	• Built in the period of 2000 - 2009. • No lighting retrofit needed as the building is newly built.
Decorative Fluorescent Wall Scone	Lobby	
Metal Halide Wall Scone with Two Parabolic Reflectors	Lobby	
2'x4' Volumetric Recessed Fluorescent	Corridor	
Direct / indirect Linear Pendant	Classroom	

DRAMA / THEATER

TYPE	LOCATION	COMMENT
1'x4' Linear Surface Mount Wraparound Squares with Prismatic lens	Exterior Ceiling Canopy	• Built in the period of 1950 - 1959. • No lighting retrofit needed as the building will be demolished.
Round Wall pack	Exterior	
Round Recessed Downlight	Lobby / Theater	
Decorative Direct Surface Wall Mount	Lobby	
Linear Surface Cove Luminaire	Theater	
2'x4' Recessed Troffer with Prismatic Lens	Classroom	
Decorative Surface Wall Mount	Classroom	
1"x4' Linear Surface Mount Wraparound Squares with Prismatic lens	Classroom	

FINE ARTS CENTER

TYPE	LOCATION	COMMENT
Compact Fluorescent Wall Mount with Louvers	Exterior	• Built in the period of 2010 - 2013. • No lighting retrofit needed as the building is newly built.
6" Round Surface Mounted	Exterior Ceiling Canopy	
Direct / indirect Linear Pendant	Classroom	
Track Head Lights	Classroom	

GENERAL EDUCATION

TYPE	LOCATION	COMMENT
Round Wall pack	Exterior	• Built in the period of 1960 - 1969. • All interior luminaires are dated and inefficient. Recommend upgrading to recessed 2'x2' or 4'x4' LED luminaires controlled via sensor switch. IESNA recommends 40 fc at working plane for general classrooms . • No lighting retrofit needed for exterior lighting, in good condition.
12" Square Surface Mount	Exterior Ceiling Canopy	
2'x4' Recessed Troffer with Prismatic Lens	Corridor / Classroom	

LIBRARY / LEARNING CENTER		
TYPE	**LOCATION**	**COMMENT**
12” Round Surface Ceiling Mount	Exterior Ceiling Canopy	• Built in the period of 2000 - 2009. • Exterior ceiling canopy surface luminaires have very yellowed lenses and are in poor condition, with one fixture having burnt-out lamp. Recommend maintenance cleaning of the luminaires and replacing burnt-out lamp. • Exterior Main Staircase consists of two different existing luminaire types; round surface wall mount luminaire and compact fluorescent rectilinear surface wall mount luminaire. Recommend replacing all of the round surface wall mount with the LED wall mount that provide better illumination and improved uniformity. To be controlled by motion sensor with auto off. • The existing 2’x4’ Recessed Parabolic Troffers in the Reading Lab, Open Reading Area, and Offices are inefficient and produce discomfort glare. Recommend upgrading to recessed LED troffers controlled by motion sensors and daylight sensors in required areas. Any areas over 100 sq. ft. are to be provided with dimmable luminaires and dimmer switch. IESNA recommends levels of 30 fc at working plane for offices. • The existing metal halide wall mount uplight luminaire and compact fluorescent wall mount uplight luminaire in the Stack Area provides indirect illumination via the Stack Area ceiling. These luminaires are inefficient, have poor light distribution, and have maintenance accessibility issues. Finally, the existing linear fluorescent teardrop luminaires also are inefficient and have poor light distribution. Recommend upgrading to LED wide beam spot lights for indirect lighting to the overall area. They should be mounted to a height that is accessible by staff. Lighting shall be dimmable and on daylight sensor near windows, any luminaires for library stacks shall be controlled by motion sensor for partial on-off control with auto off. • The existing 12” round wall mount luminaires in the staircase are unevenly spaced, inefficient, and have poor light distribution. Recommend upgrading to wall mount LED fittings with partial on-off sensor with auto off control per code requirements. • The luminaires in remaining spaces are still in good condition and do not require lighting retrofit.
Compact Fluorescent Rectilinear Surface Wall Mount	Exterior Main Staircase	
Round Surface Wall Mount	Exterior Main Staircase	
Half Cylinder Wall Sconce mounted to entry door mullion	Exterior Main Staircase	
6” Round Recessed Downlight with Decorative Ring	Open Workstations / Circulation / Periodical Stacks	
Round Direct / Indirect Decorative Pendant	Open Workstations	
2’x4’ Recessed Parabolic Troffer	Reading Lab / Open Reading / Library Office / Work Room	
Linear Fluorescent Teardrop	Periodical Stacks / Book Stack Area	
Metal Halide Wall Mount Uplight Luminaire	Book Stack Area	
Compact Fluorescent Wall Mount Luminaire	Book Stack Area	
Asymmetric Linear Wall Wash with Louver	Open Reading	
12” Round Wall Mount Luminaire	Staircase	

MAIN GYMNASIUM

TYPE	LOCATION	COMMENT
6” Round Recessed Downlight	Exterior Ceiling Canopy	• Built in the period of 1960 - 1969. • The luminaires in the Main Gym are recently upgraded in the period of 2000-2009. No lighting retrofit needed. • The back of house for the Main Gym will be demolished. No lighting retrofit needed.
12” Square Wall pack	Exterior	
4’x4’ Surface Mount with custom housing	Gym	
2 Lamp Industrial Fluorescent Pendant with Wire Guard	Gym	
1”x4’ Linear Surface Mount Wraparound Squares with Prismatic lens	Men’s Locker Room	
12” Round Surface Mount	Men’s Locker Room	
4’x4 Surface Mount with Prismatic Lens	Men’s Locker Room	

MULTI-DISCIPLINARY

TYPE	LOCATION	COMMENT
6” Round Surface Mounted	Exterior Ceiling Canopy	• Built in the period of 2010-2013. • No lighting retrofit needed as the building is newly built.
Direct / indirect Linear Pendant	Classroom	

REPROGRAPHICS

TYPE	LOCATION	COMMENT
Low Profile Full Cutoff Wall Mounted Metal Halide	Exterior	• Built in the period of 2000 - 2009. • All exterior and interior lighting is in good condition. No lighting retrofit needed.
6” Square Surface Mount Downlight	Exterior Ceiling Canopy	
Orientable Direct / Indirect Compact Fluorescent Ceiling Mount	Lobby	
2-Lamp Linear Fluorescent with 4ft. Trunking System	Lobby	
2’x4’ Volumetric Recessed Fluorescent	Office Break Room	
Direct / indirect Linear Pendant with Straight Blade Louvers	Reprographics Room	

EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS

SCIENCE COMPLEX

TYPE	LOCATION	COMMENT
6” Linear Surface Fluorescent	Exterior Ceiling Canopy	• Built in the period of 2000 - 2009. • Exterior lighting is in good condition. No lighting retrofit needed. • With the exception of the 2’x2’ and 2’x4’ Recessed Parabolic Troffers in the classrooms and corridors, the remaining spaces are in good condition. Staff and Faculty complain the existing Recessed Parabolic Troffers create discomfort glare. Recommend upgrading with high efficiency lens. • The luminaires in remaining spaces are still in good condition and do not require lighting retrofit.
6” Round Recessed Can Downlight	Lobby / General Storage / Restroom	
Direct / Indirect Decorative Pendant	Lobby	
2’x4’ Recessed Parabolic Troffer	Science Lab / Physics Lab / Lab Tech Office /	
2’x2’ Recessed Parabolic Troffer	Corridor	
6”x4’ Linear Recessed Fluorescent	Restroom	

STUDENT CENTER

TYPE	LOCATION	COMMENT
6” Square Recessed Downlight	Exterior Ceiling Canopy	• Built in the period of 2000 - 2009. • The existing 6” Square Recessed Downlights in the exterior ceiling canopy have dirty lenses which require general maintenance cleaning, otherwise no lighting retrofit require. The rest of the exterior luminaires are still in good condition and does not require lighting retrofit. • The existing 2’x2’ and 2’x4’ Recessed Parabolic Troffers in the offices, student lounge, and bookstore are inefficient and produce discomfort glare. Recommend upgrading to more efficient recessed luminaires with high efficiency lens. New luminaires shall be recessed 2’x4’ LED, dimmable in areas over 100m.sq. Controlled by motion sensors and switch at door. Any daylit areas shall be controlled by daylight sensor per code requirements. IESNA recommends levels of 30 fc at working plane for offices. • The luminaires in the remaining spaces are still in good condition and do not require lighting retrofit.
12” Square Wall pack	Exterior	
12” Round Wall pack	Exterior	
Compact Fluorescent Wall Mount Uplight	Student Info Desk	
MR16 Wall Mount	Student Info Desk	
6” Square Recessed Downlight	Admission & Records / Second Floor Lobby	
2’x4’ Recessed Parabolic Troffer	Admission & Records / Financial Aid / Assessment Office / Assessment Center / Bookstore / Counseling	
6” Round Recessed Downlight	Computer Room	
1’x4’ Linear Recessed Fluorescent with Blade Louvers	Student Lounge	
2’x2’ Recessed Parabolic Troffer	Student Lounge	
6” Round Recessed Can Downlight	Bookstore Lobby	
2 Lamp Industrial Fluorescent Pendant	Bookstore	
Metal Halide Wall Mount Uplight	Second Floor Lobby	
12” Round Surface Mount Compact Fluorescent with Cross Louver	Dinning Room Corridor	
Decorative Pendant	Dinning Room	
2’x2’ Recessed Troffer with Prismatic Lens	Cafeteria	
Indirect Linear Wall Mount	Restroom	

TECHNOLOGY CENTER		
TYPE	**LOCATION**	**COMMENT**
Metal Halide Up / Down Light with Solid Metal Shield	Exterior	• Built in the period of 2000 - 2009. • The Lobby area consists of old and occasionally broken direct / indirect linear pendants, linear fluorescent cove lights, and 4" round recessed compact fluorescent downlights. These luminaires required general cleaning or replacing with new luminaires. New luminaires shall be LED cove strip luminaires, LED recessed downlights and either recessed or suspended LED fixtures to replace the existing suspended luminaires. Lights shall be dimmable and controlled via time clock and auto off motion sensor with daylight control near the entry per code requirements. • The existing 2'x4' Recessed Parabolic Troffers in the offices and classrooms are inefficient and create discomfort glare. Recommend upgrading to more efficient luminaires with high efficiency lens. New luminaires shall be recessed 2'x4' LED, dimmable in areas over 100m.sq. Controlled by motion sensors and switch at door. Any daylit areas shall be controlled by daylight sensor per code requirements. IESNA recommends levels of 30 fc at working plane for offices. • The lighting luminaires in the remaining spaces are still in good condition and do not require lighting retrofit.
Direct / Indirect Linear Pendant	Lobby	
Linear Strip Fluorescent Cove Luminaire	Lobby	
4" Round Recessed Compact Fluorescent Downlight	Lobby	
2'x4' Recessed Parabolic Troffer	Staff Office / Classroom	
2'x4' Recessed Fluorescent with 3" Deep Low Iridescence 18 Cell Parabolic Louver	Corridor	
4" Round Recessed Compact Fluorescent Downlight	Restroom	
Recessed Perimeter Light Through System Die-Formed Semi-Specular Aluminum Louver	Restroom	

EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS

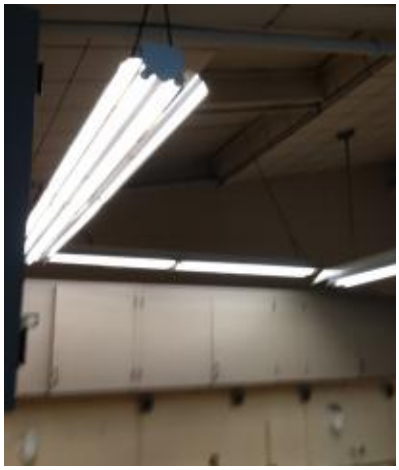
100 / 200 / 300 CLASSROOMS

EXTERIOR

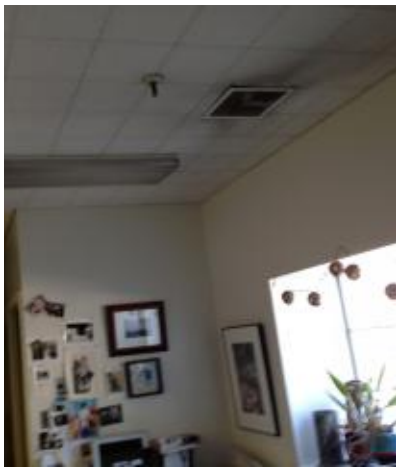
EXTERIOR CEILING CANOPY

CLASSROOM LAB

CLASSROOM



FACULTY OFFICE



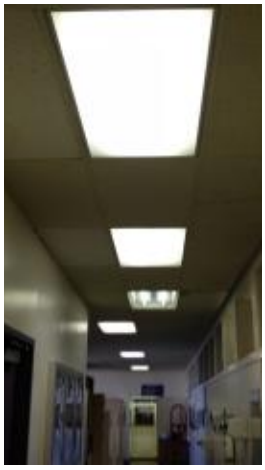
AUXILIARY GYMNASIUM

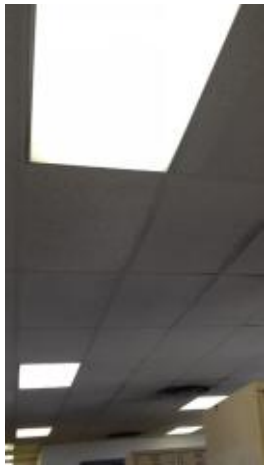
EXTERIOR

EXTERIOR CEILING CANOPY

GYMNASIUM

WOMEN'S LOCKER ROOM





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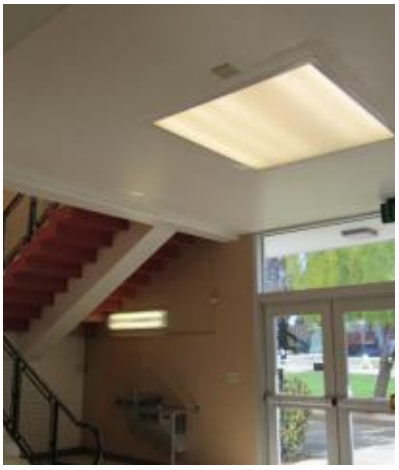
BUSINESS

EXTERIOR CEILING CANOPY

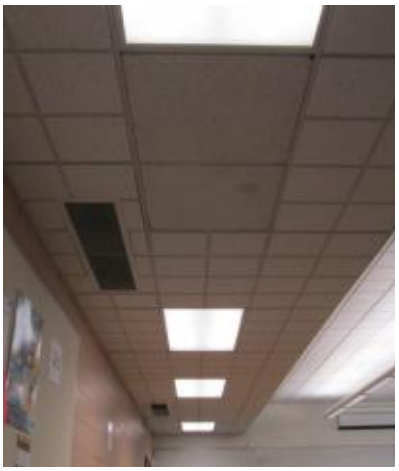
STAIRCASE LOBBY

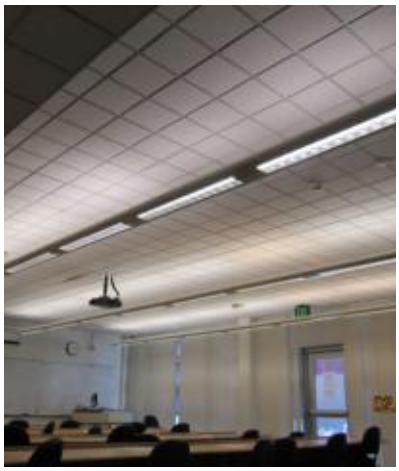


CORRIDOR

EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS PART B

CLASSROOM





OFFICE

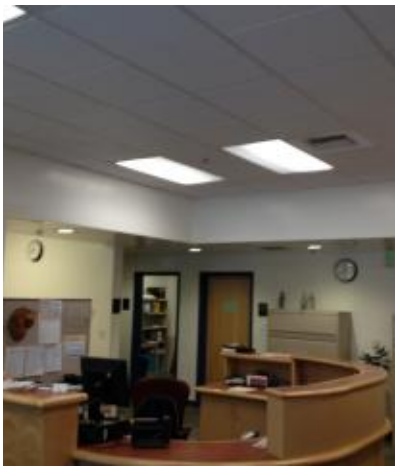
CAREER TECHNOLOGY

EXTERIOR

EXTERIOR CEILING CANOPY

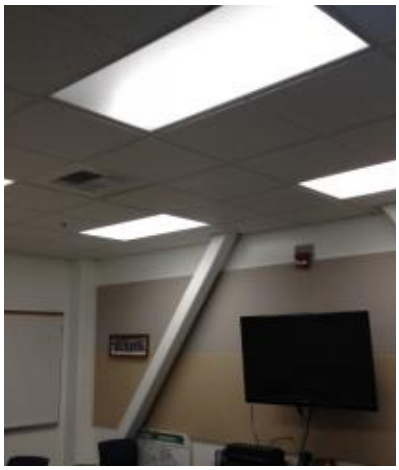
EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS PART B

RECEPTION



CORRIDOR

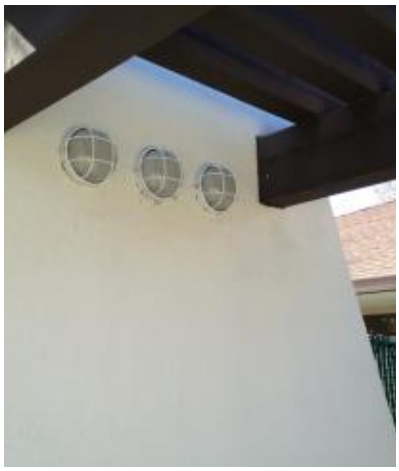
CONFERENCE ROOM



CLASSROOM LAB

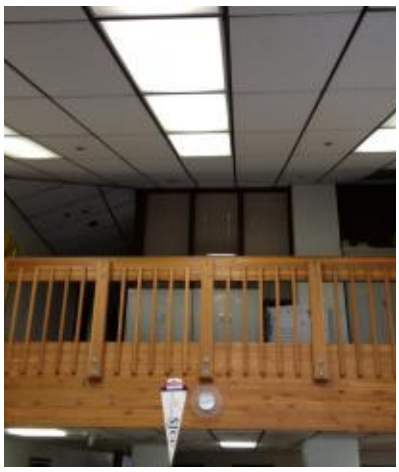
CHILD DEVELOPMENT CENTER

EXTERIOR CEILING CANOPY



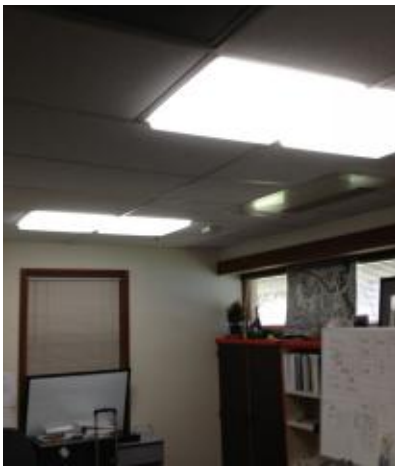
EXTERIOR

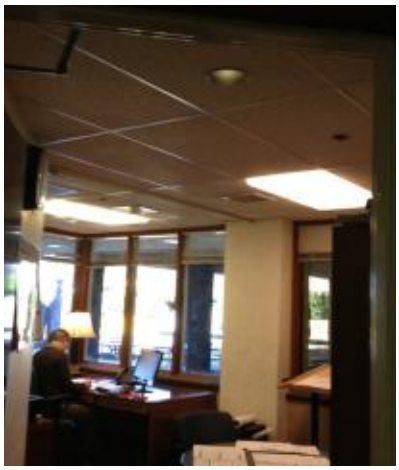
RECEPTION LOBBY

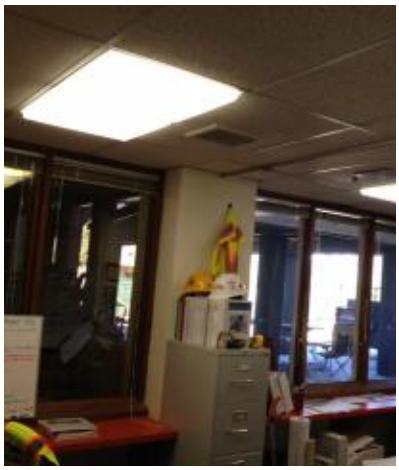


EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS PART B

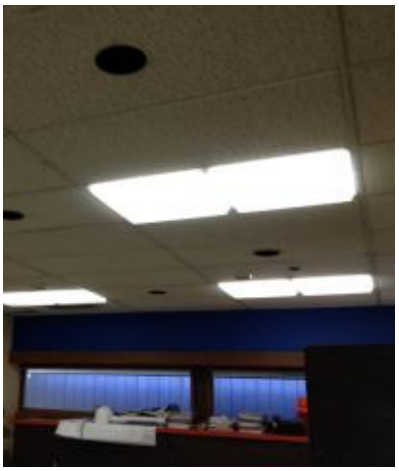
OFFICE



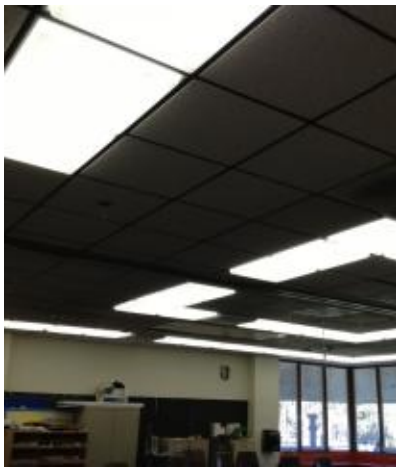




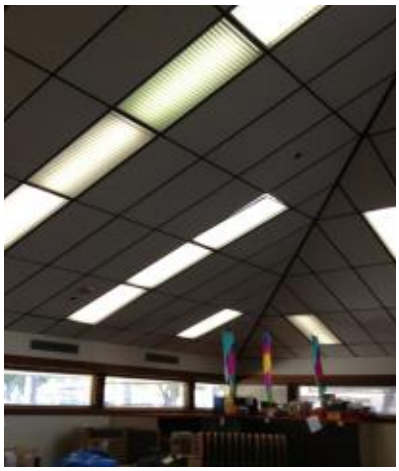
CONFERENCE ROOM



MULTI-USE ROOM

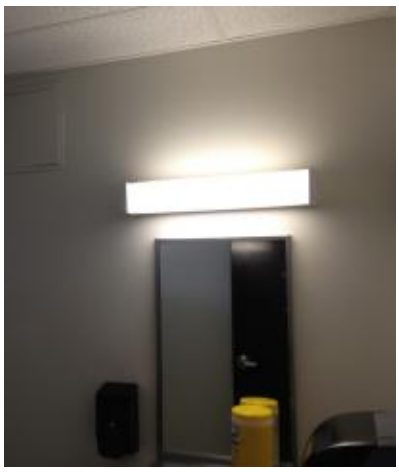


LOUNGE



CORRIDOR

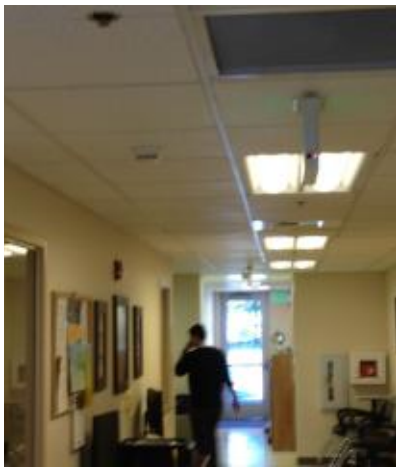
RESTROOM



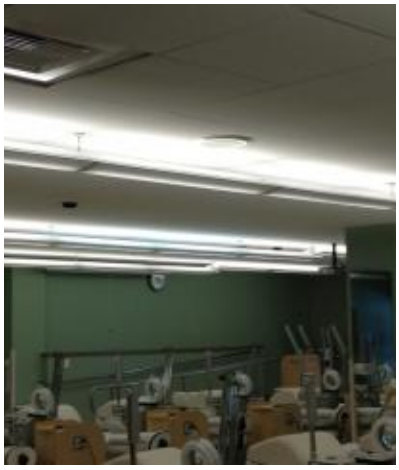
COSMETOLOGY

LOBBY

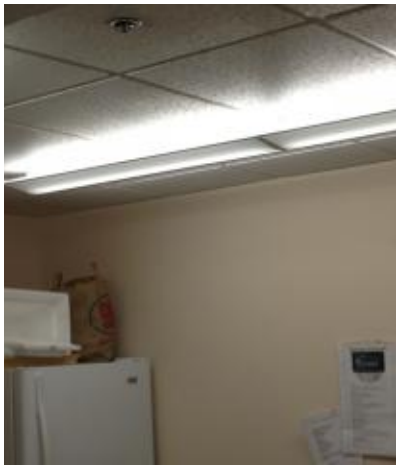
CORRIDOR



CLASSROOM



LOUNGE



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DRAMA / THEATER

EXTERIOR CEILING CANOPY

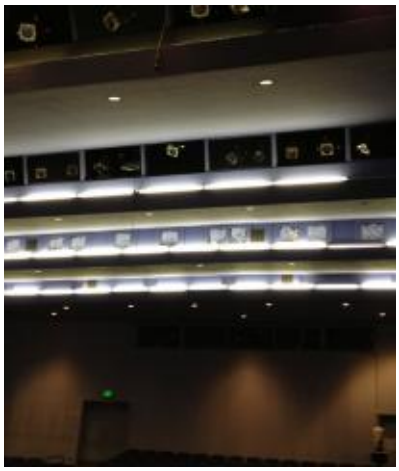
EXTERIOR

EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS PART B

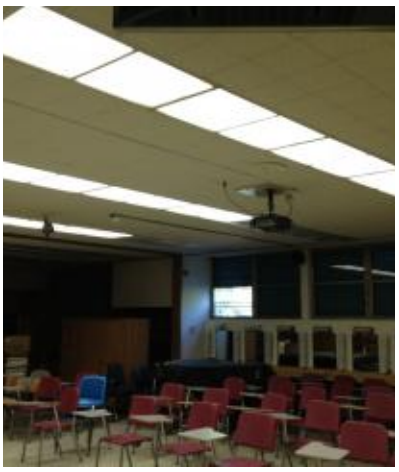
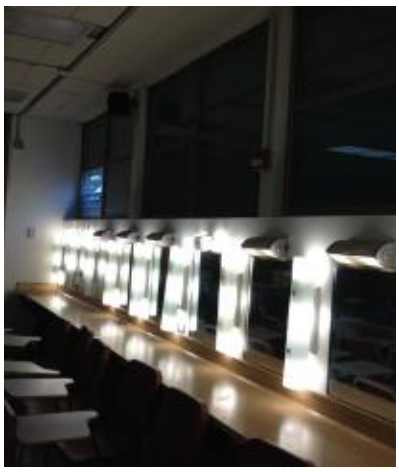
LOBBY



THEATER

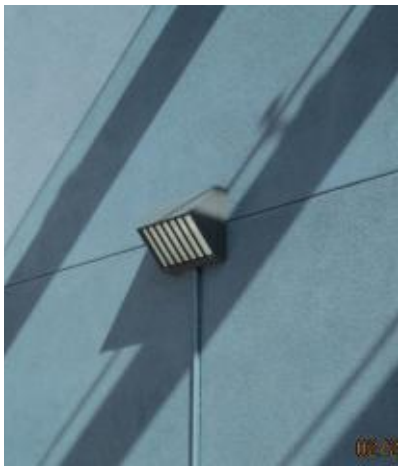




CLASSROOM


FINE ARTS CENTER

EXTERIOR



EXTERIOR CEILING CANOPY

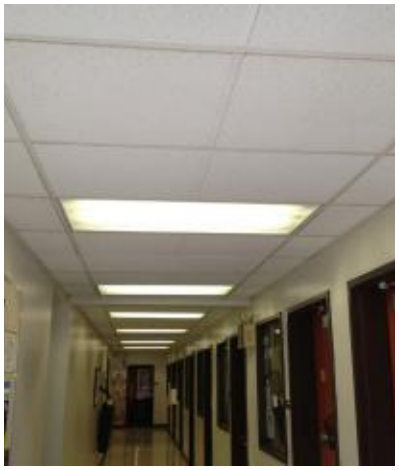
CLASSROOM

GENERAL EDUCATION

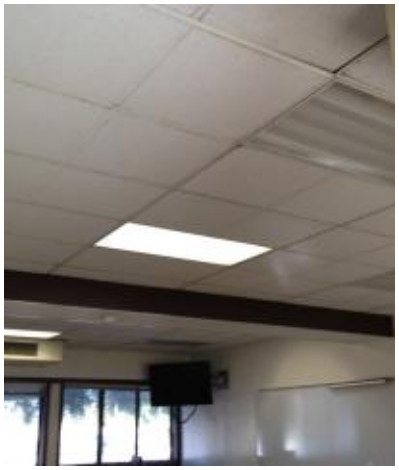
EXTERIOR

EXTERIOR CEILING CANOPY

CORRIDOR



CLASSROOM



LIBRARY / LEARNING CENTER

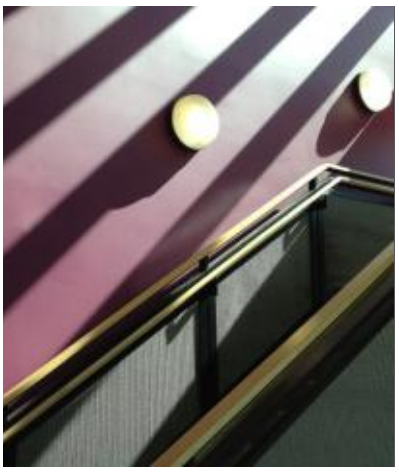
EXTERIOR CEILING CANOPY

MAIN STAIRCASE

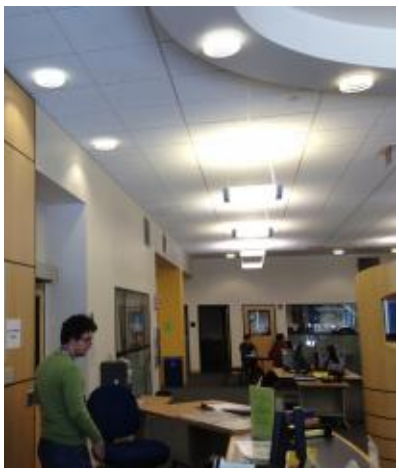
LIBRARY LANDING STAIRCASE

MAIN LIBRARY ENTRANCE

STAIRCASE



OPEN WORKSTATIONS



EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS PART B

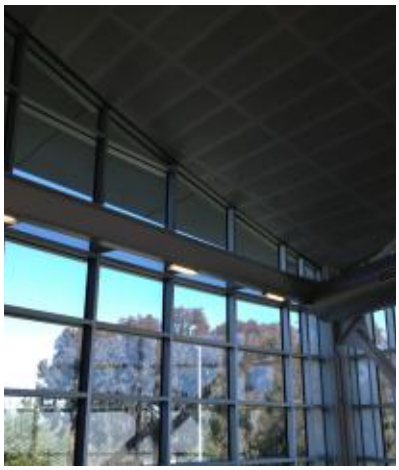
READING LAB

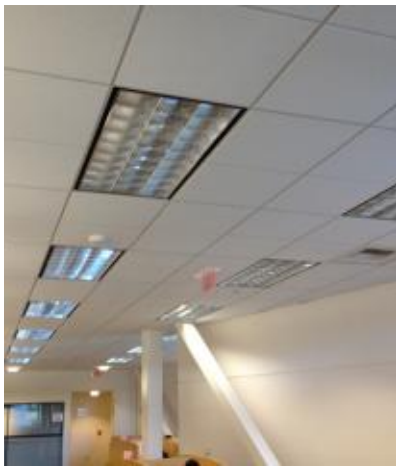
CIRCULATION

PERIODICAL STACKS

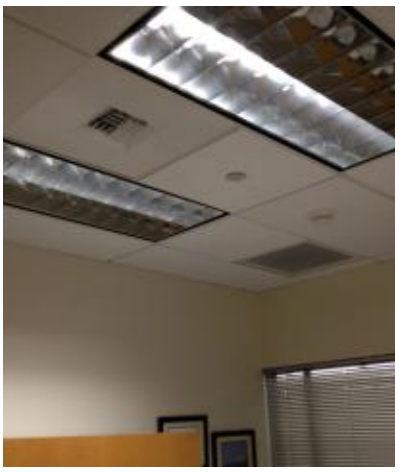
STACK AREA

OPEN READING

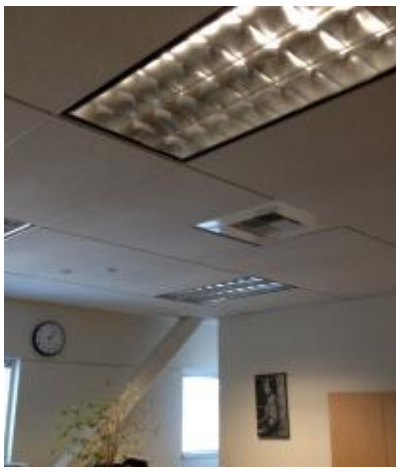




LIBRARY OFFICE



WORK ROOM



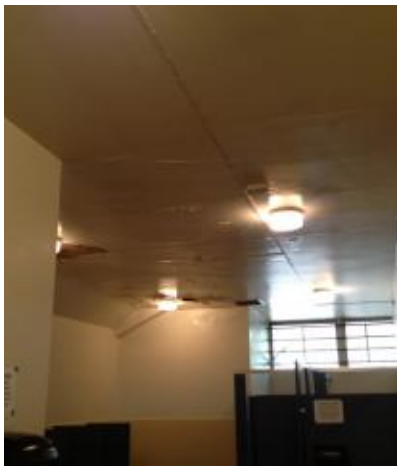
MAIN GYMNASIUM

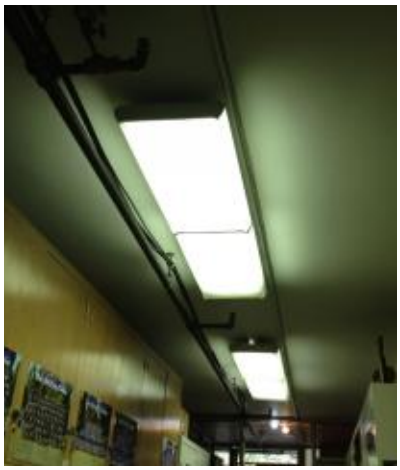
EXTERIOR

EXTERIOR CEILING CANOPY

MAIN GYMNASIUM

MEN'S LOCKER ROOM

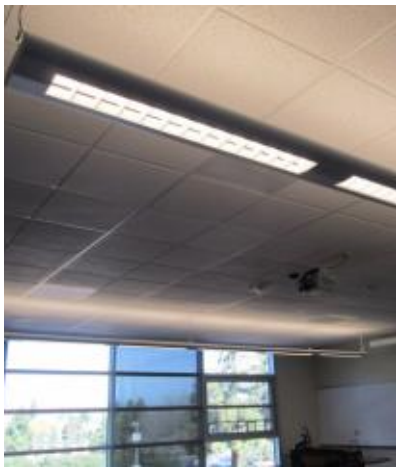




MULTI-DISCIPLINARY

EXTERIOR CEILING CANOPY

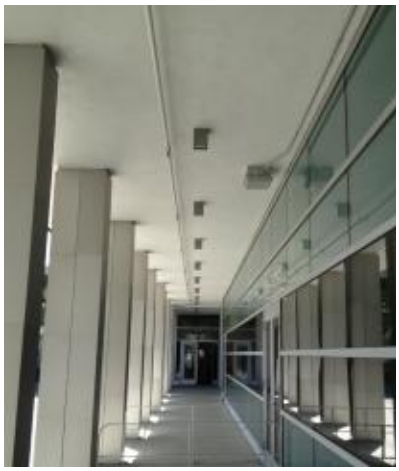
CLASSROOM



REPROGRAPHICS

EXTERIOR

EXTERIOR CEILING CANOPY



LOBBY

OFFICE

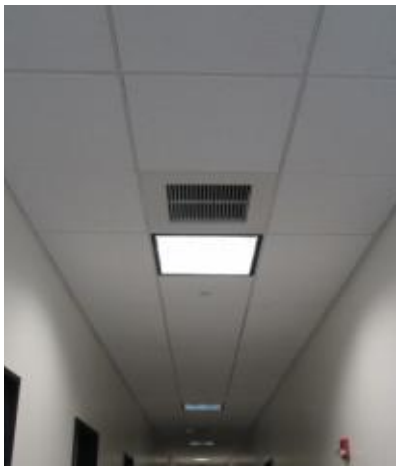
BREAK ROOM

REPROGRAPHICS ROOM

SCIENCE COMPLEX

EXTERIOR CEILING CANOPY

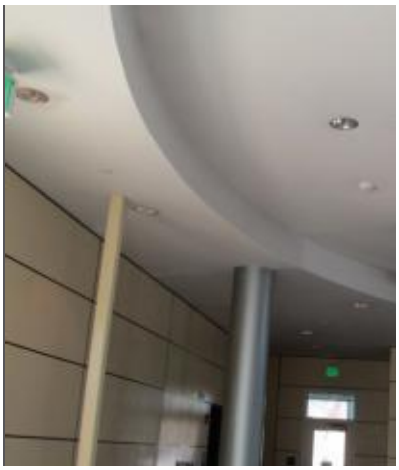
CORRIDOR



SCIENCE LAB

PHYSICS LAB

LOBBY



LAB TECH OFFICE

GENERAL STORAGE

RESTROOM

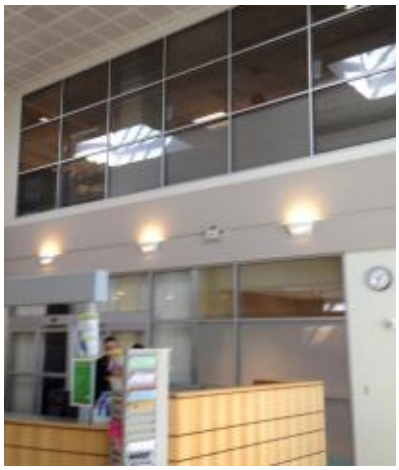
STUDENT CENTER

EXTERIOR CEILING CANOPY

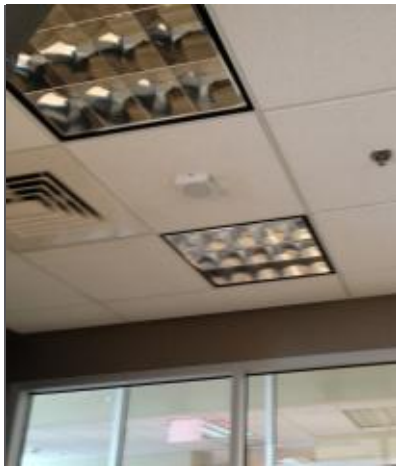
EXTERIOR

EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS PART B

STUDENT INFO DESK

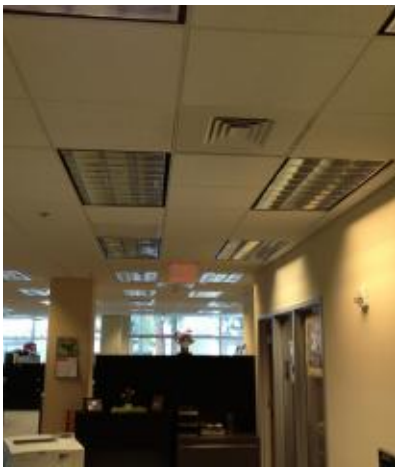


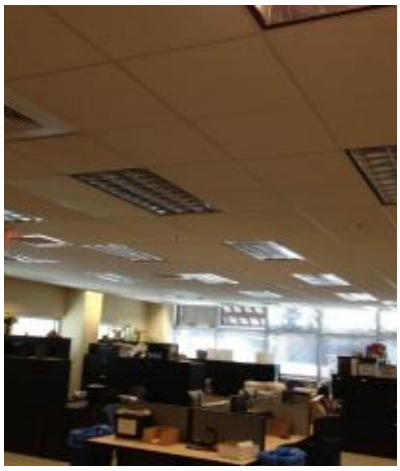
STUDENT LOUNGE

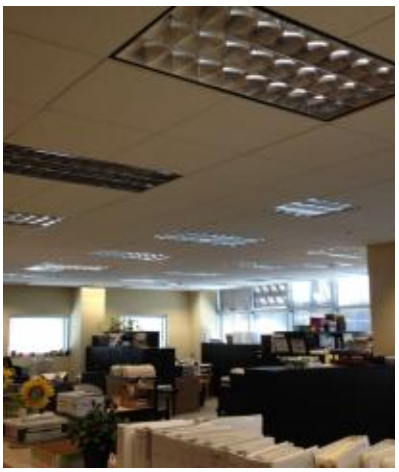


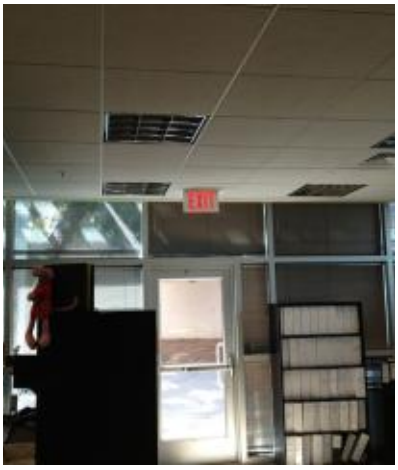
STUDENT CENTER (CONTINUED)

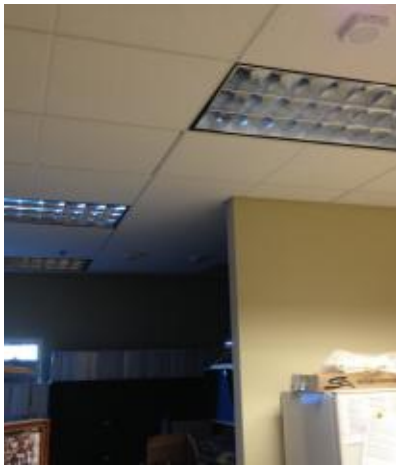
ADMISSIONS + RECORDS





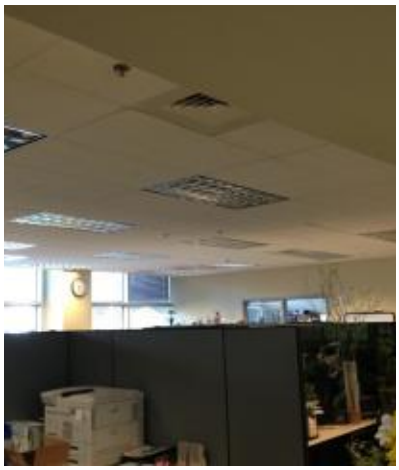




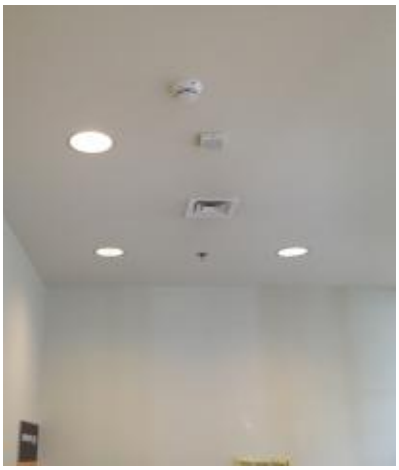


EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS PART B

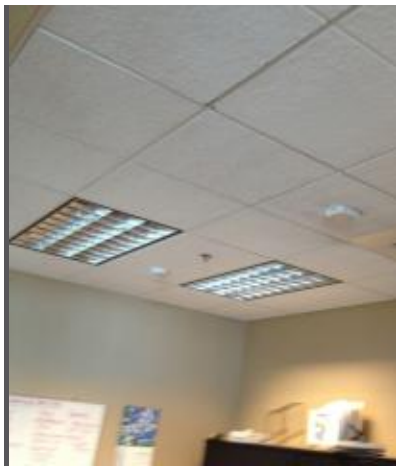
FINANCIAL AID



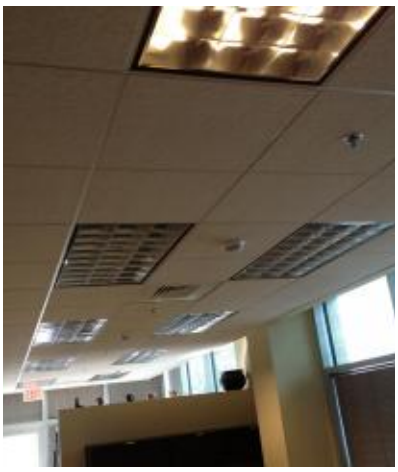
COMPUTER ROOM



ASSESSMENT OFFICE

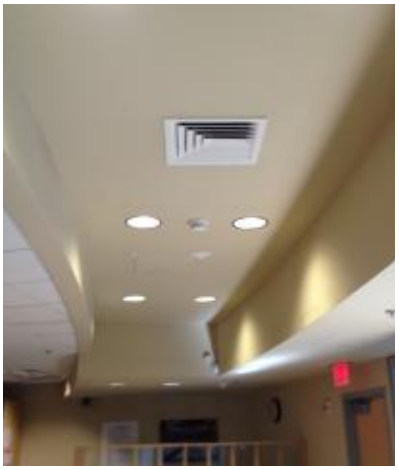


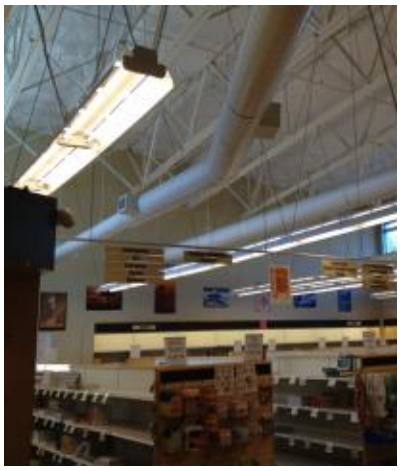
ASSESSMENT CENTER



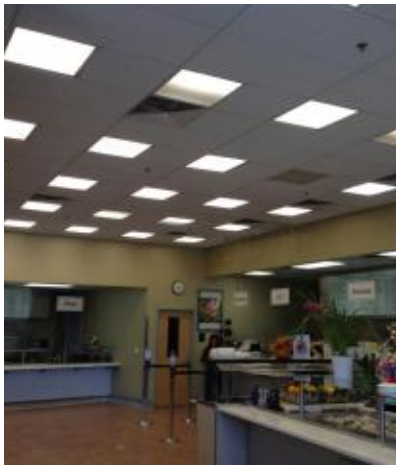
STUDENT CENTER (CONTINUED)

BOOKSTORE

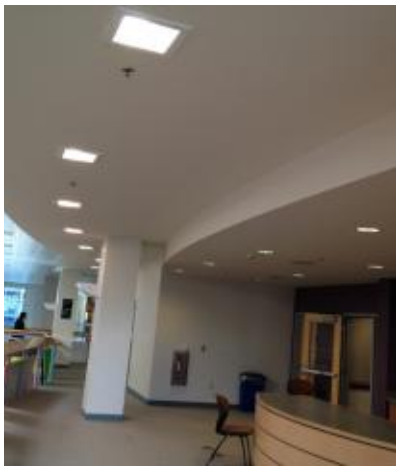


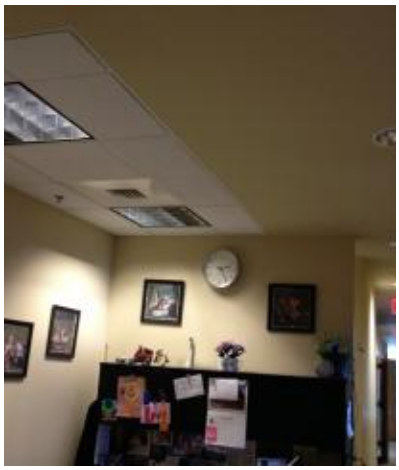


DINING ROOM

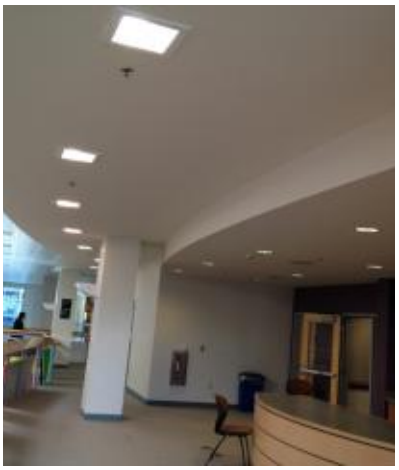


COUNSELING





SECOND FLOOR LOBBY

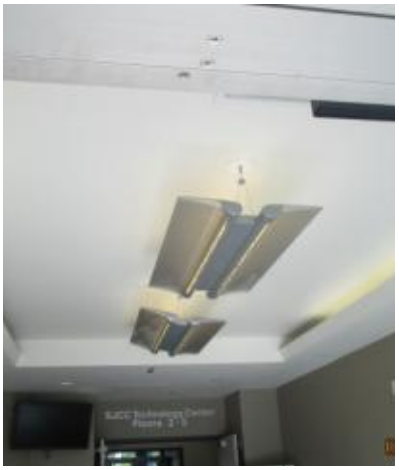


RESTROOM

TECHNOLOGY CENTER

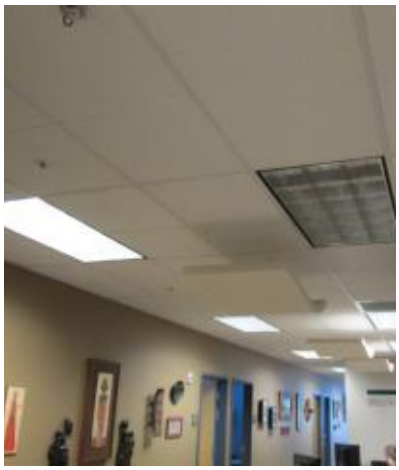
EXTERIOR

LOBBY



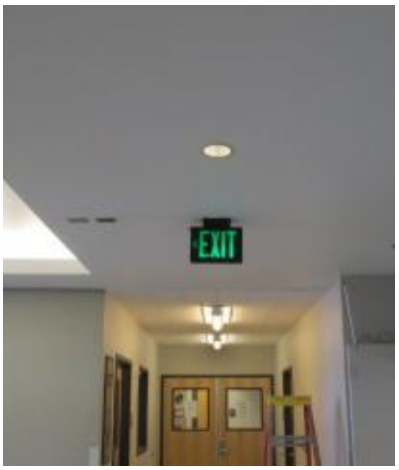
EXISTING BUILDING + INTERIOR LIGHTING CONDITIONS PART B

STAFF OFFICE

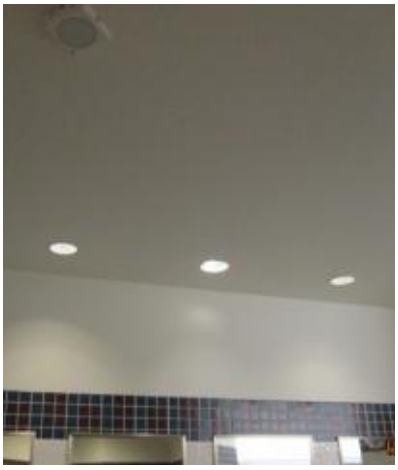


CLASSROOM

CORRIDOR



RESTROOM



PART C

PROPOSED BUILDING + INTERIOR LIGHTING EQUIPMENT PALETTE

BUSINESS

EXTERIOR CEILING CANOPY

Recommended Fixture:
Bega US 5112 LED Surface Wall and Ceiling LED with 3-Ply Opal Glass

STAIRCASE/LOBBY

Recommended Fixture:
HE Williams RNDP (Round Architectural Pendant) Series

CLASSROOM

Recommended Fixture:
Philips Ledalite Vectra Series - 2'x4' Recessed

PROPOSED BUILDING + INTERIOR LIGHTING EQUIPMENT PALETTE

GENERAL EDUCATION

EXTERIOR

Recommended Fixture:
Philips Gardco 101 LED Trapezoidal Wedge High Performance Sconce Luminaire

EXTERIOR CEILING CANOPY

Recommended Fixture:
Bega US 5112 LED Surface Wall and Ceiling LED with 3-Ply Opal Glass

CORRIDOR/CLASSROOM

Recommended Fixture:
Philips Ledalite Vectra Series - 2'x4' Recessed

END OF SECTION 6 - SAN JOSÉ CITY COLLEGE

7

SPACE GUIDELINES

INTRODUCTION

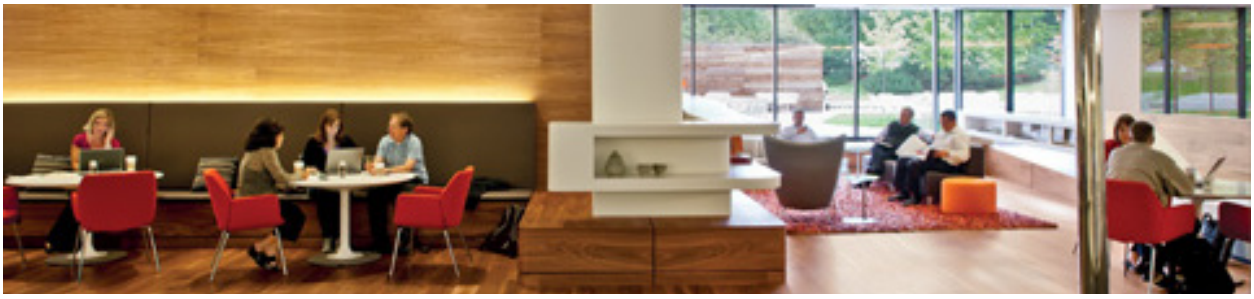
It is San José • Evergreen Community College District's intention to standardize spaces across the various district locations to a size that is equitable and functional for the expected use over the life of the building, and remain within the guidelines of the California Community College Chancellor's Office (CCCCO) capacity guidelines ("Cap Load"). The proposed standards reflect the clearances required for the effective utilization of furniture and equipment within each space. The desired minimum usable square footage is noted on each diagram. Additional width or depth within the spaces would be acceptable, particularly in spaces that have structural elements, more specialized areas, or renovations of existing buildings and will be approved on a project by project basis.

PART A

INTERIOR SPACE DESIGN

It is important to create rooms that are **adaptable**, **flexible**, and **functional**. This allows rooms to adapt to constant changes in **technology**, while flexible and functional classrooms enable instructors and students to work together in a **variety** of learning environments which may best suit different programs. This flexibility is compatible with an interdisciplinary approach to instruction and current teaching **pedagogies**. Creating environments which **promote learning**, **collaboration**, and **interaction** between individuals and groups is highly desirable. Different sizes and types of gathering places are essential throughout the district campuses, and within the buildings.

The interior architecture should clarify the elements that the buildings are composed of. Color and materials should inhabit one plane which flows from inside to outside. All planes, whether walls, floors, ceilings or partitions should be treated as distinct entities, in a singular way. Colors and materials selected for future San José • Evergreen Community College District projects should lend an **air of permanence and quality**, while providing an overall sense of welcome. Colors and materials should be appropriate to both the design concepts of the individual projects, as well as to the **campus as a whole**.



Appropriateness can be loosely defined by how well the colors and materials contribute to creating harmony in mass, scale, form, color, and context, thus establishing desirable learning environments and experiences. Public spaces such as lobbies and corridors should incorporate more interesting and lively colors or patterns. In contrast, private spaces such as classrooms, study spaces, labs, etc. should incorporate materials and colors of a professional nature befitting the use of each space. There is no identifiable use of a signature or accent color therefore, accent colors should be appropriate for each building's color scheme.

Universal Design principles should be incorporated in all spaces and environments across the campuses, to allow for the integration and usability of all users equally. Designs should accommodate a range of individual abilities, preferences, experience, knowledge, language skills, education level, sensory abilities, and mobility (5, 6). Refer to Section 2 for detailed information on Universal Design principles and implementation techniques.

BEST PRACTICES

FURNISHINGS

- Should be accommodated a variety of postures; standing, leaning, lengthy sitting at a computer, casual use of a laptop, and lounging.
- Provide marker boards in key areas supports creative ideation in a casual way.

SIGNAGE

- A wayfinding system should embody a collective strategy; unified in color, design, proportions, and text.
- Should be positioned at consistent heights.
- Should be strategically located for ease of visibility and to allow for intuitive wayfinding.
- See Part B.I for more information.

DOORS

- Locate doors in a manner to minimize congestion in corridors.

ACCESSIBILITY

- All spaces should be designed based on Universal Design principles and ADA standards. See Section 2.
- Circulation clearances, seating capacities, furnishings, reach heights and depths.

LIGHTING

- Energy management systems should be considered, such as the installation of automatic sensors.
- Daylighting in all spaces is encouraged and should be coordinated in AV equipment placement and furniture layouts accordingly.
- Daylight harvesting systems should be considered for energy management and savings. See Section 2 for more information.

POWER, DATA, WI-FI

- Access to technology, power, data, and Wi-Fi throughout the facilities is vital given today's use of multiple mediums to absorb and share digital information.
- Connectivity throughout the campus's spaces will allow any space to be readily accessible to students and faculty alike. Co-locate outlets on all walls for a clean and organized design.

PART B

INTUITIVE ENVIRONMENTS

Design for intuitive use of spaces allows a facility to function at maximum efficiency through its user interactions. Designing elements in a **rigorous** manner, through standardized placement, alignment and orientation within similar types of spaces, optimizes the organization for a user to recognizing specific uses, and boosts productivity for students, faculty, and staff alike.

Ergonomic strategies encourage the optimization of organizational systems to be designed through consideration of relevant personnel, technological and environmental variables, **logical usability**, and their **logical interactions**.

On the macro campus level, room numbering and signage should be designed for the campus as a whole to facilitate ease of wayfinding for any user. On the micro space level, careful consideration should be given to such things as; consistent grouping and alignment of control switches, and the layouts of instructional spaces' furnishings, fixtures, and equipment to consistently facilitate any faculty or student using any room at any given time. This includes power outlet locations, control switch location, Wi-Fi connectivity, projector and projection screen location and operation, light zones and control settings, light fixture orientation and suspension depth, storage and clock locations.

BEST PRACTICES

CEILING HEIGHTS

- Vary depending on space type and use.
- 9 feet clear minimum to accommodate sight lines, suspended light fixtures, and projectors while avoiding ease of access and vandalism.
- Plenums to be accessible for servicing of lights, HVAC.

ACOUSTICS / SOUND ISOLATION

- Attention to instructional spaces, meeting rooms, and office design.
- Full height partition construction, to be coordinated between architect and acoustic consultant.

CLOCKS

- Battery atomic are ideal to minimize maintenance and manual time-change errors.
- Placement on side wall for visibility, with no obstruction by any projection equipment or collaborative surfaces.

COLLABORATIVE SURFACES

- Any surface in any space can be a potential collaborative surface.
- Fixed and mobile white boards, tack panels, and table surfaces.

LIGHTING

- Orient lighting fixtures to be perpendicular to front "teaching" wall, so as to not obstruct projector.
- Fixtures in rooms with ceilings in the 10 to 13 foot range should be suspended direct-indirect for maximum light distribution.
- Fixtures should be suspended 18 inches below the ceiling level.
- Two to four zones depending on room size.
- See Interior Lighting section for more information.

PROJECTORS

- Ceiling recessed.
- Align with top of image, with a maximum of 5 degree variation.

PROJECTION SCREENS

- Ceiling recessed.
- Oriented diagonally in Classrooms.
- Oriented straight against teaching wall in Lecture Halls.
- Either motorized or manual screens can be used, to be determined on a project by project basis.

FLAT PANEL DISPLAYS

- FPD's are encouraged across the facilities. Non-reflective screens.
- Should be a maximum of 4 inches deep.
- 16:9 aspect ratio.
- 4 feet mounting height.
- Sizes vary based on sight lines, see following sections for information.

VIEWING ANGLES / SIGHT LINES

- Space configuration should accommodate the optimum viewing angles to any screen and marker board.
- In larger spaces, floor level tiers should be considered to maximize sight lines.
- See following sections for more information.

MEDIA RACKS

- Placement at the "front" of a room is ideal to minimize cable runs.
- Should be locked at all times, and only accessible to IMC personnel.

SWITCH CONTROLS

- To be placed in a locked wall panel or in the lectern.
- Provide limited lockable controls in instructional spaces and meeting rooms to faculty and staff.

CLEANOUTS / ACCESS PANELS

- Types and locations to be coordinated with architect.

WINDOW SHADES

- Window treatment in instructional spaces and meeting rooms should be dual motor, one layer containing solar blocking or blackout to prevent glare for audio visual use.
- Should be tied to AV controls.

MICROPHONES

- Ceiling mounted.
- Wireless handheld optional in instructional spaces.

SPEAKERS

- Ceiling recessed.

CAMERAS

- Two wall-mounted cameras in each instructional space and meeting room.
  One to capture the front of the room / presenter.
  One to capture rear of room / audience.
  Mounted at 92 inches above finish floor.

POWER / DATA

- Co-located electrical and data outlets.
- Power should be provided on all walls.
- Data should be provided on all walls except door walls.
- Furnishing systems with power and data connections are desired, and should be coordinated with furniture manufacturer.

WI-FI

- Access point should be available in all public and instructional spaces.

ASSISTIVE LISTENING SYSTEM

- Built-in transmitter to be located in every instructional space.
- Listening devices can be checked out from DSPS office.

HVAC

- Diffusers to be ceiling recessed or linear if wall mounted.
- Thermostats to be wall mounted and grouped with other locked controls.
- Thermostat user control is acceptable only in offices.

LIFE SAFETY

- Strobes and fire alarm pull station to be wall mounted and grouped or aligned with other wall devices.
- All sprinklers to be ceiling recessed.
- Exist signs to be wall mounted above doorways and must follow building codes.

PART C
PUBLIC SPACES

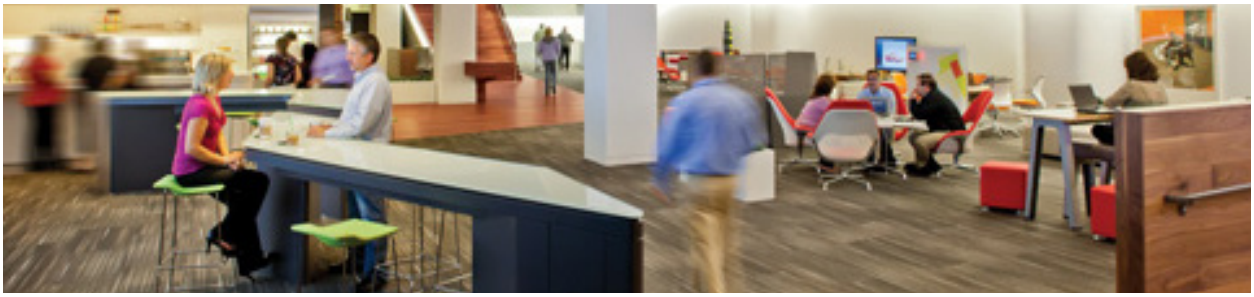
CONTENTS:

Public spaces are essential for the daily life of students, faculty, staff, and visitors. They foster the widest variety of activities, and should support the informal, spontaneous, casual collisions and socializing that supports behaviors, attitudes, and goals that lead to trust, collaboration, and in turn, innovation and education (3).

Planning a campus's facilities should strategically distribute a mix of quiet and loud, public and semi-private spaces such as lounges, cafés, common areas, and study rooms throughout buildings. They should be created within easy to locate areas such as atria, corridors, outside classrooms and offices, in transition spaces, and outdoors. Consideration should be given to designing a variety of configurations to define a space within a space, to give users a sense of enclosure. They should support a variety of student uses including study, waiting between classes, socializing, interacting with one another or with instructors, eating, or reading.

Every space is a potential learning or collaborating environment, and should be supported with power, data, and Wi-Fi technology so information and communication is made readily available. AV varies per space, typically lighting should be suited for study. Design alcoves for garbage and recycling containers in major circulation and public areas, so as to encourage a clean campus in a manner that is both aesthetically pleasing and not interfering with space functions or circulation.

PUBLIC SPACES



BEST PRACTICES

LOCATION

- Distributed throughout buildings.
- Open louder spaces such as lounges and cafes, should be located near public entrances or circulation.

GEOMETRY

- Spaces can vary pending location and type.
- Corridor widths should be 8 feet clear for comfortable circulation.
- Where collaborative seating is designed, the recommended corridor width is 13 feet (1).

CEILING HEIGHTS

- Can vary pending space type and use.
- Consider variation to create a dynamic set of environments.
- Corridor should be at 10 feet (1).

ACOUSTICS / SOUND ISOLATION

- When adjacent to instructional spaces, meeting rooms, or offices, full height partition construction is recommended.
- Coordinate between architect and acoustic consultant.

ACCESSIBILITY

- See Part A.

COLLABORATIVE SURFACES

- See Part B.

FURNITURE SYSTEMS

- A variation of systems should be incorporated, flexible to accommodate various uses and postures.

LIGHTING

- See Interior Lighting section.

FLAT PANEL DISPLAYS

- See Part B.

POWER / DATA

- See Part B.

WI-FI

- See Part B.

HVAC

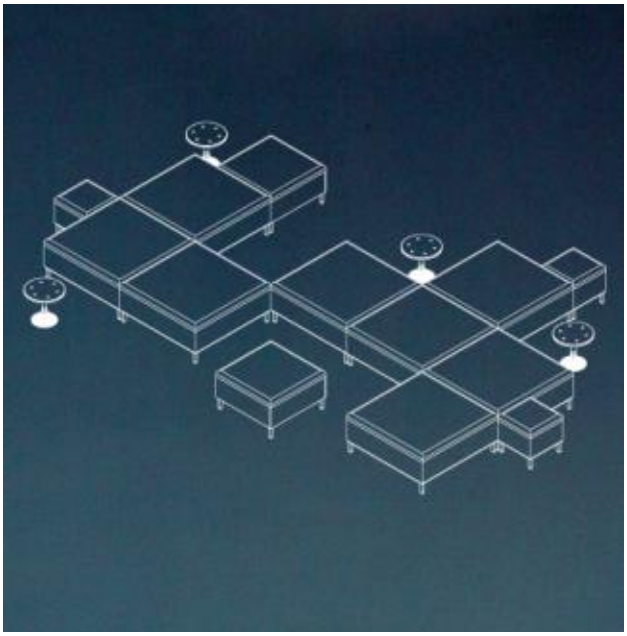
- See Part B.

LIFE SAFETY

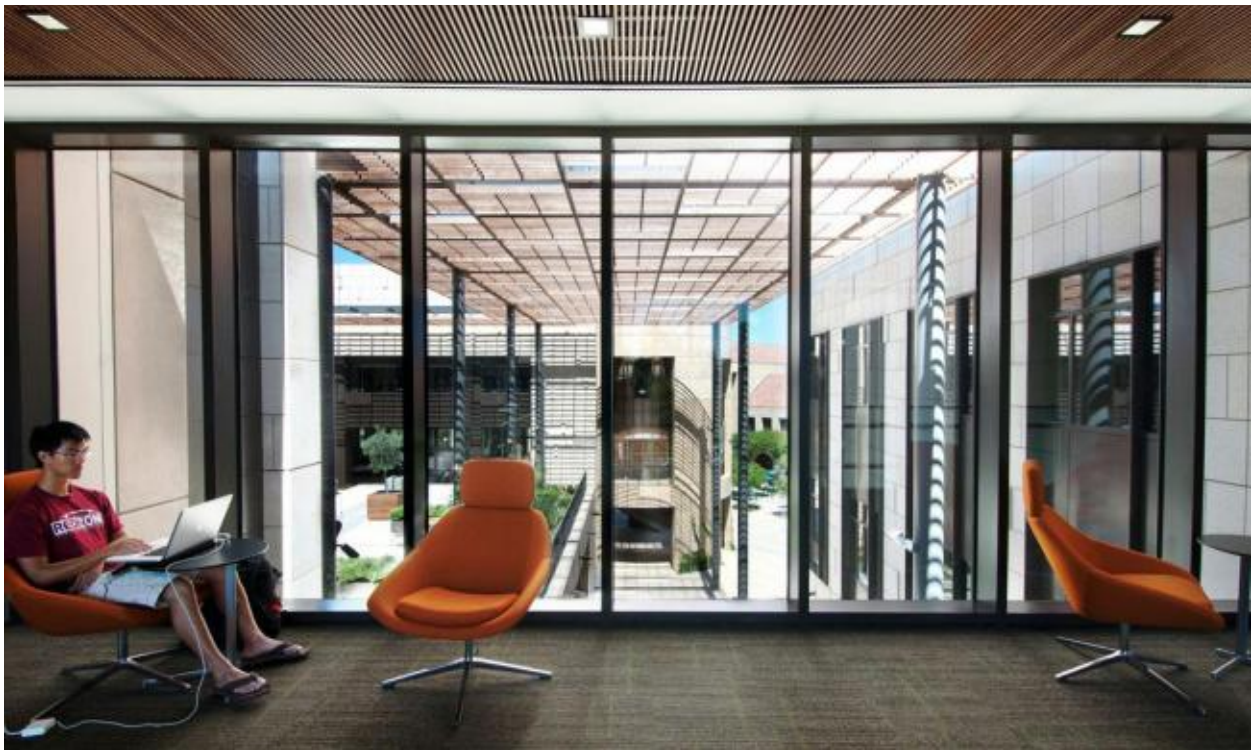
- See Part B.

I. COLLABORATIVE COMMON AREAS

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

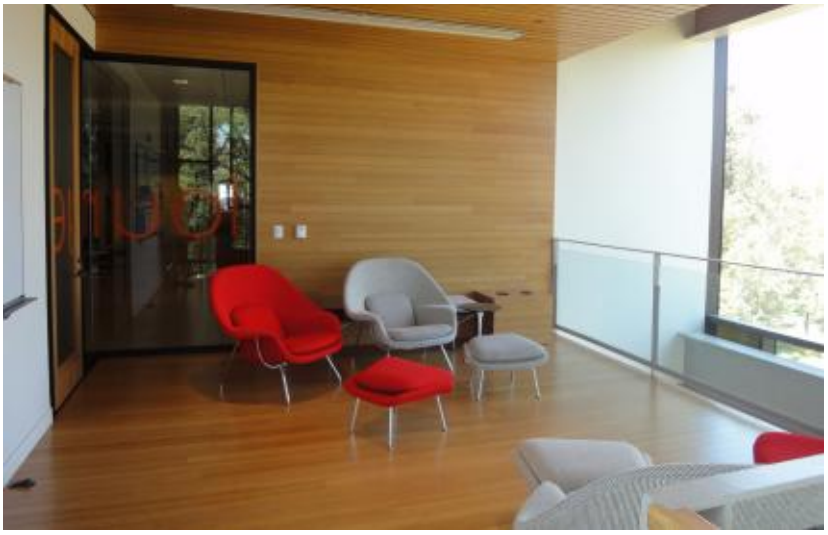


I. COLLABORATIVE COMMON AREAS (CONTINUED)



Buildings on campus should be designed with awareness and sensitivity for human interaction within the built environment. Designers should consider these often “un-planned” areas when designing new buildings and spaces and think first and foremost about the people who will occupy them. These flexible spaces should foster collaboration and social interaction as well as provide opportunities for individual focus and reflection.

I. COLLABORATIVE COMMON AREAS (CONTINUED)



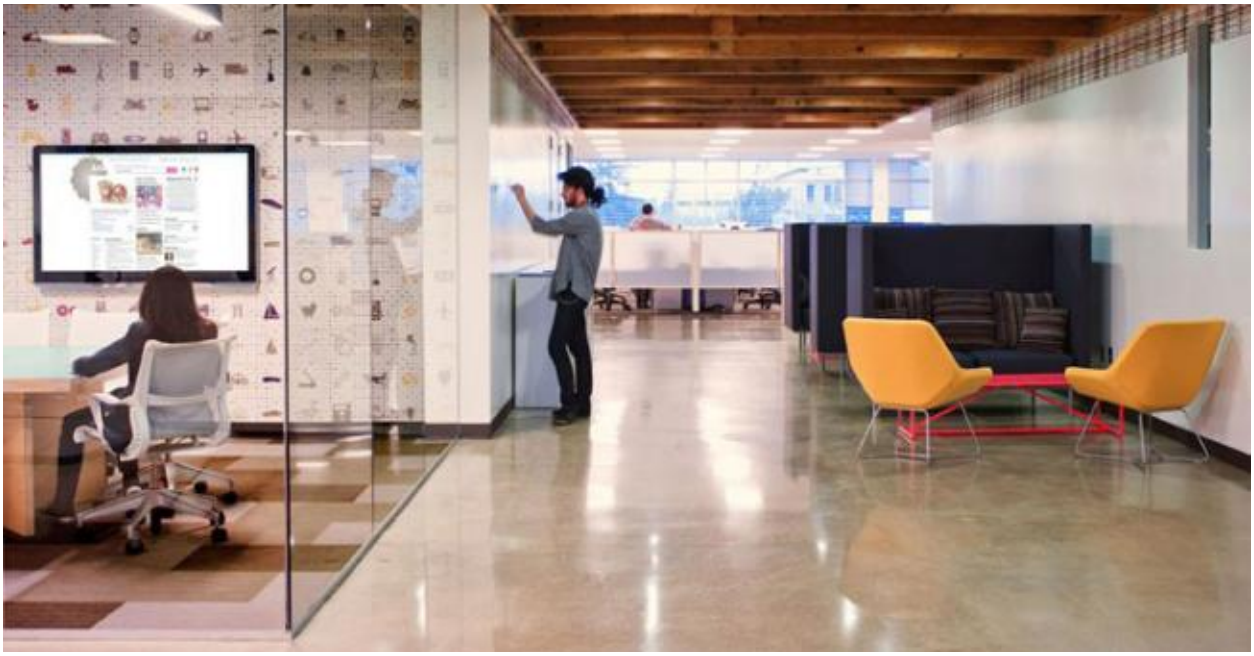
II. LOBBIES

Lobbies are the first and foremost place a visitor experiences when entering the building and thus should be well designed for comfort and aesthetics. Furniture should match the decor of the space and welcome guests as they transition into the building. San José • Evergreen Community College District encourages designers to incorporate artwork into the fabric of the Lobby's design. Proper lighting designating a place for permanent or rotating exhibits should be incorporated, even if the budget will not cover the cost of the original art.

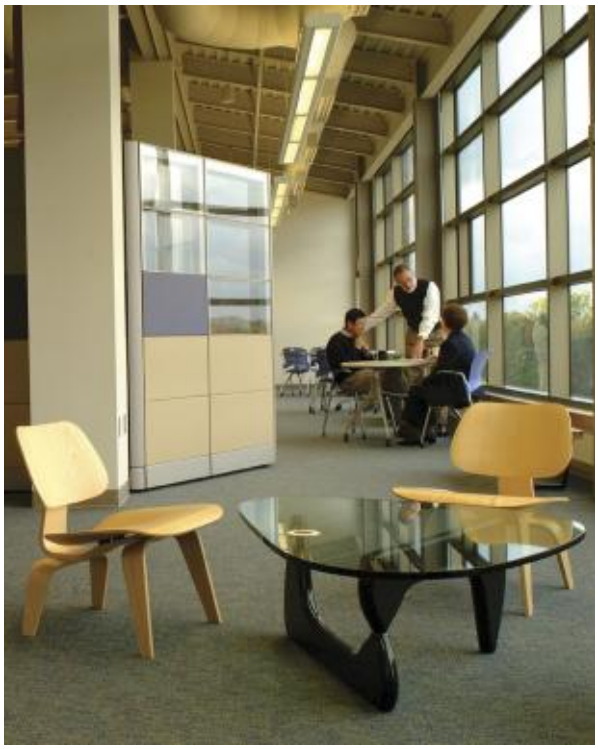
III. PUBLIC CORRIDORS

Public corridors adjacent to student classrooms should be comprised of highly durable materials and configured to provide students with opportunities for interaction. Break out spaces at the ends are encouraged as they allow for informal dialogue and gatherings.

IV. OFFICE SUITE CORRIDORS (PRIVATE)



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



PART D
CLASSROOMS

As the primary spaces for instruction, classrooms are where students and faculty spend a significant amount of time together, and should be designed large enough to accommodate seat count, pedagogies, learning technologies, furnishings, accessibility and building code requirements.

Faculty should have intuitive ease of access to light zoning, window shade, and projection controls from a wall panel or the fixed lectern. Classrooms should be geometrically wide and shallow, with the wide side as the front teaching wall, to maximize view angles and make it easier for the instructor to be close to all the students even in the most distant seats. The back wide wall can host windows with shades to maximize daylighting.

Classrooms should foster communication by maximizing the white board on the front teaching wall, provide projection communication, Wi-Fi connectivity, and assisted listening systems. Furthermore, tack panels on side walls support student work and collaboration. Given the ways in which teaching and learning is moving, every classroom should be equipped with video / tele conferencing infrastructure; microphones, speakers, and cameras.

Three types of classroom design options should be considered; traditional, flexible, and active. The number of each type of classrooms included in a building project will be determined by the needs of the specific programs that will occupy the building.

BEST PRACTICES

GEOMETRY

- Wider and shallower rooms.
- Wide wall as the front teaching wall. This brings the instructor in close proximity to all the students, and encourages eye contact.
- Windows should be located on the back wide wall, to provide daylighting yet minimize daydreaming.

CEILING HEIGHTS

- 11 feet minimum should be considered to accommodate suspended light fixtures and projectors.

ACOUSTICS / SOUND ISOLATION

- See Part B.

ACCESSIBILITY

- See Part A.

LECTERN

- Accessible and fixed.

INSTRUCTOR DESK

- Accessible and mobile.

STUDENT FURNITURE

- Movable tables and chairs for variety of pedagogical approaches, group work, and interaction layouts.

MARKER BOARDS / RAILS

- Maximize marker board at the front teaching wall.
- Marker board rails on side walls for additional mobile writable surfaces.

TACK PANELS

- Maximize tack panels on side walls.
- Align with other elements in the room for a clean design.
- On the front teaching wall, create a zone that other elements occupy.

CLOCKS

- See Part B.

LIGHTING

- See Interior Lighting section.

PROJECTORS

- See Part B.

PROJECTION SCREENS

- See Part B.

FLAT PANEL DISPLAYS

- Provide infrastructure (wall blocking and back box) for future installation needs.
- The number of FPDs to be purchased will be determined on a project by project basis.
- 16:9 aspect ratio.
- 4 foot mounting height.

VIEWING ANGLES

- See Part B.

MEDIA RACKS

- House the racks in either a media closet or in a media console, to be determined on a project by project basis.
- See Part B.

SWITCH CONTROLS

- See Part B.

CLEANOUTS / ACCESS PATHS

- See Part B.

MICROPHONES

- See Part B.

SPEAKERS

- See Part B.

CAMERAS

- See Part B.

WINDOW SHADES

- See Part B.

POWER / DATA

- Power over Ethernet (POE) connection.
- See Part B.

WI-FI

- See Part B.

ASSISTIVE LISTENING SYSTEM

- See Part B.

HVAC

- See Part B.

LIFE SAFETY

- See Part B.

TRADITIONAL CLASSROOM

FLEXIBLE CLASSROOM

Traditional and flexible classroom layouts are generally based on several key assumptions:

- Furniture consists of rows of chair desks or moveable tables and chairs.
- The room is oriented so that there is an obvious “front” suggested by the location of the writing and/or projection surface.
- The instructor’s station is typically located toward the front of the room.
- Proportions are generally wider than deep for line of sight to whiteboard and instructor.

One important teaching trend is moving the instructor away from their didactic role as “sage-at-the-stage” to one of active facilitator. Students are more engaged in learning together, frequently working in groups and interacting with peers. In this model of problem-based learning, students work in groups, at shared work surfaces, with chairs on wheels. Tables, which may also be on wheels, can be reoriented to allow for different workgroup methodologies. The instructor moves about the room interacting with different groups, offering suggestions and guidance.

ACTIVE CLASSROOM

PART E
LEARN LABS

Learn Labs are the most popular learning spaces due to their **engaging**, **flexible**, and **high tech** design. Movable furniture can be configured to suit a range of pedagogies and learning modalities, supporting small or large group **interaction** and **active learning**. There is no real "front" to the classroom since every wall hosts a Flat Panel Display and white boards to act as public "**thinking spaces**". The instructor's workstation can be located anywhere in the room, with fixed lectern at the imaginative "front" for media control.

Learn Labs spaces should:

- Encourage meaningful interactions between all users, to enable active and collaborative exchanges, learning, and socializing.
- Provide appropriate up to date technology to support modern, diverse, and flexible learning experiences.
- Provide healthy sustainable learning environments that take advantage of day lighting and material use.
- Be flexible to support a range of current and future pedagogies and learning styles. (2)

LEARN LABS

BEST PRACTICES

GEOMETRY

- Close to square is acceptable.

CEILING HEIGHTS

- 10 feet minimum.

ACOUSTICS / SOUND ISOLATION

- See Part B.

ACCESSIBILITY

- See Part A.

LECTERN

- Accessible and fixed.

INSTRUCTOR DESK

- Accessible and mobile.
- To be located anywhere in the room.

STUDENT FURNITURE

- Movable tables and chairs for a variety of layouts.

MARKER BOARDS / RAILS

- Maximize marker board “thinking spaces” on all walls.

TACK PANELS

- Maximize tack panels to support student work.

CLOCKS

- Avoid conflict with equipment, maker boards, and tack panels.
- See Part B.

LIGHTING
- See Interior Lighting section.

FLAT PANEL DISPLAYS
- One FPD on each wall.
- See Part B.

VIEWING ANGLES
- See Part B.

MEDIA RACKS
- House in either a media closet or in a media console, to be determined on a project by project basis.
- See Part B.

SWITCH CONTROLS
- See Part B.

CLEANOUTS / ACCESS PATHS
- See Part B.

MICROPHONES
- See Part B.

SPEAKERS
- See Part B.

CAMERAS
- See Part B.

WINDOW SHADES
- See Part B.

POWER / DATA
- Power over Ethernet (POE) connection.
- See Part B.

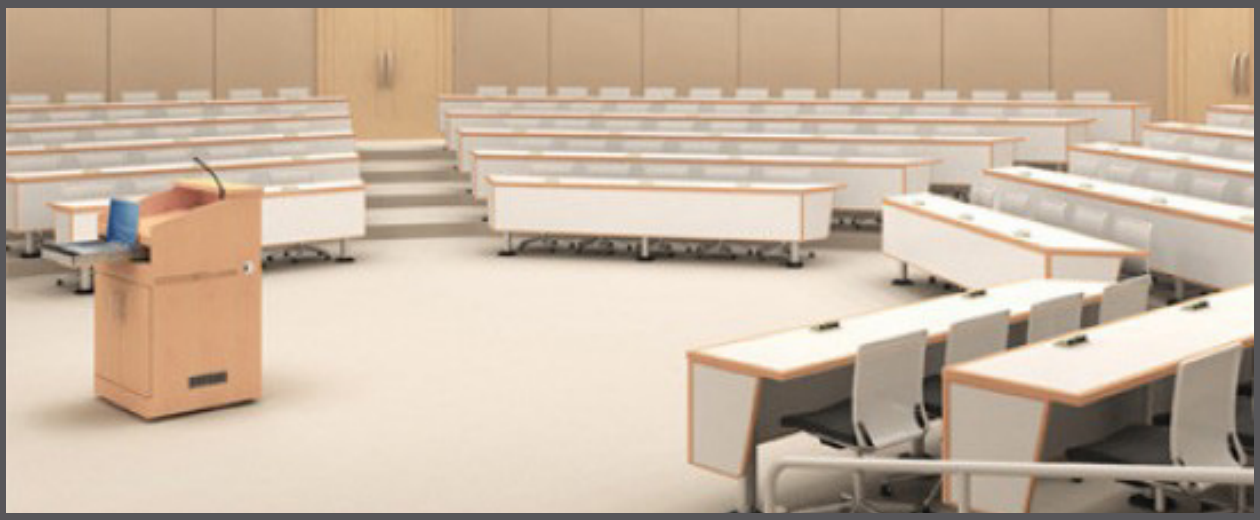
WI-FI
- See Part B.

ASSISTIVE LISTENING SYSTEM
- See Part B.

HVAC
- See Part B.

LIFE SAFETY
- See Part B.

PART F
LECTURE HALLS



Lecture halls may serve as instructional spaces and double as assembly halls in support of non-instructional purposes. Lecture halls are unique in that their capacities yield a multi-level tiered floor system to accommodate sight lines. The number of lecture halls included in a building project will be determined by the needs of the specific programs that will occupy the building.

Modesty panels that double as writable surfaces mounted to the tables, coupled with alternate row seats that turn 180 degrees, encourage collaboration even in these large spaces.

Ramps have typically been located inside these large spaces, however an option exploring the placement of the ramps outside, gives more space back to the Lecture Halls and maximizes the square footage. To minimize opportunities for instructors to stumble while moving about the space, handrails and consistent rise and run on steps should be considered.

Faculty should have intuitive ease of access to light zoning, window shade, and projection controls from a wall panel or the fixed lectern. The spaces should foster communication by maximizing triple sliding white boards at the front teaching wall, provide large projection communication, Wi-Fi connectivity, and assistive listening systems. Every lecture hall should also be equipped with video / tele conferencing infrastructure; microphones, speakers, and cameras.

The back wall should incorporate a ledge and tack panels for informational material, as well as windows where possible. Transom lights above doors should also be considered, with dual shade mechanisms to control daylight.

LECTURE HALLS

BEST PRACTICES

GEOMETRY

- Wide wall as the front teaching wall. This brings the instructor in close proximity to all the students, and encourages eye contact.
- Transom lights above doors and windows along the back wide wall provide daylighting.

LOCATION

- The larger the room, the lower the building floor level.

CEILING HEIGHTS

- 13 feet minimum.
- Primarily a function of sight lines, projection screen and marker board heights.

ACOUSTICS / SOUND ISOLATION

- See Part B.

ACCESSIBILITY

- Provide an accessible ramp and appropriate handrails.
- See Part A.

LECTERN

- Accessible and fixed.

INSTRUCTOR DESK

- Accessible and mobile.

DEMONSTRATION TABLE

- To be determined on a project by project basis if needed.
- The standards graphically show where the table should be located, allowing for all clearances.

STUDENT FURNITURE

- Tables should be fixed and continuous in rows oriented to front of room teaching wall.

- Floor-mounted base 30” on center, each supporting two swing-away self-returning seats.
- Two rows per tier with seats in alternate rows to rotate 180 degrees to facilitate student group work and collaboration.
- Space between seat and table should accommodate a 4 inches for additional belly room.

COLLABORATIVE SURFACES
- Student tables create great horizontal collaborative surfaces.
- The modesty panel can double as a vertical writing surface for alternate rows to utilize.
- Maximize tack panels on back walls.

MARKER BOARDS / RAILS
- Triple sliding marker boards at the front teaching wall.

TACK PANELS
- On front teaching wall, create a zone that other elements occupy.
- Align with other elements in the room for a clean design. See diagram on the following pages.

CLOCKS
- See Part B.

LIGHTING
- See Interior Lighting section.

PROJECTORS
- See Part B.

PROJECTION SCREENS
- Two projection screens can be installed to maximize conformable viewing angles, or for the flexibility of projecting multiple images simultaneously. To be determined on a project by project basis.
- See Part B.

VIEWING ANGLES / SIGHT LINES
- Student tables should angle at the ends of the room to maximize viewing angles.
- Raised floor tiers maximize sight lines to the furthest seats.

MEDIA RACKS
- A media closet at 42 inches deep by 48 inches wide to be located at the front of the room to minimize cable runs.
- Access to IMC staff only.

SWITCH CONTROLS
- See Part B.

CLEANOUTS / ACCESS PATHS
- See Part B.

MICROPHONES
- See Part B.

SPEAKERS
- See Part B.

CAMERAS
- See Part B.

WINDOW SHADES
- See Part B.

POWER / DATA
- Power to be provided at each fixed table seat.
- Electrical conduits to be fed through fixed seat bases.
- Power over Ethernet (POE) connection.
- See Part B.

WI-FI
- See Part B.

ASSISTIVE LISTENING SYSTEM
- See Part B.

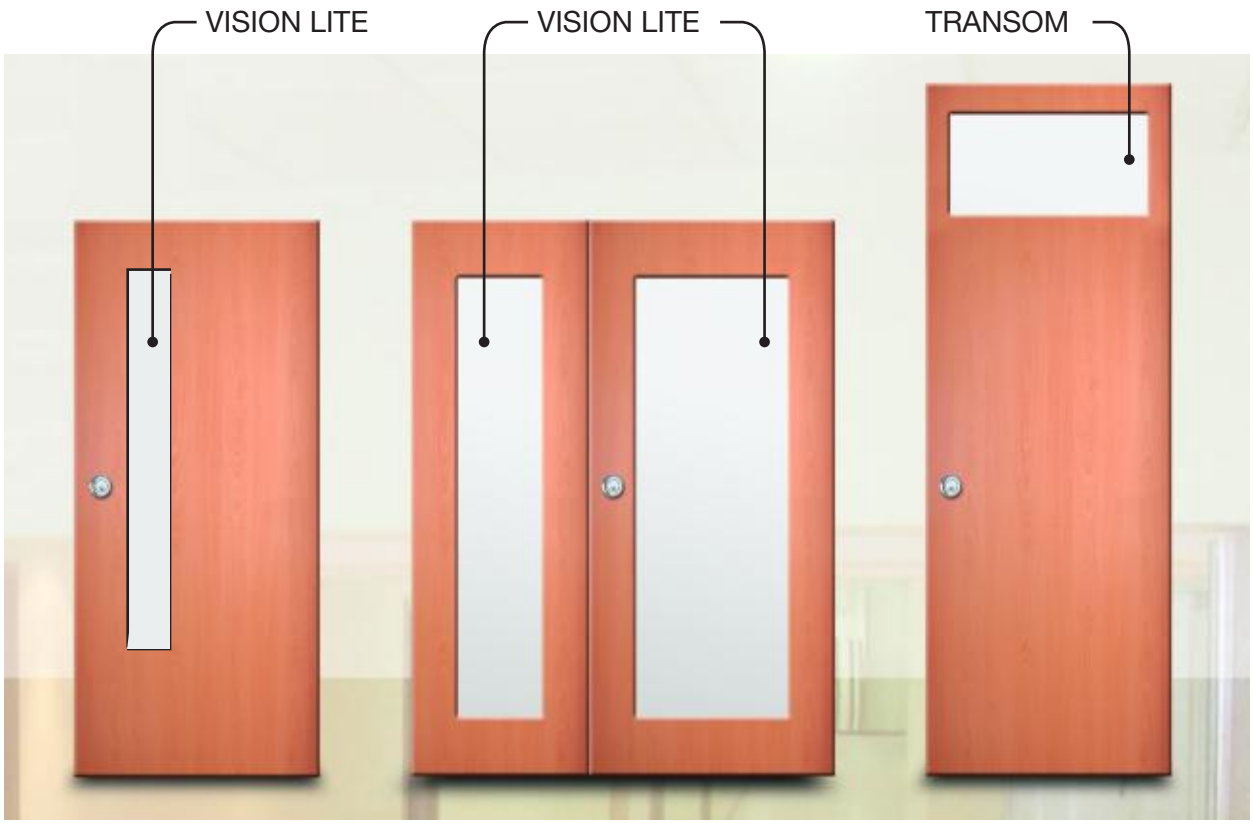
HVAC
- See Part B.

LIFE SAFETY
- See Part B.

PART G
OFFICES

Private office environments should incorporate systems that maximize daylighting and ergonomics to aid user's productivity and overall sense of well-being. Office spaces should combine user focus with freedom of design, while workstations will create flexible work environments perfectly suited to individual tasks, social interaction and collaboration.

Although offices vary in size and capacity, there should be consistency in their furnishing systems, guest seating support, and maximized storage. Work surfaces and collaborative surfaces should be considered, sometimes one surface supporting both in the smaller offices. Mobile elements can make seating reconfigurations or screen sharing more accessible for collaboration. Conference technology and bathroom facilities should be provided in the president and vice chancellor's offices, see Sections J and K for more information.


VISION LITE
VISION LITE
TRANSOM

BEST PRACTICES

DOORS
- Vision panels are regularly installed to allow first responders to quickly ascertain the condition of room occupants.
- At a minimum, a solid door with a vision lite is required.

CEILING HEIGHTS
- 8 to 10 feet minimum.

ACOUSTICS / SOUND ISOLATION
- Full height partition construction is recommended.
- See Part B.

ACCESSIBILITY
- See Part A.

CLOCKS
- See Part B.

STORAGE
- Provide furnishings to maximize storage needs without obstructing windows or accessibility.

LIGHTING
- See Interior Lighting section.

FLAT PANEL DISPLAYS
- Only in designated offices.
- See Part B.

MEDIA RACKS
- To be housed in a prefabricated media console.
- See Part B.

SWITCH CONTROLS
- See Part B.

CLEANOUTS / ACCESS PATHS
- See Part B.

POWER / DATA
- See Part B.

WI-FI
- See Part B.

HVAC
- Manually operated is acceptable.
- See Part B.

LIFE SAFETY
- See Part B.

PART H
WORKSTATIONS

Open office workstation environments should be designed in consistency with a campus's approach in color, materiality, and furnishings. Systems to maximize daylighting and ergonomics aid user's productivity and overall sense of well-being. Today's office workers are more mobile, flexible, and social, while spending a majority of their day in their work environments. In turn, spaces should be designed to support a variety of productive styles; through "heads-down" focused work, to in-person and virtual social interactions and knowledge collaboration.

Studies show that the "huddle around the water cooler" social interactions support attitudes that lead to trust, collaboration, and productivity. When individuals are given the opportunities to share knowledge and experiences, as well as receive instant feedback, projects move faster toward successful completion (7). Therefore, an open office workstation environment should balance workstation modules with formal an informal gathering areas to encourage camaraderie.

It's good practice to assess a campus's work culture to determine if the work environments created are working effectively as intended, and making any adjustments to improve the staff's productivity.

WORKSTATIONS

BEST PRACTICES

CEILING HEIGHTS

- 10 feet minimum.

ACCESSIBILITY

- See Part A.

STORAGE

- Provide furnishing systems that maximize storage needs without obstructing windows or accessibility.

COLLABORATIVE SURFACES

- Allocated spaces for surfaces between workstations or within a groups of workstations.
- Fixed and mobile white boards as well as tack panels are encouraged.
- Storage unit tops can double as seating for collaborative zone.

LIGHTING

- See Interior Lighting section.

POWER / DATA

- Coordinate location for floor stub-ups with FF&E consultant.
- See Part B.

HVAC

- See Part B.

LIFE SAFETY

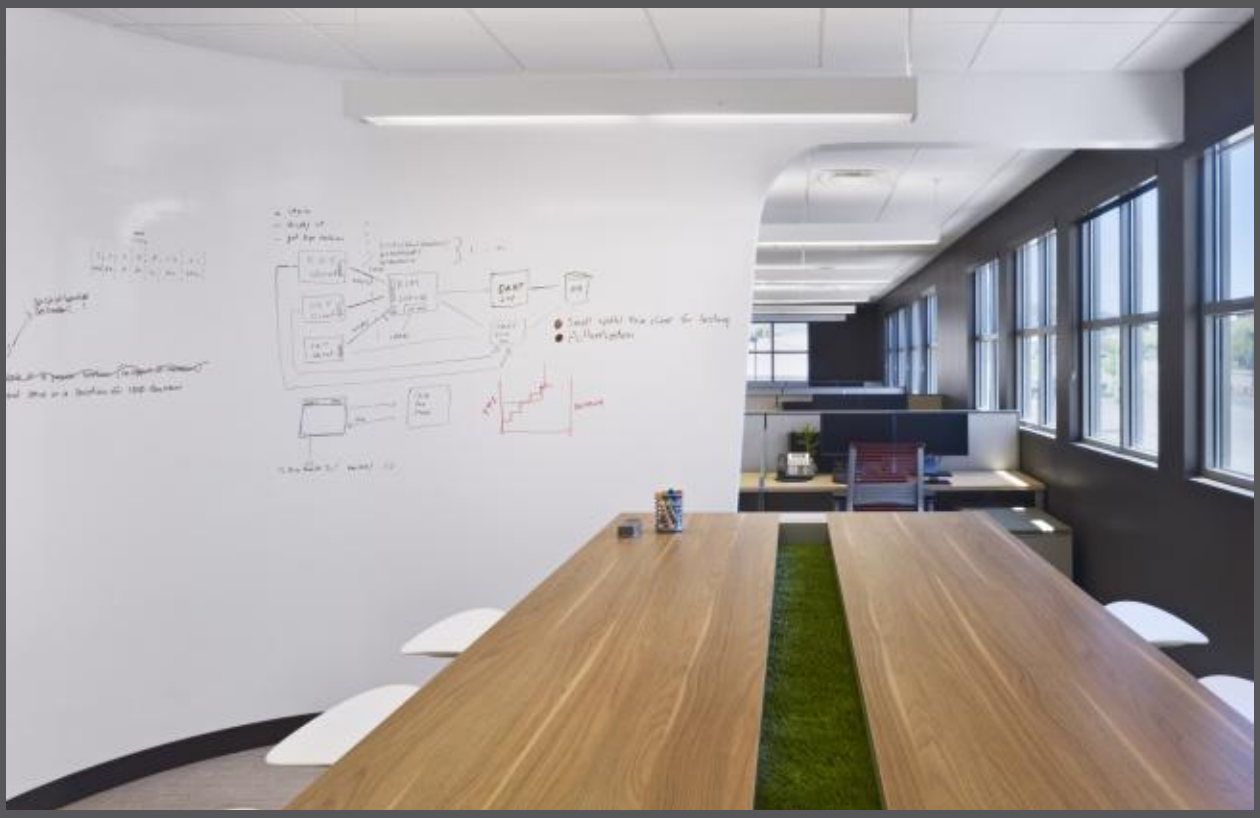
- See Part B.

Furnishings should create a variety of opportunities. Elements to consider include:

- Division panel heights low enough to create a line of sight.
- Screens that can be viewed by all parties collaborating.
- Space between two workstations can function as storage, small group collaboration, and a guest seat if a cushion is provided.
- Spaces amid a group of workstations can host a medium group of individuals meeting.
- Formal and informal space types are encouraged to foster to the variety of ways in which people interact.
- A variety of furnishings to support a variety of poses; formal, informal, sitting, standing, leaning, writing, etc.
- Mobile furnishings allow users to reconfigure a space for their needs.

PART J

CONFERENCE ROOMS



A well designed conference room helps in an effective, clear and dramatic communication of ideas and dialogue. Meeting room design demands not only the appropriate furniture and equipment, but also the right space, atmosphere, and lighting arrangement of the room.

These spaces can be a component of public access, located in centralized areas within a facility. Their interiors should be designed seeking the comfort audio level of the users, and should not allow for external sound to interfere with internal interaction. When selecting furnishings, it is good practice to plan for a sufficient amount of space for the users to circulate and roam around comfortably. Cluttering should be completely avoided by not crowding too many chairs around the table. Furthermore, tables with power and data connectivity are ideal for today's high-tech mobile users.

Due to the nature of their use frequency, daylighting and daylight harvesting strategies should be incorporated. Techniques such as motion sensors to turn the lights off when the space is not in use will generate much energy savings.

CONFERENCE ROOMS

SMALL CONFERENCE ROOM

MEDIUM CONFERENCE ROOM

LARGE CONFERENCE ROOM

BEST PRACTICES

ROOM GEOMETRY
- Rectangular is ideal with short wall as the media wall.

CEILING HEIGHTS
- 11 feet minimum to accommodate suspended light fixtures and sight lines.

ACCESSIBILITY
- See Part A.

CLOCKS
- See Part B.

STORAGE
- Replicate media console module without electrical fittings.

COLLABORATIVE SURFACES
- Maximize white boards and tack panels.

LIGHTING
- See Interior Lighting section.

FLAT PANEL DISPLAYS
- One FPD mounted on designated wall.
- 16:9 aspect ratio.
- 4 foot mounting height.

VIEWING ANGLES / SIGHT LINES
- Maximize viewing angles for FPD screens.

MEDIA RACKS
- To be housed in a prefabricated media console.
- See Part B.

SWITCH CONTROLS
- See Part B.

CLEANOUTS / ACCESS PANELS
- See Part B.

MICROPHONES
- Furniture fixed.
- Coordinate with FF&E consultant.

SPEAKERS
- See Part B.

CAMERAS
- On front wall, to be mounted above FPD.
- See Part B.

WINDOW SHADES
- See Part B.

POWER / DATA
- Coordinate location for floor stub-ups with FF&E consultant.
- See Part B.

WI-FI
- See Part B.

HVAC
- See Part B.

LIFE SAFETY
- See Part B.

PART K
TOILET ROOMS

Toilet rooms should be designed with equal care and attention to detail as other spaces on campus. Colors, materials, fixtures, and other elements should be appropriate to the design concepts of the each campus so users.

A design feature for convenient use includes providing a continuous ledge, 12 inches deep and spanning the area behind lavatories and toilets. This design element provides a convenient dry surface for occupants to set their personal belongings.

The number of student, faculty and staff toilet rooms included in a building project will be determined by the needs of the specific programs that will occupy the building.

BEST PRACTICES

CEILING HEIGHTS
- 8 feet minimum.

ACCESSIBILITY
- All stall counts, clearances, reach heights, and reach depths should comply with ADA standards.

BATHROOM FIXTURES
- All wall-mounted water closets, urinals, and lavatories to be supported by floor mounted chair carriers or concealed arm uprights.
- Top of lavatory support is approximately 40” high.

WATER FOUNTAINS
- Backing plates for drinking fountains to be provided by the manufacturer.

PARTITIONS
- Floor to ceiling.

LIGHTING
- See Interior Lighting section.

CLEANOUTS / ACCESS PANELS
- Types and locations to be coordinated with the architect.

DRAINS
- To be provided with an automatic trap primer behind an access panel.

WATER SUPPLY
- Hot and cold water supply should be provided with accessible shut off valves.

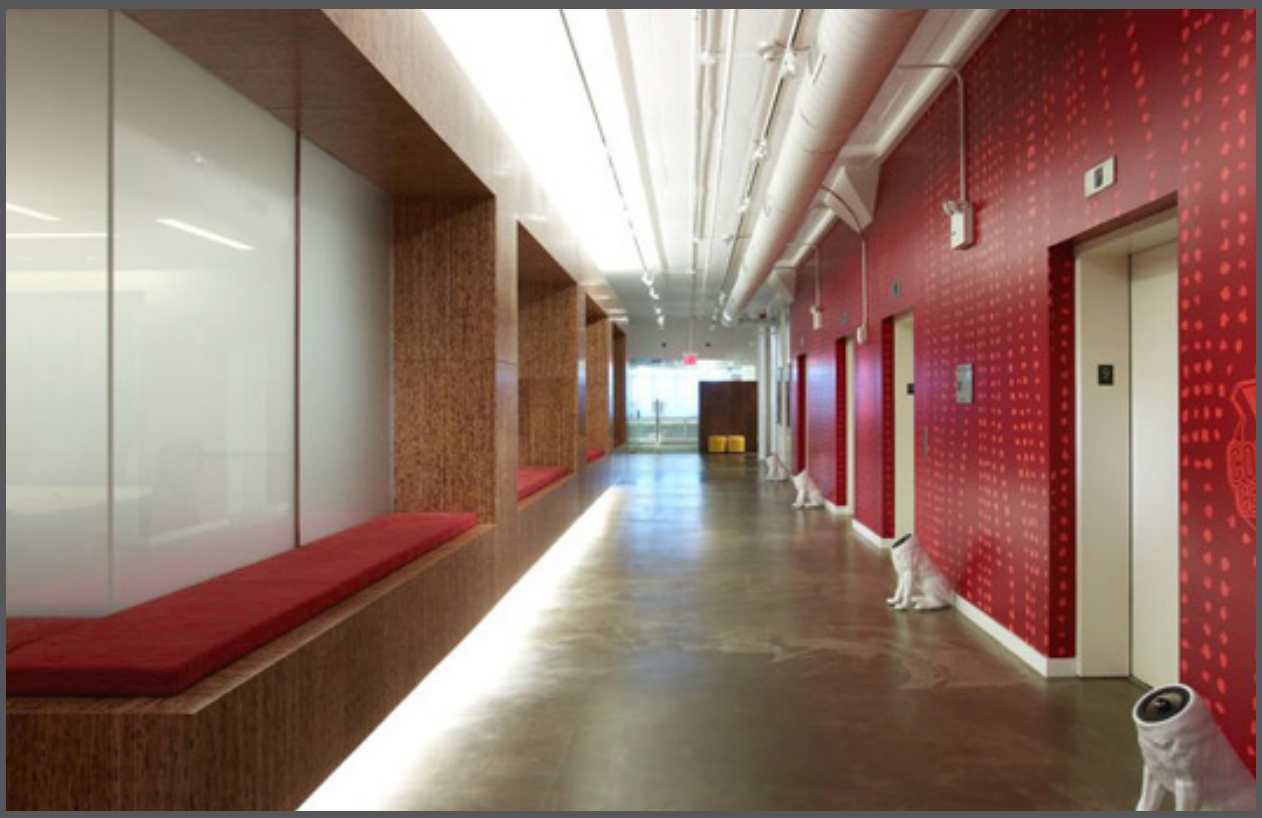
HVAC
- See Part B.

LIFE SAFETY
- See Part B.

PART L

VERTICAL CIRCULATION

CONTENTS:



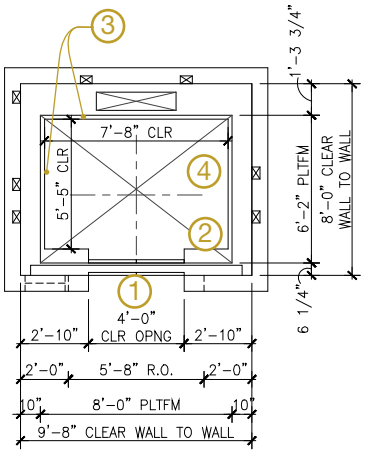
Passenger elevators should be designed with equal care and attention to detail as other spaces on campus. Colors, materials, fixtures, and other elements should be appropriate to the design concepts of the each campus so users. Quantity and location should be determined on a project by project basis based on occupancy loads, and they should be large enough to accommodate ADA requirements.

All equipment rooms shall be designed and located to facilitate the removal, transport, and replacement of the largest equipment component housed within the room.
Machine room surfaces similar to Electrical Room. Refer to Part M.

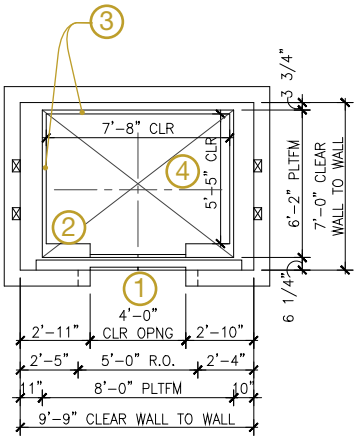
I. PASSENGER ELEVATOR - CENTER OPENING

0 ft 4 ft 8 ft

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



MACHINE ROOM-LESS



IN-GROUND HYDRAULIC

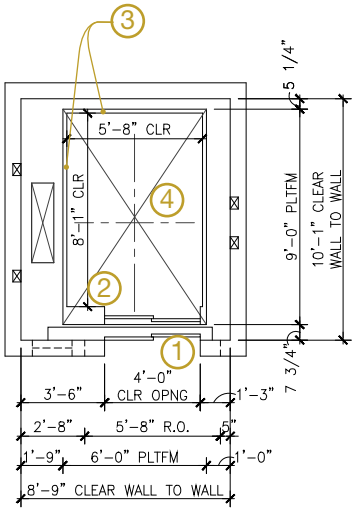
LEGEND

1	Doors:	Brushed stainless steel	
2	Front Return Wall Panels:	Column type	
3	Side and Rear Wall Panels:	Manufacturer:	Thyssenkrup
		Style:	TK Steel Wall Cab
		Color:	5WL Patterned Stainless Steel Walls
4	Floor:	Manufacturer:	Gerflor
		Style:	Mipolam Symbioz
		Color:	6044 Sea Storm (Dark Grey)
		Welding Rod:	Match sheet vinyl
	Ceiling:	Style:	Black Powder Coat Panel
		Lighting:	Halogen Downlight

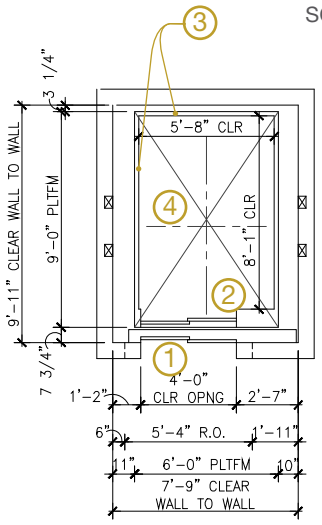
II. SERVICE ELEVATOR - SIDE OPENING

0 ft 4 ft 8 ft

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



MACHINE ROOM-LESS



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4	Floor:	Manufacturer:	Gerflor
		Style:	Mipolam Symbioz
		Color:	6044 Sea Storm (Dark Grey)
		Welding Rod:	Match sheet vinyl
	Ceiling:	Style:	Black Powder Coat Panel
		Lighting:	Halogen Downlight

PART M
SUPPORT ROOMS

CONTENTS:

Support rooms have unique characteristics due to the nature of the contents they house. Proper materials and acoustic treatment to walls and floors are requires so as to not interrupt any of the building occupants during their daily activities. They should be adequately lit, refer to Interior Lighting section for more detail.

All equipment rooms shall be designed and located to facilitate the removal, transport, and replacement of the largest equipment component housed within the room, without removing permanent walls, large items of equipment, or equipment essential to the principal on-going, day-to-day building use. Ensure adequate safe access and manufacturer's recommended working clearances for all equipment.

Air equipment, piping, ductwork, etc., shall be located to provide unobstructed access to filters, bearings, valves, control devices, and anything requiring access for maintenance. Piping shall be coordinated such that it does not interfere with equipment and connections to and from equipment.

I. CUSTODIAL WET/ EQUIPMENT CLOSET

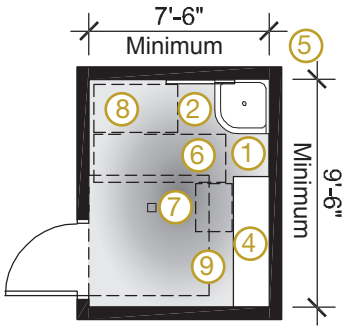
MINIMUM 71 SF

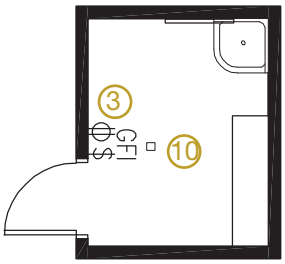
0 ft 4 ft 8 ft

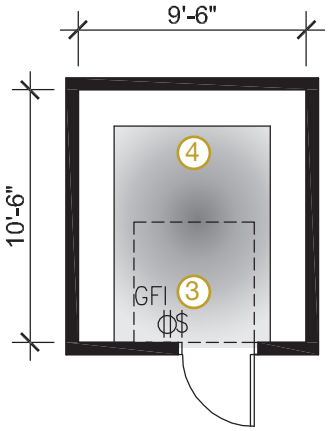
SCALE: 1/8" = 1'-0"

II. CUSTODIAL SUPPLY STORAGE ROOM

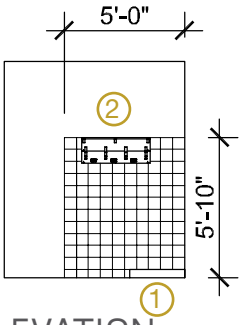
MINIMUM 100 SF







PLAN



(A) ELEVATION

LEGEND

1. Floor basin (mop sink) with 4" curb
2. Mop rack/shelf with hooks
3. Ground fault interrupter (GFI) receptacle located approximately 2'-0" above finish floor (AFF) near door
4. Adjustable shelving -18" deep by at least 15 lineal feet; 5'-0" tall shelf units
5. Hot and cold water faucet with vacuum breaker and hook for filling buckets and attached hose
6. Mop cart - 2'-0" x 6'-0"
7. Vacuum - 18" x 18"
8. Floor machine (buffer) - 2'-0" x 4'-0"
9. Step ladder
10. Floor drain with trap primer connection

SYMBOLS

- Duplex
- Quadruplex
- $ Light switch with occupancy sensor

SURFACES

Floor:	Hardened smooth concrete
Wall:	• Washable, hard, smooth finish on concrete block
	• Glazed tile wainscot at floor basin
Ceiling Ht:	Slab to slab
Ceiling Type:	Exposed concrete or painted drywall
Door:	• 3'-0" wide
	• Hollow metal frame

BEST PRACTICES

- Backflow preventers, pressure regulators etc. are not allowed in custodial rooms.
- Provide exhaust at a minimum of 10AC/HR.
- Provide adequate ventilation.

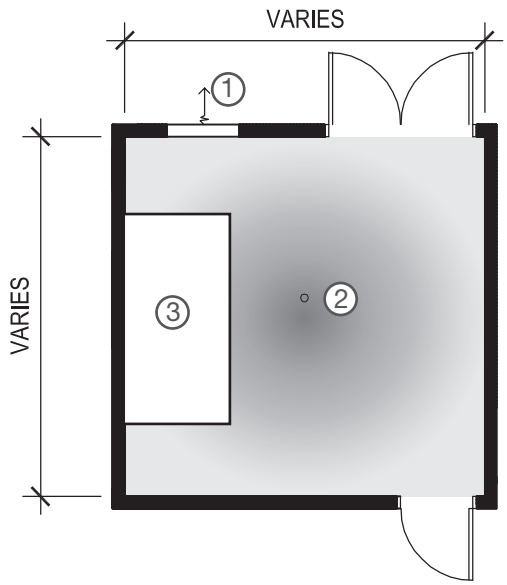
CUSTODIAL WET EQUIPMENT CLOSET

- Strategically located on all floors throughout a building.
- Locate to avoid moving equipment long distances.
- Doors shall swing out and shall be large enough to permit free movement of boxes and equipment (3'-0" min).

CUSTODIAL SUPPLY STORAGE ROOM

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

III. MECHANICAL ROOMS - SF VARIES



PLAN

LEGEND

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

SYMBOLS

Quadruplex

GFI Ground Fault Interrupter (GFI)

SURFACES

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

PURPOSE

The purpose of this standard is to specify minimum requirements for mechanical rooms installed throughout the District.

GENERAL

- California Building Code
- California Green Building Standards Code or Cal Green
- California Mechanical Code
- California Plumbing Code
- NFPA 90A Standard for the Installation of Air-Conditioning and Ventilating Systems
- NFPA 90B Standard for the Installation of Warm Air Heating and Air-Conditioning Systems
- ASHRAE Handbooks

III. MECHANICAL ROOMS (CONTINUED)

DESIGN STANDARDS

ACCESS

- Mechanical rooms shall be separated from other occupancies as required by the CBC.
- Access to mechanical rooms shall be directly from outdoors or a corridor, access through intervening spaces is not allowed. Doors shall be keyed by the Facility's Department to ensure authorized access only.

DOORS

- Doors for exterior entrances shall be oversized or double doors based on the equipment being provided. Designer must coordinate with the architect and facilities representative to determine the implementation of this requirement.
- Ingress/egress openings shall be sized to allow future equipment replacement without demolition of walls or roof. (Removable louvers are acceptable). Provide a minimum of double 3'-0" doors for all mechanical rooms larger than 100 square feet. Comply with CBC and CMC for exiting requirements.

LOWER LEVEL VS. UPPER FLOOR EQUIPMENT ROOMS

- Indoor equipment that is heavy and / or noise and vibration generating and/ or prone to leaking fluid such as air compressors, pumps, and domestic water heating equipment shall be housed within an equipment room that is located at the lowest level of the building. Adequate provision shall be made to protect adjacent areas from the transmission of noise and vibration.

ADJACENT AREAS

- Any space that is sensitive to noise and/or vibration shall not be located adjacent to (including above and below) a mechanical equipment room that houses noise and/or vibration generating equipment.

EQUIPMENT PADS

- A concrete housekeeping pad shall be provided for each piece of floor mounted mechanical equipment.

PUMPS

- Pumps shall be base mounted only, inline are not acceptable. Base mounted pumps shall have drainable base plate to support pump and motor independently and allow service to pump internals without requiring piping or electrical disconnection.

AIR HANDLERS

- Air handlers shall be so located so that access doors are capable of fully opening. Air handler access on both the left and right sides shall be provided for air handlers greater than 3,000 cfm. Space shall be provided inside the mechanical room to facilitate replacement of the filters, coils, etc.

VENTILATION

- Thermostatically controlled exhaust fans shall be installed in every mechanical room, with minimum ventilation per code, or as required to remove calculated heat gain from electrical equipment or piping heat gain. Provide for filtered make up air.

INSULATION

- All piping, pumps, valves, strainers, suction diffusers, triple duty valves, etc. shall be insulated. All CHW insulation shall include a vapor barrier.

LABELING

- Label/tag all equipment, including disconnects, VFD's, starters, piping and controls.

VACUUM BREAKER

- Provide a minimum of one vacuum breaker protected hose bibb within each mechanical room.

ELECTRICAL

- Provide sufficient convenience outlets for maintenance operations.

LIGHTING

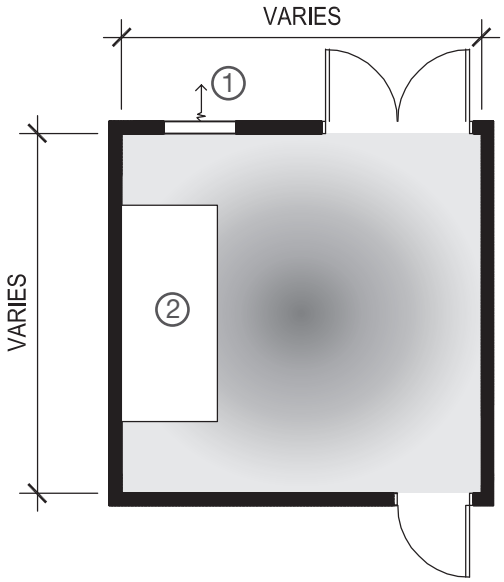
- Lighting shall be sufficient to allow maintenance activities on all sides of any piece of equipment. Lighting shall be controlled via occupancy sensor(s) and shall be fluorescent or LED.

PIPING

- Provide sufficient (and required) access around all equipment to allow maintenance access. Arrange piping/ ductwork to allow free access throughout the mechanical room. Minimum piping height shall be 7'-0" above finished floor, unless connecting to equipment.
- Mechanical piping entrance into room should be coordinated with the equipment locations prior to scope finalization.

IV. ELECTRICAL ROOMS - SF VARIES

PLAN



LEGEND

1. Exterior wall louver (depending on room type)
2. Provide 3” high concrete curbs (housekeeping pads) for equipment.
   Pad size to be determined by equipment size.

SURFACES

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

PURPOSE

The purpose of this standard is to specify minimum requirements for electrical rooms installed at SJECCD.

GENERAL

- California Building Code
- California Electrical Code
- California Fire Code
- California Green Building Standards Code or Cal Green

IV. ELECTRICAL ROOMS (CONTINUED)

DESIGN STANDARDS

ACCESS

- Access to electrical rooms shall be directly from outdoors or a corridor, access through intervening spaces is not allowed.
- All panels and electrical equipment shall be provided with code required service access space.
- Underground conduit entrance into electrical switchgear should be routed under the equipment unless otherwise approved by the owner prior to scope finalization.

USAGE

- Electrical rooms shall be used only for electrical related equipment (including fire alarm, EMS and other dry utilities).
- Wet utilities (with the exception of fire sprinklers, where required) shall not pass through, or be installed in, any electrical room.

ROOM SIZING FOR TYPICAL FACILITIES

- Electrical rooms shall be separated from other occupancies as required by the CBC.
- 20,000 – 40,000 sf multi-levels: One room on main level and one per 20,000 sf on upper level(s) at 8’ x 10’ each.
- +40,000 sf : multi-levels: One room on each level, one per 20,000 sf and space 200’ apart at 8’ x 10’ each.
    - Additional remote electrical rooms should be considered for buildings with distinct space layouts which may benefit from additional localized distribution equipment.(i.e. An individual wing of building that is separated from the main building by multistory open atrium).

DOORS

- Doors for exterior entrances shall be oversized or double doors based on the equipment being provided. Designer must coordinate with the architect and facilities representative to determine the implementation of this requirement.
- Ingress/egress openings shall be sized to allow future equipment replacement without demolition of walls or roof. (Removable louvers are acceptable). Provide minimum of two 3'-0" double doors for rooms larger than 100 sf.

VENTILATION

- Rooms shall be equipped with a thermostatically controlled exhaust fan and provisions for filtered make up air. Fan shall be sized to remove electrical equipment heat generation (transformers, VFD's, etc.)

LIGHTING

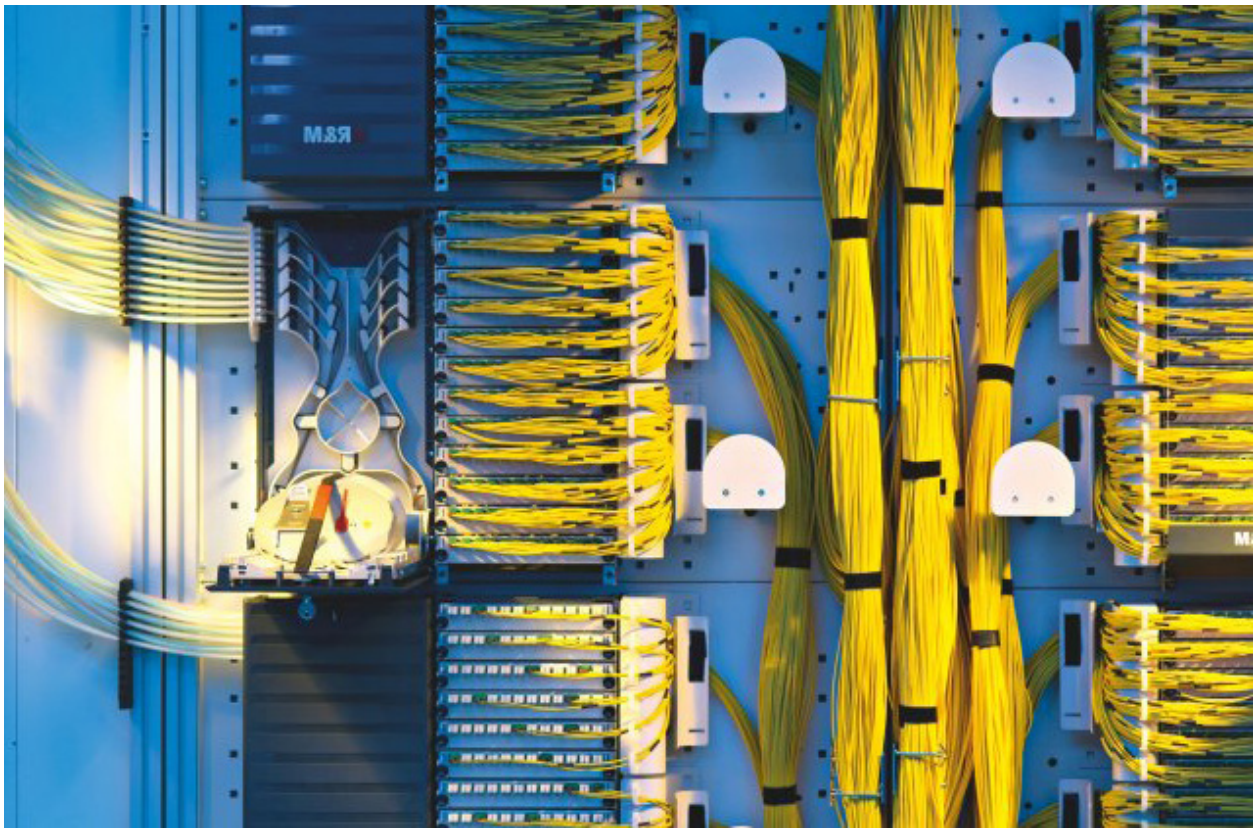
- Rooms shall be equipped with adequate lighting and lighting shall be controlled via occupancy sensor.

EXTERIOR SERVICE TRANSFORMER

- Minimum 8'x 8' pad size.
- Provide 36" clear around three sides, and 12' of clearance on front side.
- Typically drive up access is required for maintenance.
- It is desirable to locate the electrical room on an exterior wall, near the final transformer location.

PART N

TECHNOLOGY ROOMS



All technology rooms shall be designed and located to facilitate the removal, transport, and replacement of the largest equipment component housed within the room, without removing permanent walls, large items of equipment, or equipment essential to the principal on-going, day-to-day building use. Ensure adequate safe access and manufacturer's recommended working clearances for all equipment.

BEST PRACTICES

POWER

- Connect to emergency power.

CEILING HEIGHT

- 8 foot minimum clear of obstructions.
- No windows required, full height walls.

HVAC

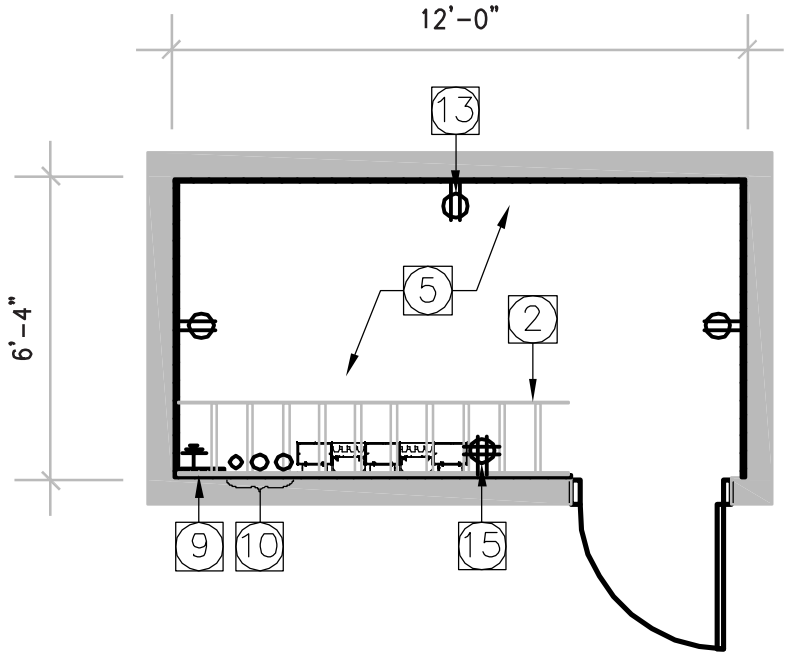
- Provide stand-alone HVAC unit with independent controls.

BUILDING ENTRANCE FACILITIES (EFs)

MINIMUM 150 SF

0 ft 2 ft 4 ft

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



PLAN

LEGEND

1. Telecom main grounding busbar at 18" AFF
2. 120V/30A and 208/30A outlet on dedicated circuit mounted on side of ladder rack (NEMA L5-30R)
3. 120V/20A quadplex outlet on dedicated circuit mounted on side of ladder rack (typ.)
4. Wall mounted equipment
5. Wall mounted telephone
6. 19" equipment rack w/ 6" vertical cable management (typ.)
7. Convenience duplex outlet
8. 12" ladder rack @ 7'-6" above finish floor (AFF)
9. 8'x4'x 3/4" sheets of A-C grade fire retardant treated plywood by General Contractor at all walls, plywood 2'-0"AFF to 10'-0"AFF
10. Security card access

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data
- $ Light switch
- Wall Phone
- Twist Lock

SURFACES

Floor:	Sealed concrete
Wall:	• Exposed concrete
	• Painted drywall
	• Hard, smooth finish on concrete block wall
Ceiling Ht:	Slab to slab (8’-6” minimum)
Ceiling Type:	Underside of structure
Doors:	• 3’-6” wide, solid, lockable, no louvers
	• Hollow metal frames
	• Hollow metal door for exterior doors

PART P

REFERENCE DOCUMENTS

REFERENCES

1. San Diego Community College District
   2011 District Design Guidelines & Standards Manual. October 2011

2. University of British Columbia
   Learning Space Design Guidelines. March 2012

3. Just Because You Build It Doesn't Mean They Will Come: Planning for Effective Workplace Interaction and Collaboration
   Allsteel Inc.

4. Lutron Energy-Saving Strategies Guides : Daylight Harvesting Basics
   Lutron

5. Designing for All Ages and Abilities
   Center for Universal Design at NC State

6. Principles of Universal Design
   Center for Universal Design at NC State

7. Just Because You Build It Doesn't Mean They Will Come: Planning for Effective Workplace Interaction and Collaboration
   Jan Johnson, Allsteel & Steve Hargis, HOK

8. Design Guidance: Learning Environments.
   University of Cincinnati, Division of the University Architect. January 2003

9. Gather: Where Ideas Meet
   Allsteel Inc.

10. Gather Design Guide: Supporting and inspiring interaction and collaboration.
    Allsteel Inc.

11. Involve
    Allsteel Inc.

12. Active Learning Spaces: Insights, Applications, and Solutions.
    Steecase Education Solutions

13. Learning Environments Design Guidelines: Version 1.0
    University of New Mexico

LIST OF TERMS

AV	Audio Visual
ADA	American with Disabilities Act
ALS	Assistive Listening System
ASF	Assignable Square Footage
DSA	Division of the State Architect
FF&E	Furniture, Fixtures, & Equipment
FTE	Full Time Equivalent
OFCI	Owner Furnished, Contrator Installed

END OF SECTION 7

SECTION 7

EVERGREEN VALLEY COLLEGE

PART A

ROOM NUMBERING

I. ROOM NUMBERING

PURPOSE

UNIFORMITY:

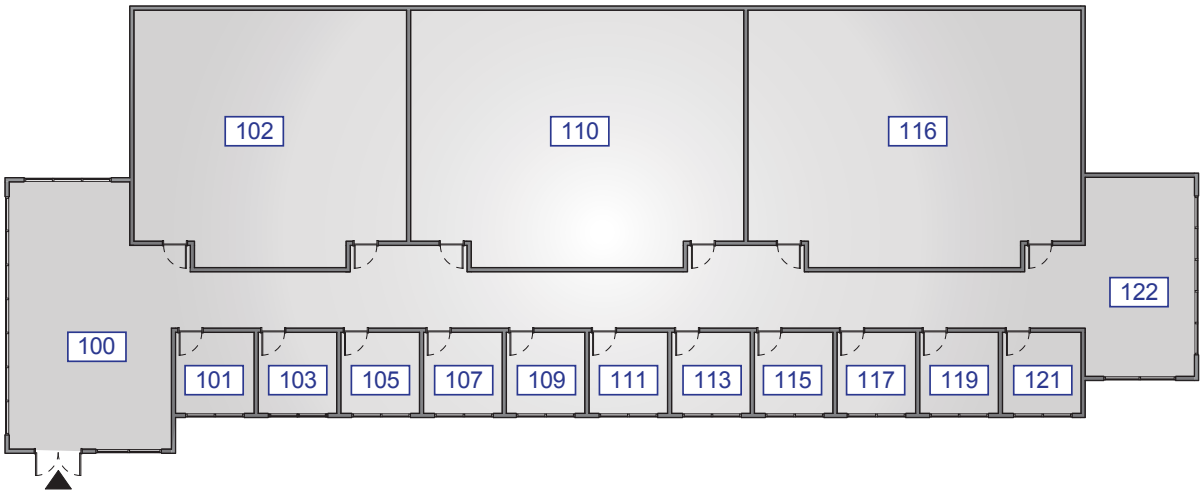
- A standard pattern of room numbers shall be applied to the working drawings before a building is approved.

FLEXIBILITY:

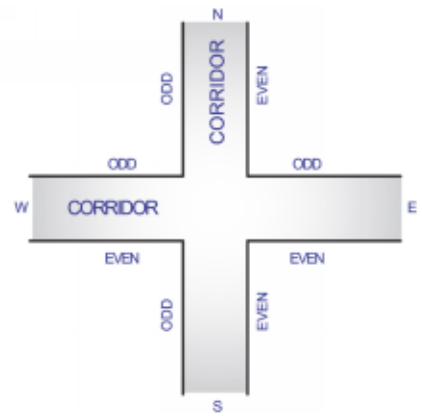
- A standard pattern of room numbers permits the assignment of new room numbers in a logical relationship to existing room numbers, when new rooms are created by the addition and removal of partitions.

CONVENIENCE:

- Assign room numbers on all floors of a building according to a single basic pattern to enable users of the building to find rooms with the least possible difficulty.



HORIZONTAL PROGRESSION



STARTING POINT:

- Preferably at or near the principal entrance, and at an end or corner of the building. (If both conditions cannot be met, the choice must be based on a judgement as to which starting point will permit the simpler and more logical progression.)

DIRECTION OF PROGRESSION:

- The direction of heaviest flow of traffic entering the building.

EVEN + ODD NUMBERS:

- Assign only one number to a room even though the room may have two or more doors. Even numbers should align along the north side of the building and odd numbers along the south.

DESIGNATION FLOOR

Sub-Basement	S-XX to S-XX
Basement or Ground Floor	XXX to XXX
First Floor	XXX to XXX
Second Floor	XXX to XXX
Third Floor	XXX to XXX

VERTICAL IDENTITY

- Application of the principle generally ensures that corresponding numbers (e.g., S-27, 27, 127, 227, 237, etc.) occupy the same relative position on all floors of the building.

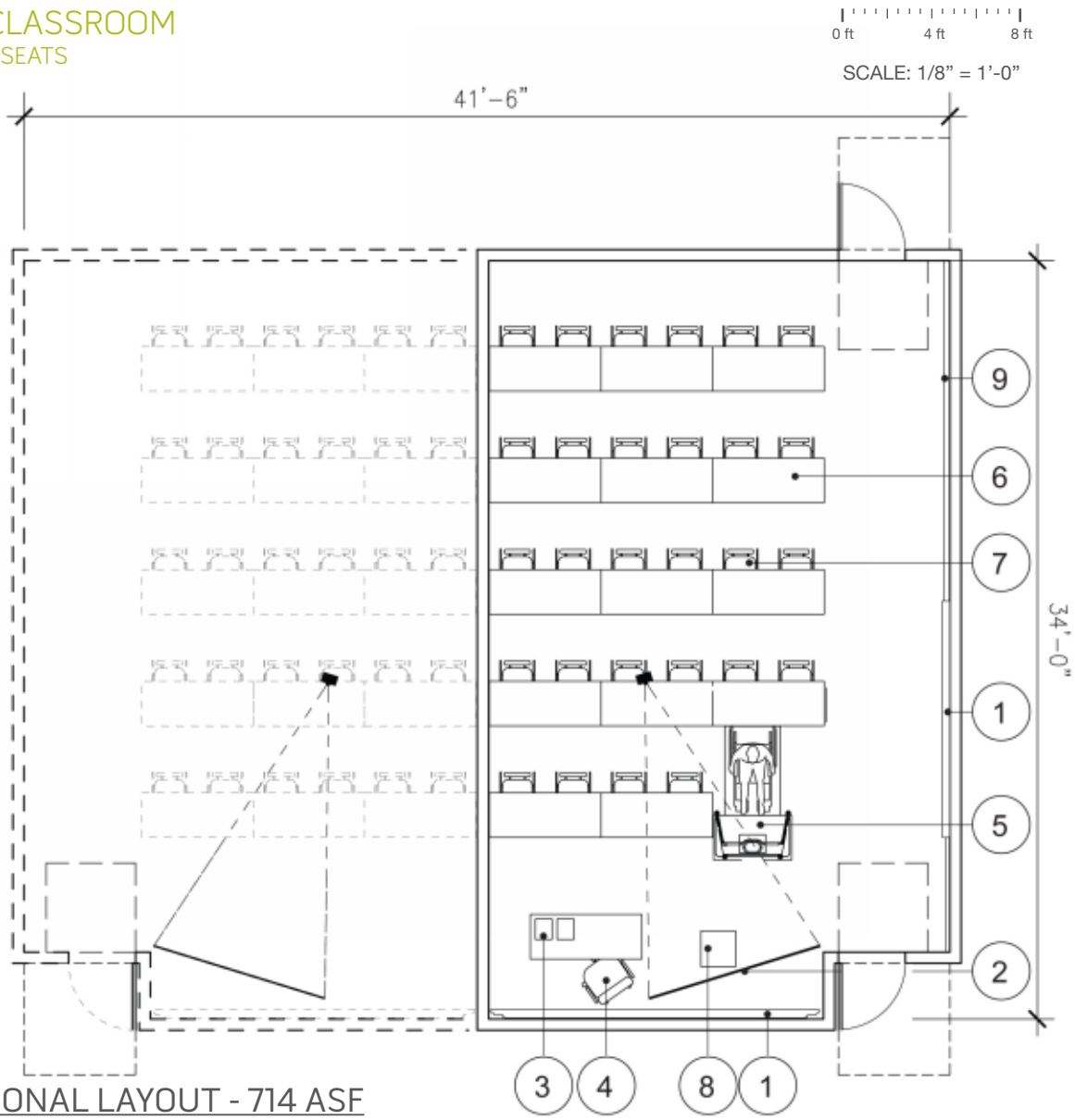
Refer to the *California Community College Space Inventory Handbook* for suggested standard patterns for numbering.

PART B
CLASSROOMS

CONTENTS:

SMALL CLASSROOM

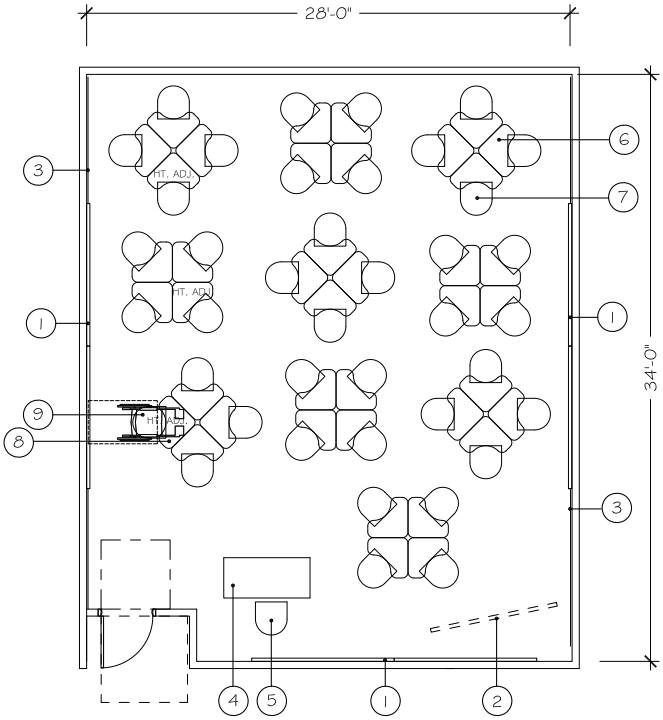
- 30 SEATS

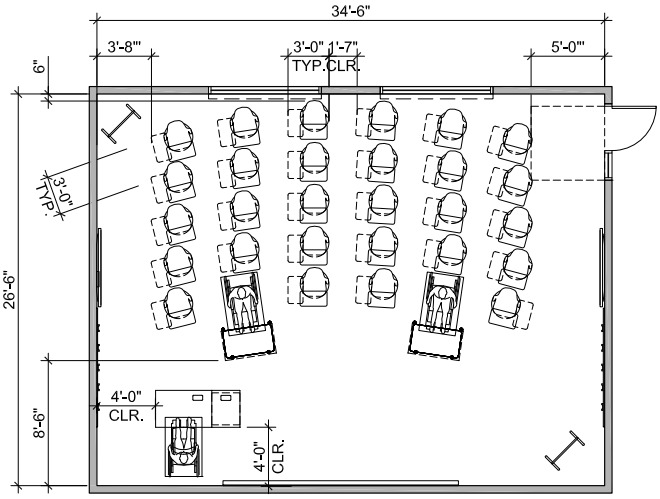


TRADITIONAL LAYOUT - 714 ASF

0 ft 8 ft 16 ft

SCALE: 1/16" = 1'-0"





FLEXIBLE LAYOUT - 953 ASF

LEGEND

1. Writable Surface (Group 1)
2. Projector Screen (Group 1)
3. Tackable Surface (Group 1)
4. Instructor Station
5. Instructor Chair
6. Movable Student Desk
7. Stackable Student Chair
8. Ada Desk
9. Ada Chair

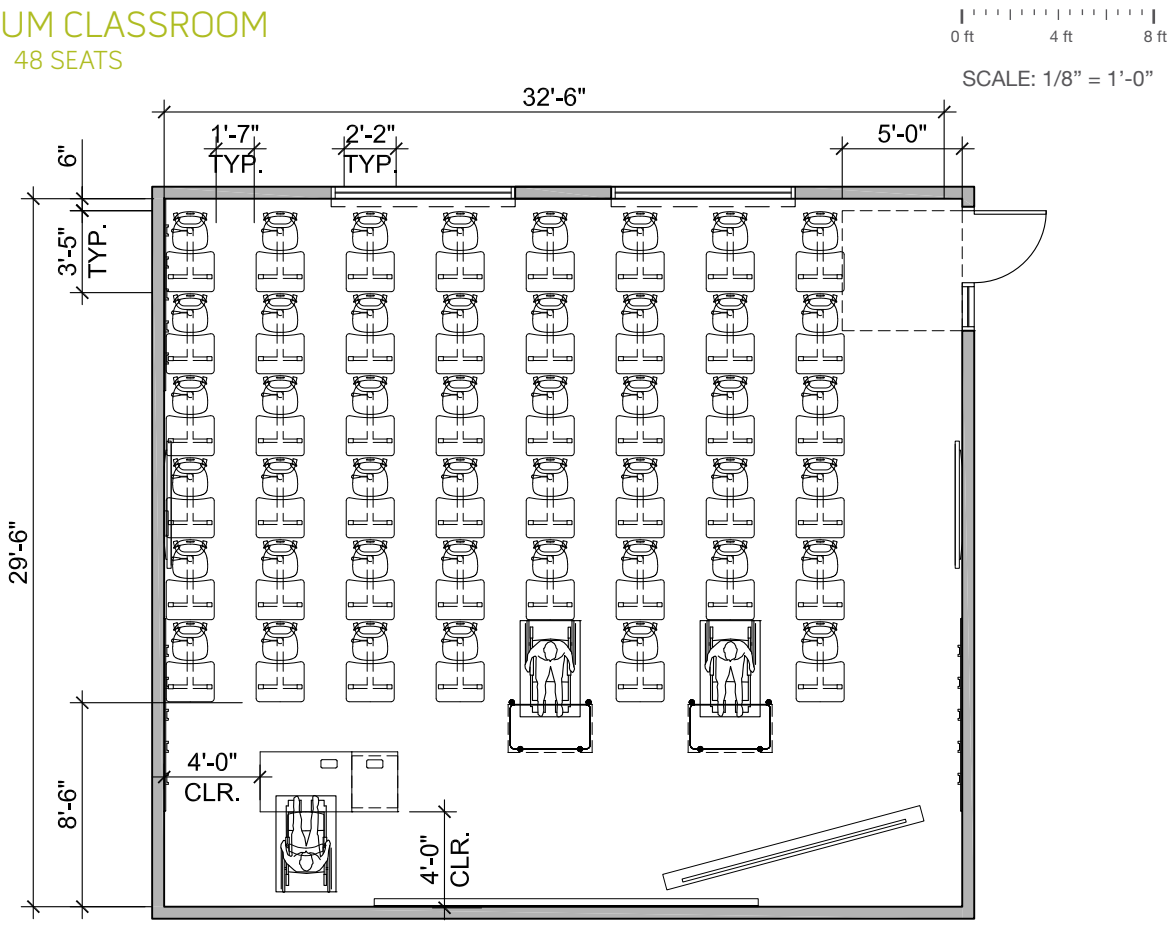
ACTIVE LAYOUT - 953 ASF

SURFACES

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

MEDIUM CLASSROOM

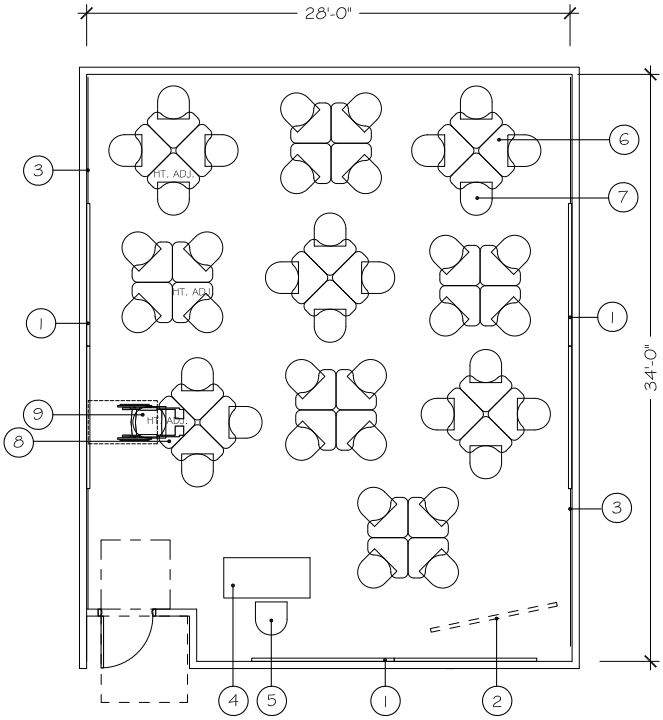
- 48 SEATS



TRADITIONAL LAYOUT - 980 ASF

0 ft 8 ft 16 ft

SCALE: 1/16" = 1'-0"



FLEXIBLE LAYOUT - 980 ASF

LEGEND

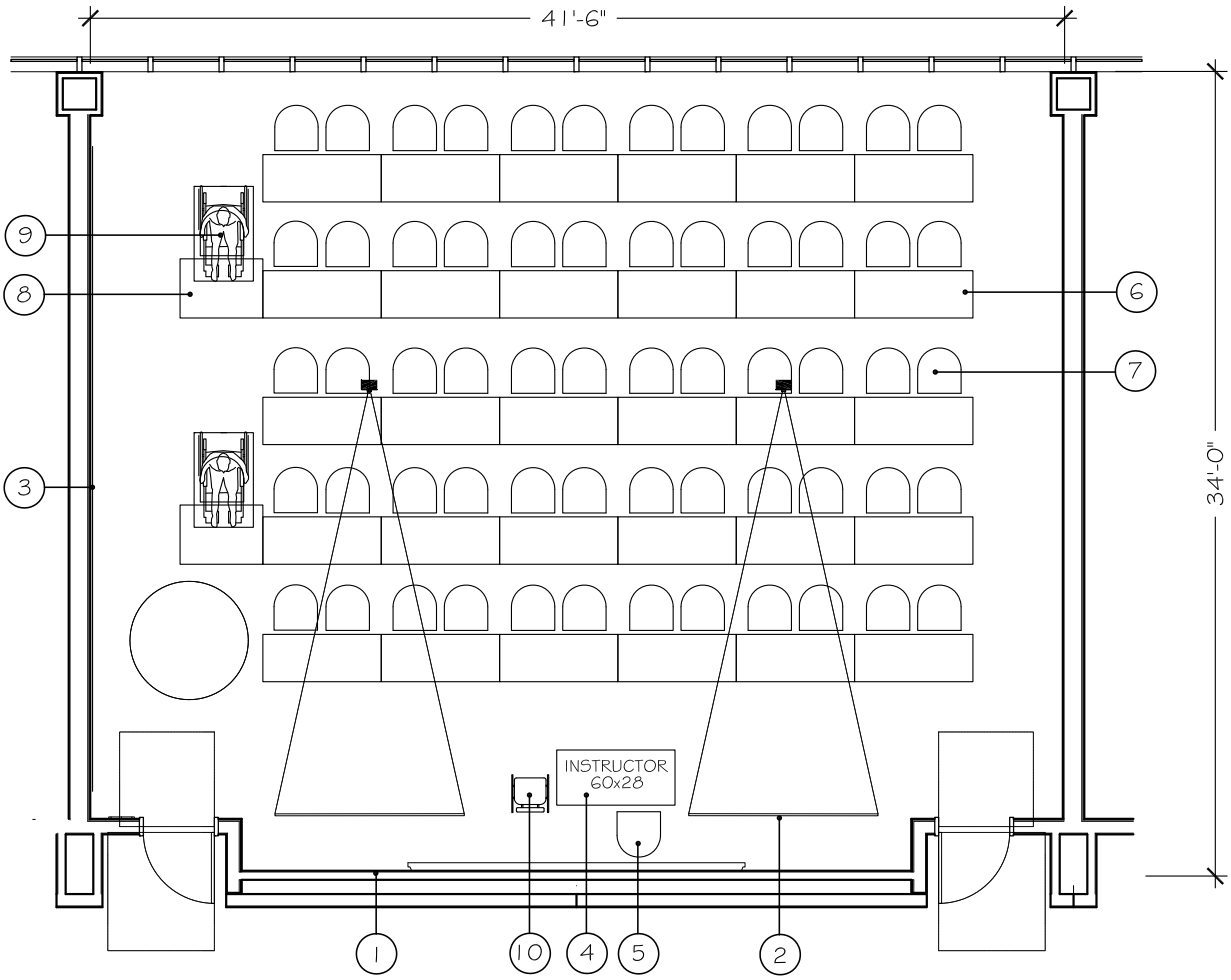
1. Writable Surface (Group 1)
2. Projector Screen (Group 1)
3. Tackable Surface (Group 1)
4. Instructor Station
5. Instructor Chair
6. Movable Student Desk
7. Stackable Student Chair
8. Ada Desk
9. Ada Chair

LARGE CLASSROOM

- 60 SEATS

0 ft 4 ft 8 ft

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



TRADITIONAL LAYOUT - 1,428 ASF

LEGEND

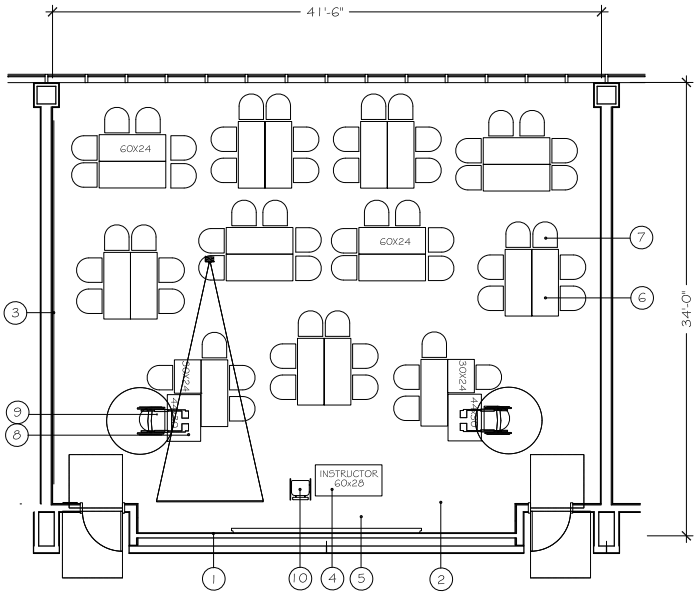
1. Writable Surface (Group 1)
2. Projector Screen (Group 1)
3. Tackable Surface (Group 1)
4. Instructor Station
5. Instructor Chair
6. Movable Student Table
7. Student Chair, Casters or Stacking
8. ADA Desk
9. ADA Chair
10. Lectern

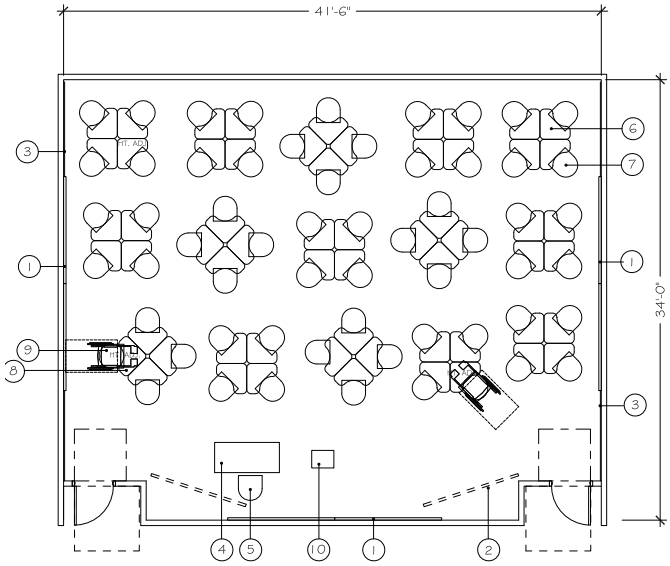
SURFACES

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

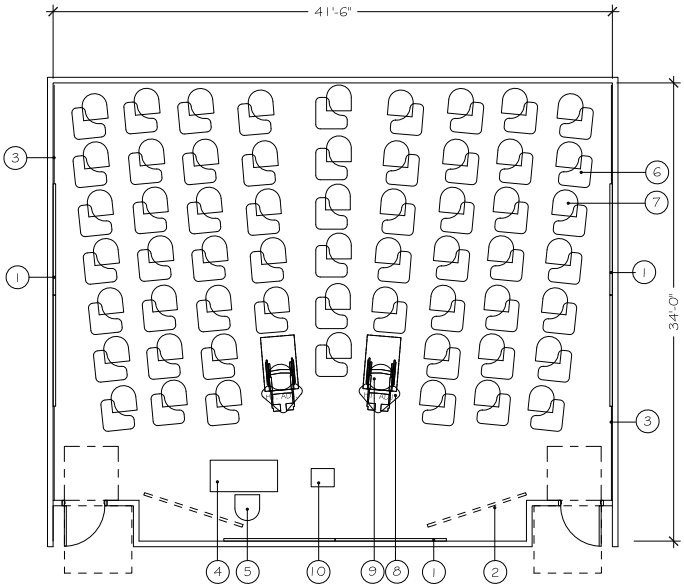
0 ft 8 ft 16 ft

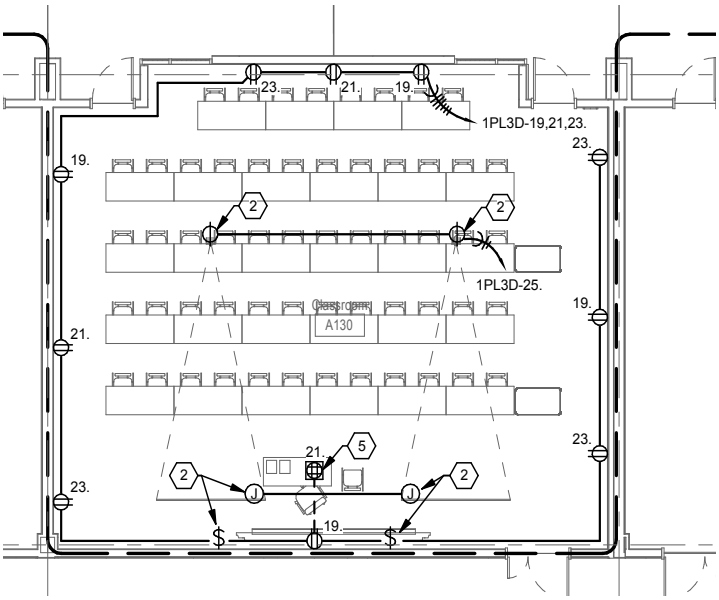
SCALE: 1/16" = 1'-0"





FLEXIBLE LAYOUT - 1,428 ASF





ACTIVE LAYOUT - 1,428 ASF

POWER/DATA/AV PLAN

PART C
LEARN LABS

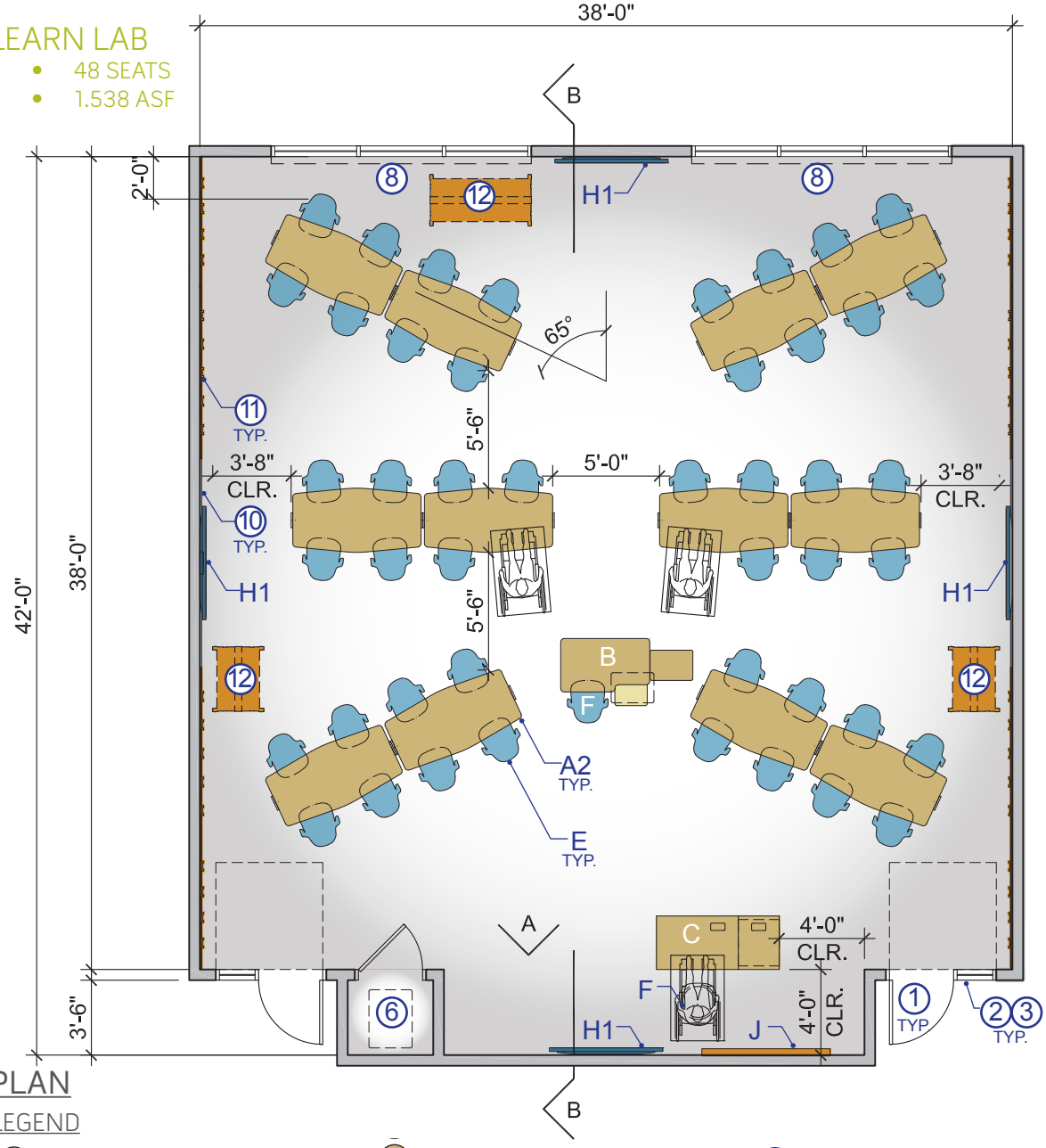
- Flexible learn labs offering a variety and combination of furnishings
- Table and chairs
- Collaborative and and individual work
- Tutoring use
- Adaptable to accommodate a variety of students

0 ft 4 ft 8 ft

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

LEARN LAB

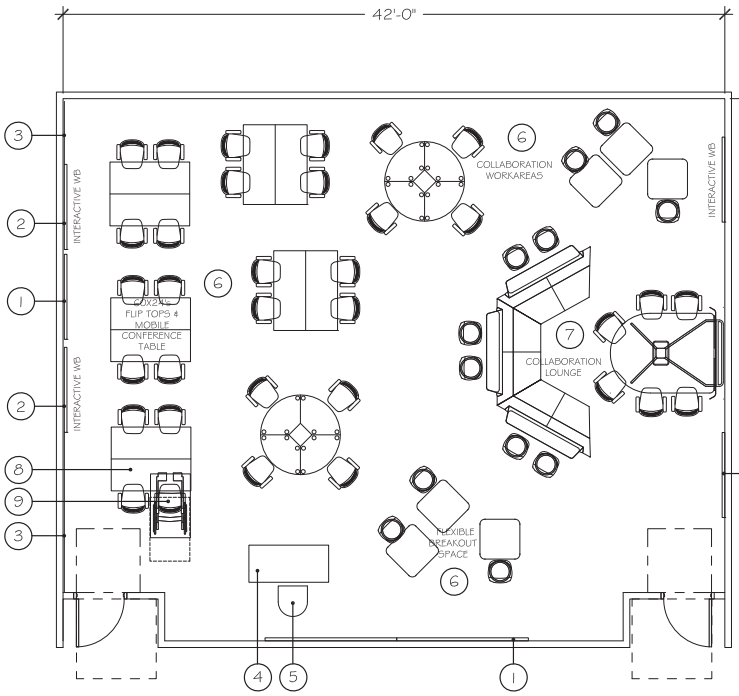
- 48 SEATS
- 1.538 ASF

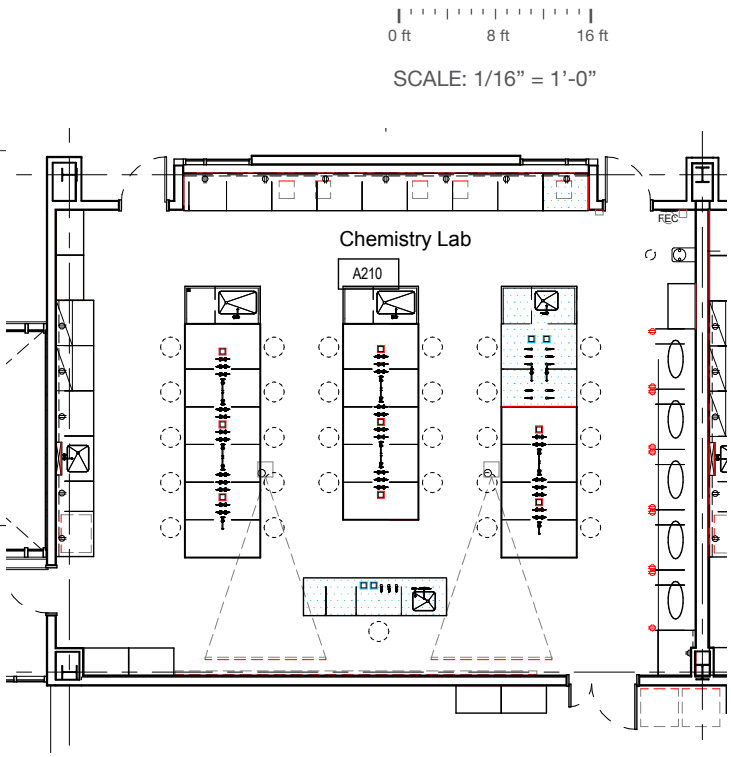


PLAN

LEGEND

- A2 Mobile student tables
- B Mobile instructor station
- C Fixed accessible lectern
- E Mobile student seating
- F Mobile instructor seating
- H1 70" flat panel display, wall mounted
- J Writable surface area
- K Tackable surface area
- 1 Solid wood door
- 2 Sidelight
- 3 Room signage
- 4 ALS signage
- 5 Battery operated atomic clock
- 6 Media closet (42"x48" clear)
- 7 Direct / indirect pendant lighting
- 8 Double roller shade (window treatment and room darkening)
- 10 Chair rail
- 11 Markerboard rail
- 12 Whiteboard easel





ALTERNATE LAYOUT

LEGEND

1. Writable Surface (Group 1)
2. Interactive Whiteboard
3. Tackable Surface (Group 1)
4. Facilitator/Instructor Station
5. Facilitator/Instructor Chair
6. Flexible/Collaborative Tables
7. Media Center
8. Ada Adjustable Table
9. Ada Chair
10. Lectern

SURFACES

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

POWER/DATA/AV PLAN

SYMBOLS

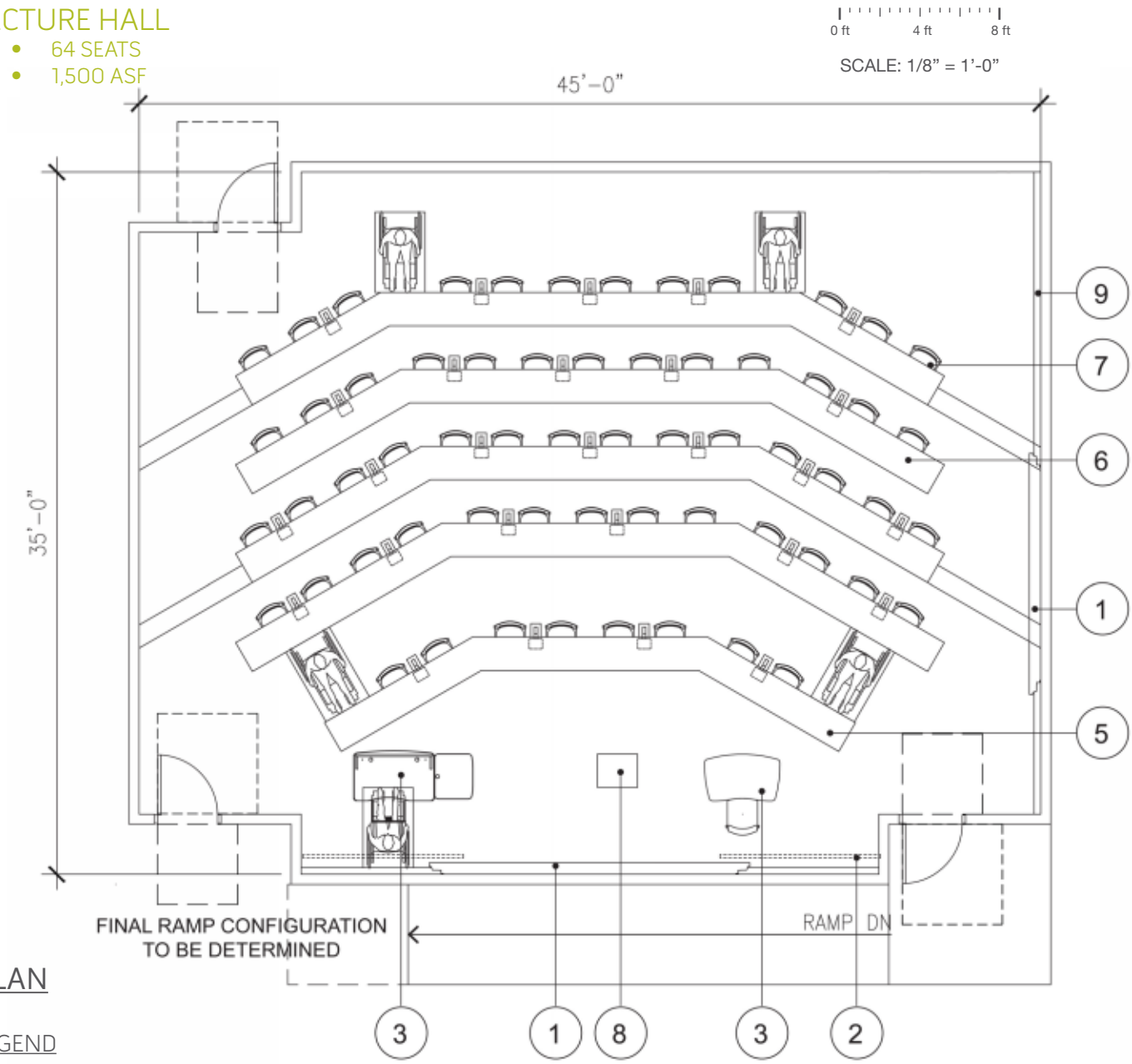
- Duplex
- Quadruplex
- Tel/Data (duplex)
- Flush floor-mounted quadruplex
- Flush floor-mounted data (6 outlets at instructor station)
- A/V connector
- $ Light switch
- Ⓢ Ceiling Speaker

PART D
LECTURE HALLS

CONTENTS:

LECTURE HALL

- 64 SEATS
- 1,500 ASF



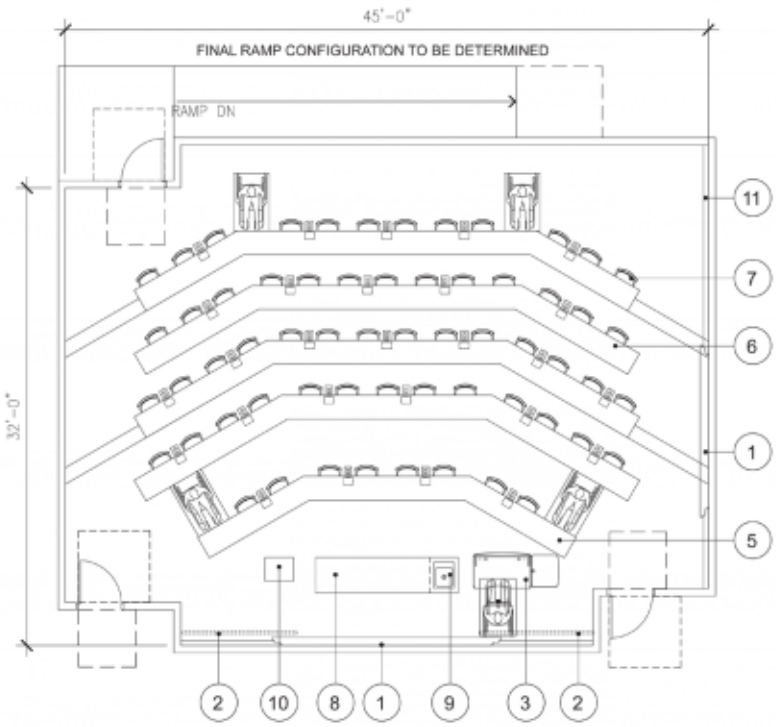
PLAN

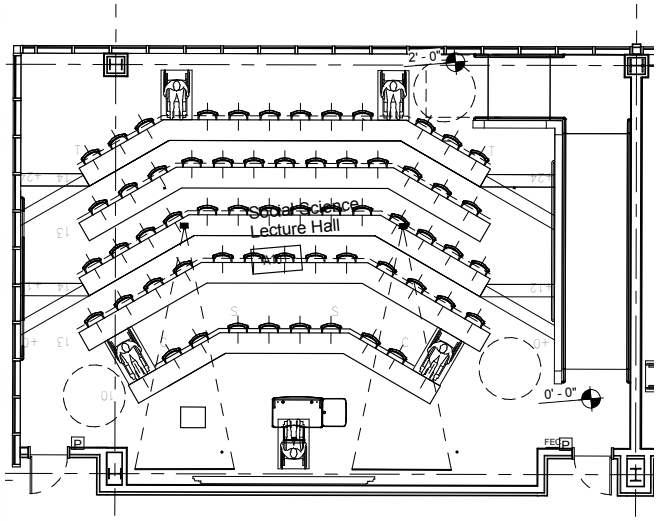
LEGEND

1. Writable Surface
2. Projector Screen
3. Movable Lectern Desk
4. Movable Lectern Chair
5. ADA Seat
6. Fixed Student Desk
7. Movable Student Chair
8. Student Podium
9. AC Panel & Tackable Surface

0 ft 8 ft 16 ft

SCALE: 1/16" = 1'-0"





ALTERNATE LAYOUT

SURFACES

Floor:	Resilient flooring
Wall:	Painted drywall
Ceiling Ht:	
Ceiling Type:	Acoustical ceiling tile

POWER/DATA/AV PLAN

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (duplex)
- Flush floor-mounted quadruplex
- Flush floor-mounted data (6 outlets at instructor station)
- A/V connector
- $ Light switch
- Ceiling Speaker

PART E

PRIVATE OFFICES

CONTENTS:

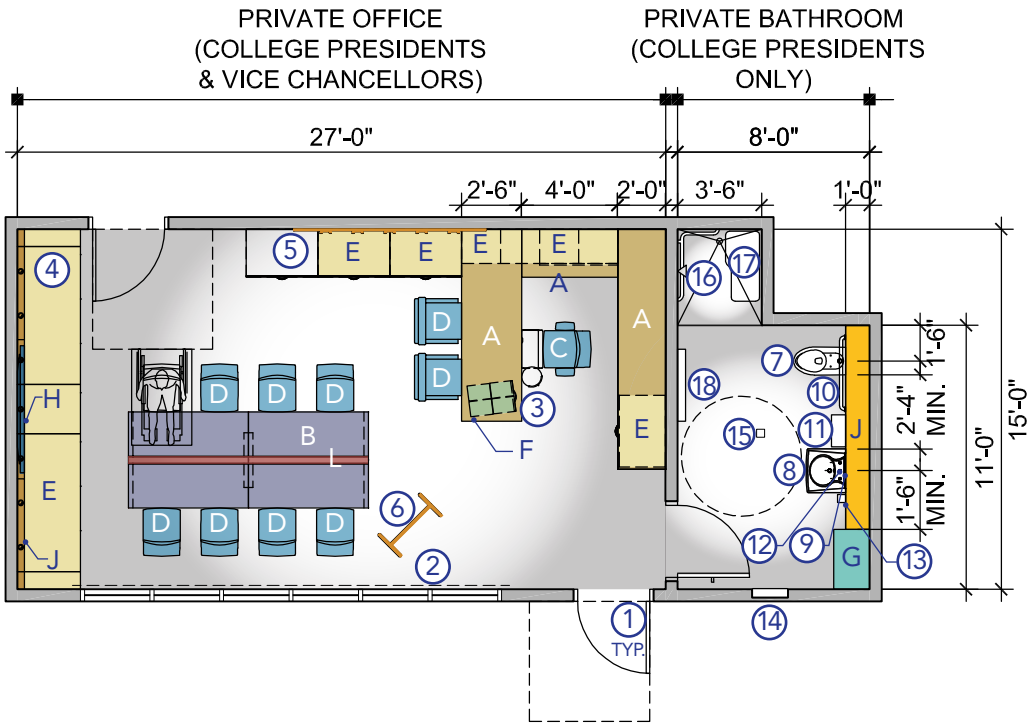
- Office components should offer a wide variety of worksurface options to adaptive to various space sizes
- Closed filing, open or closed shelving and bookcases should be offered in the product statement of line
- A tack board should be provided for posting
- Ergonomic task chair with multiple options to allow adjustability for a variety of users including arm adjustments in both height and width
- Work areas to be designed and provided with ADA compliant features
- Furnishings shall be reviewed and specified for conformance to LEED “Recyclable Materials”

I. ADMINISTRATOR/DEAN'S OFFICE WITH ADMIN & CONFERENCE ROOM

405 ASF (507 WITH RESTROOM) | SINGLE OCCUPANCY

0 ft 4 ft 8 ft

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



PLAN

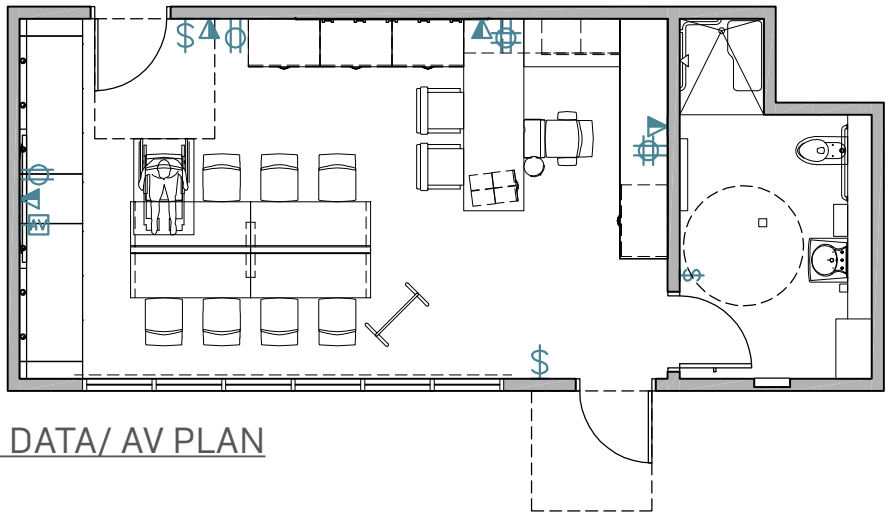
LEGEND

- A Worksurface
- B Conference table
- C Task seating
- D Guest seating
- E Storage
- F Mobile, lockable pedestal file with seat cushion
- G Closet
- H 70" flat panel display, wall mounted
- J Shelf
- K Tackable surface area
- L Power/data access

1. Solid wood door with vision panel
2. Single roller shade
3. Keyboard/mouse tray
4. Media console
5. Markerboard rail
6. Whiteboard easel
7. Water closet
8. Lavatory - wall hung
9. Mirror
10. Horizontal grab bar (2 walls)
11. Combination toilet seat cover, sanitary napkin disposal, and toilet tissue dispenser - recessed preferred
12. Faucet
13. Soap dispenser - surface mounted
14. Combination paper towel dispenser and waste receptacle - recessed
15. Floor drain with trap prime connection
16. ADA shower
17. ADA shower seat
18. Diaper changing station

0 ft 4 ft 8 ft

SCALE: 1/8” = 1’-0”



POWER / DATA/ AV PLAN

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9’-0” to 11’-0”
Ceiling Type:	Acoustical ceiling tile

NOTE

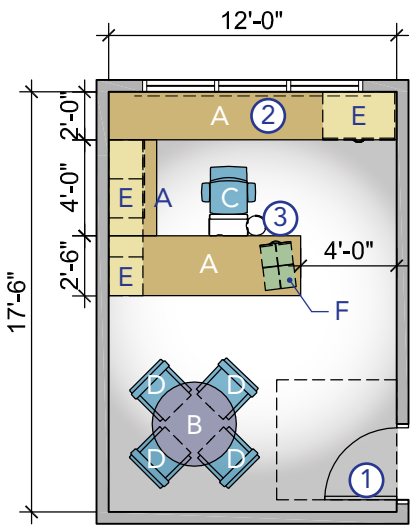
Provide adjacent restroom at college president office only.

II. VICE PRESIDENT'S OFFICE

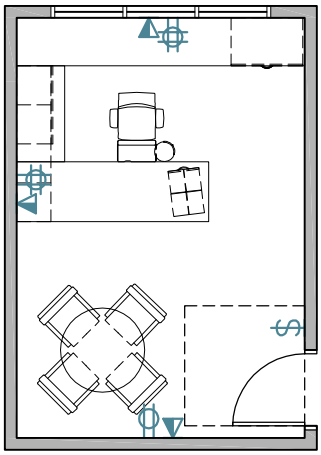
210 ASF | SINGLE OCCUPANCY

0 ft 4 ft 8 ft

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



PLAN



LEGEND

- (A) Worksurface
- (B) Collaboration table
- (C) Task seating
- (D) Guest seating
- (E) Storage
- (F) Mobile, lockable pedestal file with seat cushion
- (1) Solid wood door with vision panel
- (2) Single roller shade
- (3) Keyboard/mouse tray

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

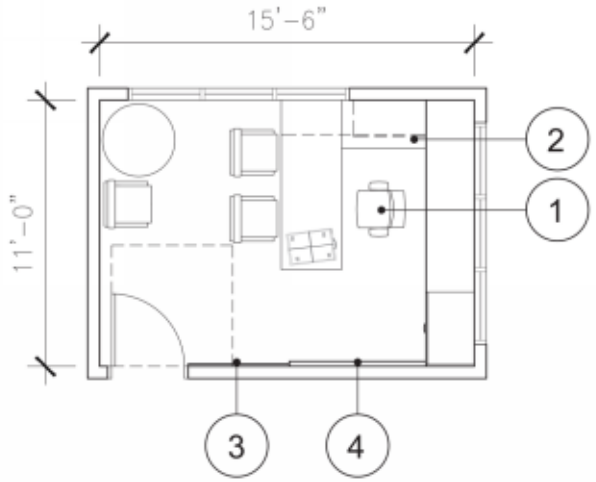
SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

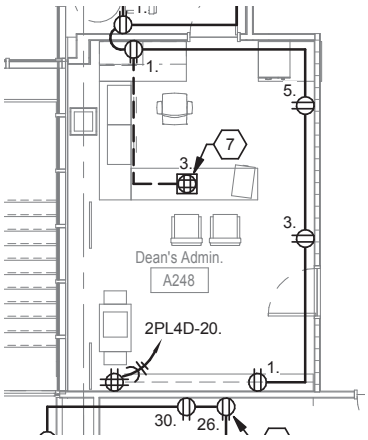
III. ADMINISTRATOR/DEAN'S OFFICE
170 ASF | SINGLE OCCUPANCY

0 ft 4 ft 8 ft

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



PLAN



POWER / DATA / AV PLAN

LEGEND

1. Movable chairs (1 task + 3 side)
2. Work Station to include: Table, Desk, Upper Cabinets, File Cabinets, Bookshelf, Movable Storage
3. Tackboard
4. Writable Surface

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

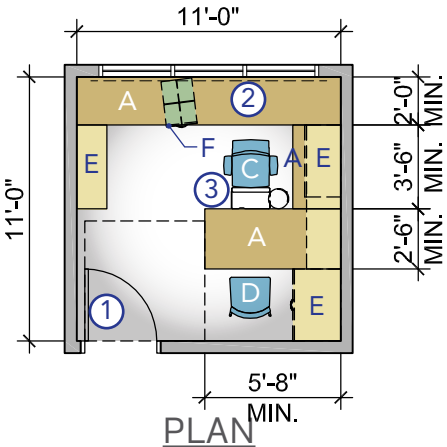
SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

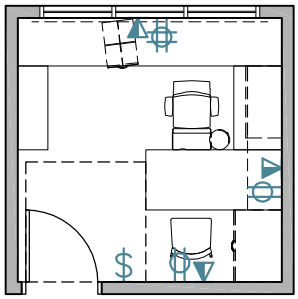
IV. MANAGER/SUPERVISOR OFFICE
121 ASF | SINGLE OCCUPANCY

0 ft 4 ft 8 ft

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



PLAN



POWER / DATA / AV PLAN

LEGEND

- (A) Worksurface
- (C) Task seating
- (D) Guest seating
- (E) Storage
- (F) Mobile, lockable pedestal file with seat cushion
- (1) Solid wood door with vision panel
- (2) Single roller shade
- (3) Keyboard/mouse tray

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

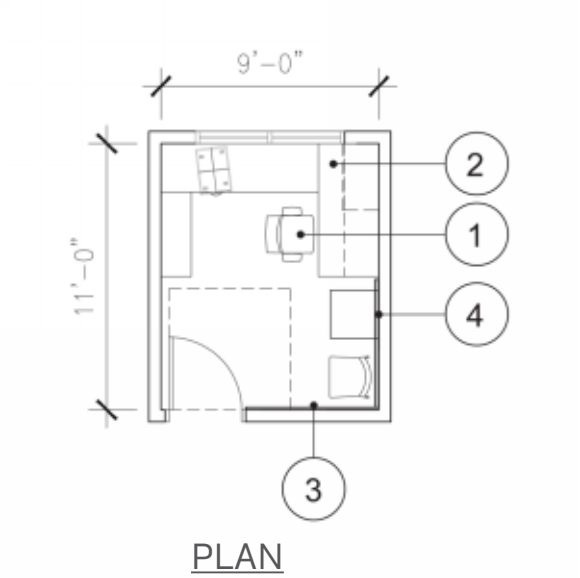
SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

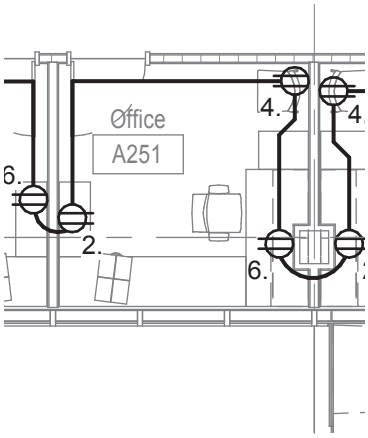
V. STANDARD OFFICE
99 ASF | SINGLE OCCUPANCY

0 ft 4 ft 8 ft

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



PLAN



POWER / DATA / AV PLAN

LEGEND

1. Movable chairs (1 task + 1 side)
2. Work Station to include: Table, Desk, Upper Cabinet, Bookshelf, Movable Storage
3. Tackboard
4. Writable Surface

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

PART F
WORKSTATIONS

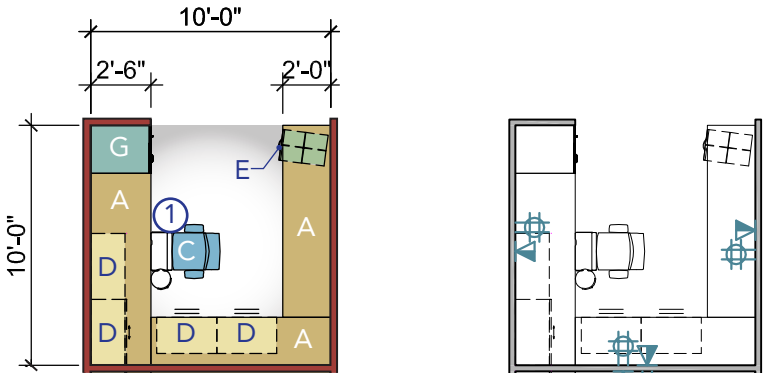
CONTENTS:

- Providing minimal dividers allows some privacy yet supports open space and light
- Desking should provide power for laptop use
- Chairs should be fully ergonomic to allow adjustability for a variety of users
- Minimal storage to be provided at shared stations
- Storage needs should be provided for in adjacent space with the use of lockers or defined areas within workrooms
- When possible adjustable height work surfaces should be provided offering a greeter degree of flexibility
- Work areas to be designed and provided with ADA compliant features

I. DEAN'S ADMINISTRATIVE ASSISTANT
100 ASF

0 ft 4 ft 8 ft

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



PLAN POWER / DATA / AV PLAN

LEGEND

- A Worksurface
- C Task seating
- D Storage
- E Mobile, lockable pedestal file with seat cushion
- G Small wardrobe
- H Power/data access
- 1 Keyboard/mouse tray

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

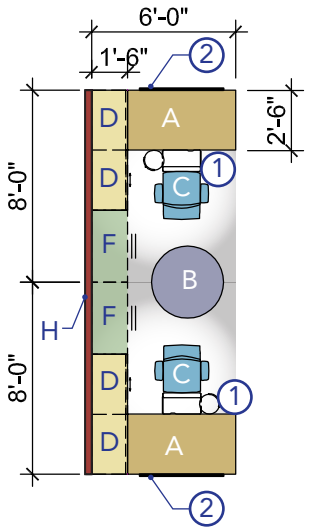
SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

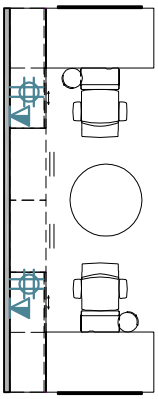
II. ADJUNCT OFFICE
48 ASF

0 ft 4 ft 8 ft

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



PLAN



POWER / DATA / AV PLAN

LEGEND

- (A) Worksurface
- (B) Collaboration Table
- (C) Task seating
- (D) Storage
- (E) Mobile, lockable pedestal file with seat cushion
- (F) Lateral file with seat cushion
- (H) Power/data access
- (1) Keyboard/mouse tray
- (2) Privacy panel

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

PART G

CONFERENCE ROOMS

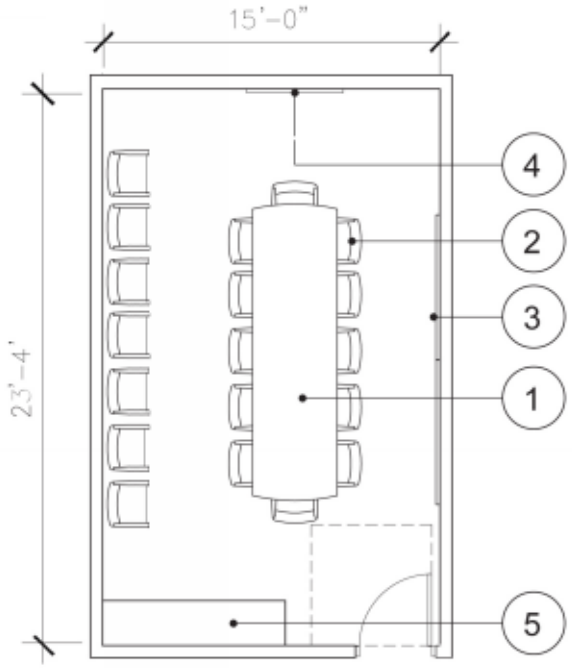
CONTENTS:

- Smaller conference rooms can be furnished with a one or two piece top
- Larger sized conference rooms should be provided with multiple tabled to allow flexibility of use
- Seating should be supportive and comfortable
- Fabric options should be offered with manufacturer's mid-range grades and be highly durable and stain resistant
- Table selections should offer options such as "pop-up" power & data modules at table level, locking casters on multiple table set-ups, optional base positions to allow greater use around ends of tables

I. LARGE CONFERENCE ROOM
350 ASF | 12-15 SEATS

0 ft 4 ft 8 ft

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



PLAN

LEGEND

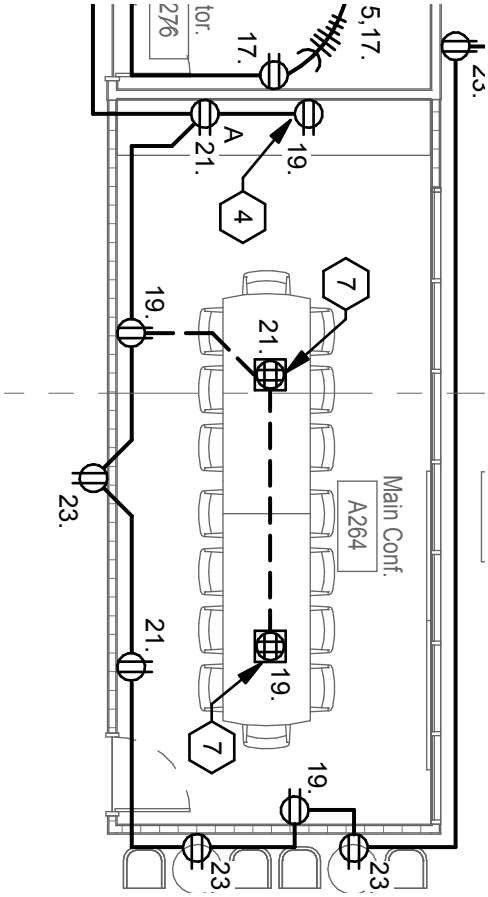
1. Table for 12-15 people
2. (12) Chairs
3. Writable Surface
4. LCD Screen
5. Credenza

SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

0 ft 4 ft 8 ft

SCALE: 1/8” = 1’-0”



POWER / DATA / AV PLAN

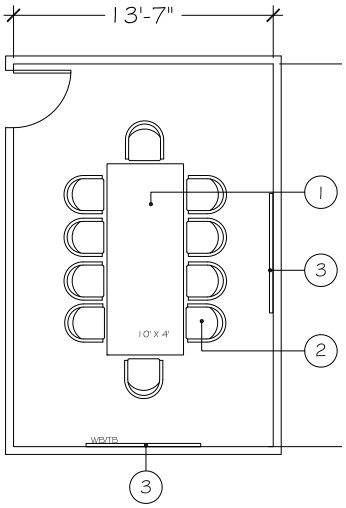
SYMBOLS

- Duplex
- Tel/Data
- Flush floor-mounted duplex
- Flush floor-mounted data
- A/V connector
- $ Light switch with occupancy sensor
- Ceiling Data
- Ceiling Speaker
- Ceiling Quadruplex

II. MEDIUM CONFERENCE ROOM
273 ASF | 10-12 SEATS

0 ft 4 ft 8 ft

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



PLAN

LEGEND

1. TABLE FOR 8-10
2. (8-10) CHAIRS
3. WRITABLE SURFACE

LEGEND

1. Table for B-10
2. (8-10) Chairs
3. Writable Surface

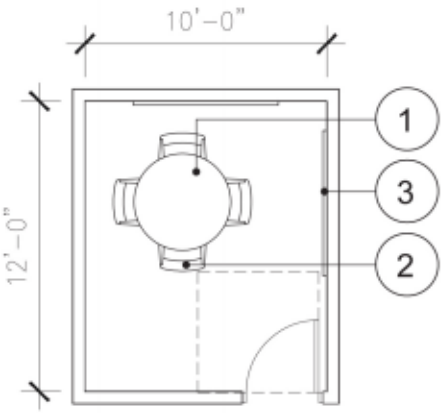
SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

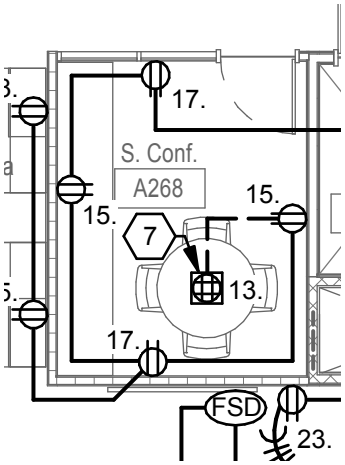
III. SMALL CONFERENCE ROOM
120 ASF | 4-6 SEATS

0 ft 4 ft 8 ft

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



PLAN



POWER / DATA / AV PLAN

LEGEND

1. Table for 4-6 people
2. (4-6) Chairs
3. Writable Surface

SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

SYMBOLS

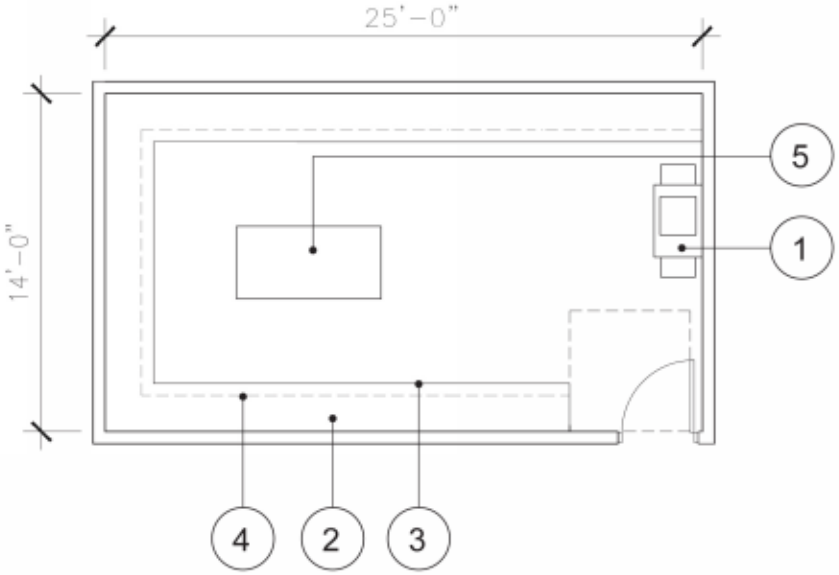
- Duplex
- Tel/Data
- Flush floor-mounted duplex
- Flush floor-mounted data
- A/V connector
- $ Light switch with occupancy sensor
- Ceiling Data
- Ceiling Speaker
- Ceiling Quadruplex

PART H
WORK ROOMS

WORK ROOM
350 ASF

0 ft 4 ft 8 ft

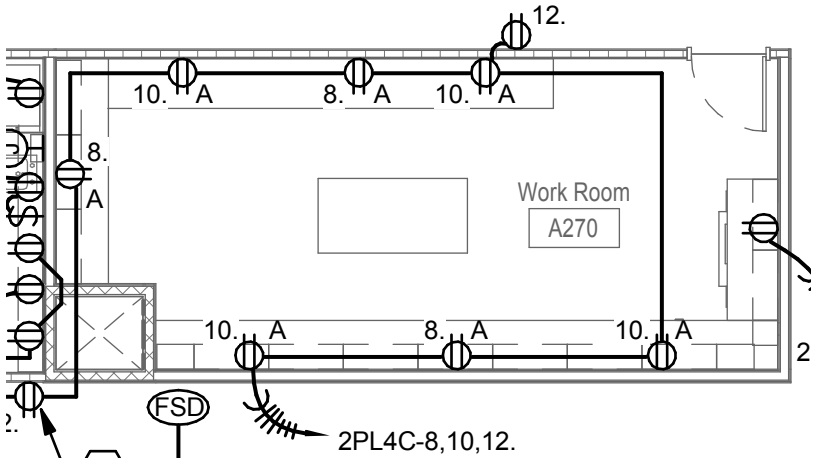
SCALE: 1/8" = 1'-0"



LEGEND

1. Copy Machine/ Scanner/ Fax/ Printer
2. Counter Top Area
3. Under Counter File Cabinets
4. Upper Cabinets
5. Central Work Table

PLAN



SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

POWER / DATA / AV PLAN

PART J
BREAK OUT SPACES

BREAK OUT SPACES

- Break our seating areas offering individual or group study
- Lounge style seating with optional tablet arms
- Tablets arms when provided should allow movement to accommodate a greater population
- Mobile whiteboard easels provided to encourage interactive learning
- Furnishings selections shall be reviewed and specified for conformance to LEED "Recyclable Materials"

PART K
TOILET ROOMS

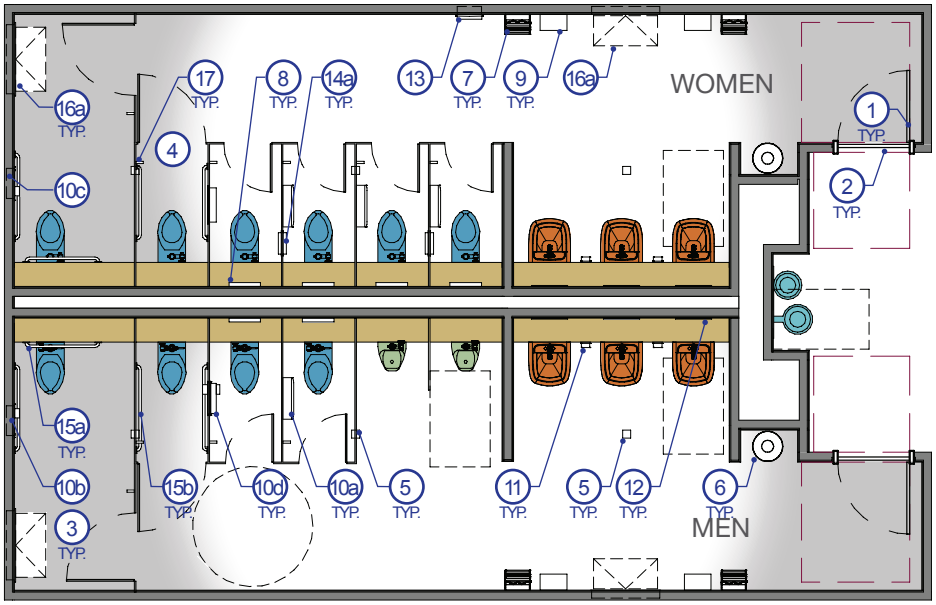
CONTENTS:

I. MULTIPLE ACCOMMODATION STUDENT TOILET ROOM

846 SF | TOTAL OCCUPANCY

0 ft 4 ft 8 ft

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



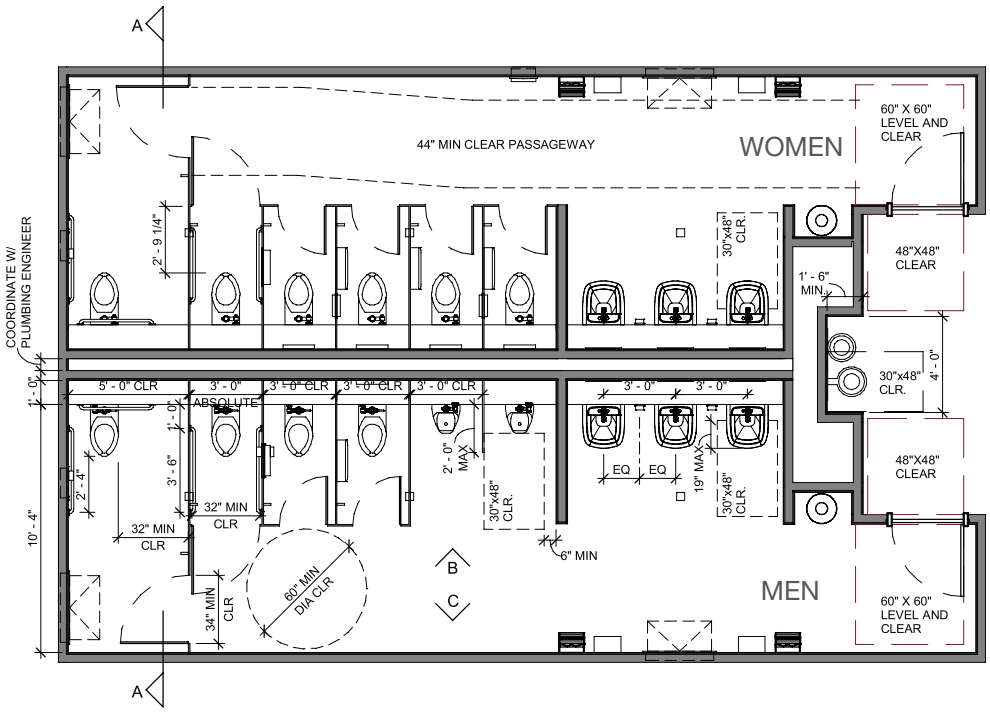
PLAN

LEGEND

- (A) Ledge
- (B) Lavatory - wall hung
- (C) Water closet - wall hung
- (D) Urinal
- (E) Electric water cooler (EWC)
- (1) Solid wood door
- (2) Threshold
- (3) Wheelchair accessible stall
- (4) Semi-ambulatory accessible stall (where required)
- (5) Floor drain with trap primer connection
- (6) Freestanding waste receptacle
- (7) Hand dryer - recessed preferred
- (8) Toilet seat cover dispenser - surface mounted
- (9) Paper towel dispenser - surface mounted
- (10a) Jumbo roll toilet tissue dispenser - surface mounted
- (10b) Combination toilet seat cover and toilet tissue dispenser - recessed preferred

0 ft 4 ft 8 ft

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



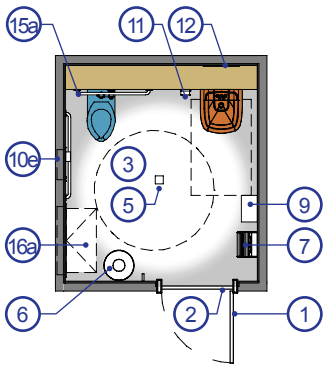
DIMENSION PLAN

- 10c Combination toilet seat cover, sanitary napkin disposal, and toilet tissue dispenser
  - recessed preferred
- 10d Combination toilet seat cover and toilet tissue dispenser
  - partition mounted
- 10e Combination toilet seat cover, sanitary napkin disposal, and toilet tissue dispenser
  - partition mounted
- 11 Soap dispenser
  - surface mounted
- 12 Mirror
- 13 Napkin/tampon vendor
  - recessed
- 14a Sanitary napkin disposal
  - surface mounted
- 14b Sanitary napkin disposal
  - recessed
- 15a Horizontal grab bar (2 perpendicular walls)
- 15b Horizontal grab bar (2 parallel walls)
- 16a Diaper changing station
  - recessed
- 16b Diaper changing station
  - surface mounted
- 17 Coat hook with bumper (2 per stall)

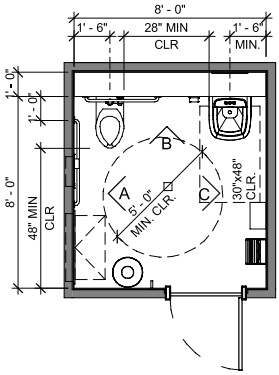
II. SINGLE OCCUPANCY TOILET ROOM
MINIMUM 60 SF

0 ft 4 ft 8 ft

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



PLAN



DIMENSION PLAN

LEGEND

- (A) Ledge
- (B) Lavatory - wall hung
- (C) Water closet - wall hung
- (D) Urinal
- (E) Electric water cooler (EWC)

- (1) Solid wood door
- (2) Threshold
- (3) Wheelchair accessible stall
- (4) Semi-ambulatory accessible stall (where required)
- (5) Floor drain with trap primer connection
- (6) Freestanding waste receptacle
- (7) Hand dryer - recessed preferred
- (8) Toilet seat cover dispenser - surface mounted
- (9) Paper towel dispenser - surface mounted
- (10a) Jumbo roll toilet tissue dispenser - surface mounted

- (10b) Combination toilet seat cover and toilet tissue dispenser - recessed preferred
- (10c) Combination toilet seat cover, sanitary napkin disposal, and toilet tissue dispenser - recessed preferred
- (10d) Combination toilet seat cover and toilet tissue dispenser - partition mounted
- (10e) Combination toilet seat cover, sanitary napkin disposal, and toilet tissue dispenser - partition mounted

0 ft 4 ft 8 ft

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

11 Soap dispenser
- surface mounted
12 Mirror
13 Napkin/tampon vendor
- recessed
14a Sanitary napkin disposal
- surface mounted
14b Sanitary napkin disposal
- recessed
15a Horizontal grab bar
(2 perpendicular walls)
15b Horizontal grab bar
(2 parallel walls)
16a Diaper changing station
- recessed
16b Diaper changing station
- surface mounted
17 Coat hook with bumper
(2 per stall)

SURFACES

Floor:	Sealed concrete, fluid-applied flooring, or porcelain tile
Base:	Porcelain tile
Wall:	Ceramic tile
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Painted drywall

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END OF SECTION 7 - EVERGREEN VALLEY COLLEGE

SECTION 7

SAN JOSÉ CITY COLLEGE

PART A

ROOM NUMBERING

I. ROOM NUMBERING

PURPOSE

UNIFORMITY:

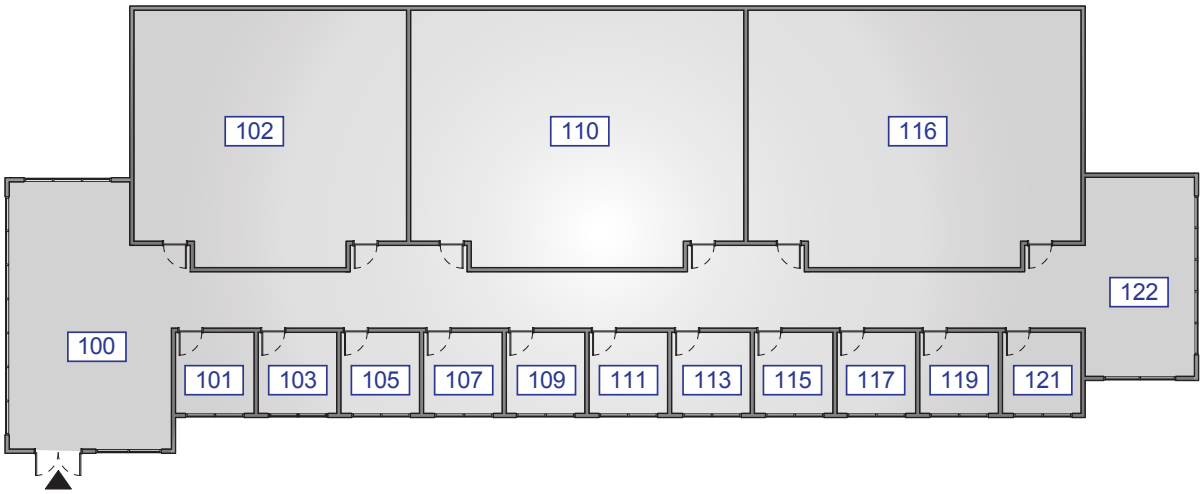
- A standard pattern of room numbers shall be applied to the working drawings before a building is approved.

FLEXIBILITY:

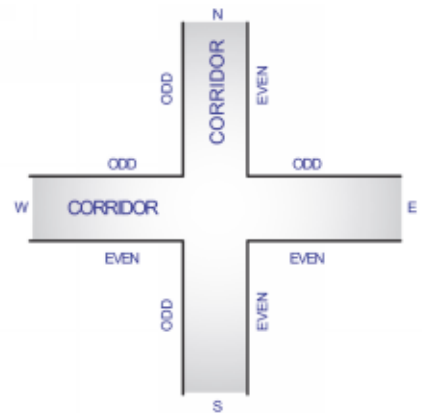
- A standard pattern of room numbers permits the assignment of new room numbers in a logical relationship to existing room numbers, when new rooms are created by the addition and removal of partitions.

CONVENIENCE:

- Assign room numbers on all floors of a building according to a single basic pattern to enable users of the building to find rooms with the least possible difficulty.



HORIZONTAL PROGRESSION



STARTING POINT:

- Preferably at or near the principal entrance, and at an end or corner of the building. (If both conditions cannot be met, the choice must be based on a judgement as to which starting point will permit the simpler and more logical progression.)

DIRECTION OF PROGRESSION:

- The direction of heaviest flow of traffic entering the building.

EVEN + ODD NUMBERS:

- Assign only one number to a room even though the room may have two or more doors. Even numbers should align along the north side of the building and odd numbers along the south.

DESIGNATION FLOOR

Sub-Basement	S-XX to S-XX
Basement or Ground Floor	XXX to XXX
First Floor	XXX to XXX
Second Floor	XXX to XXX
Third Floor	XXX to XXX

VERTICAL IDENTITY

- Application of the principle generally ensures that corresponding numbers (e.g., S-27, 27, 127, 227, 237, etc.) occupy the same relative position on all floors of the building.

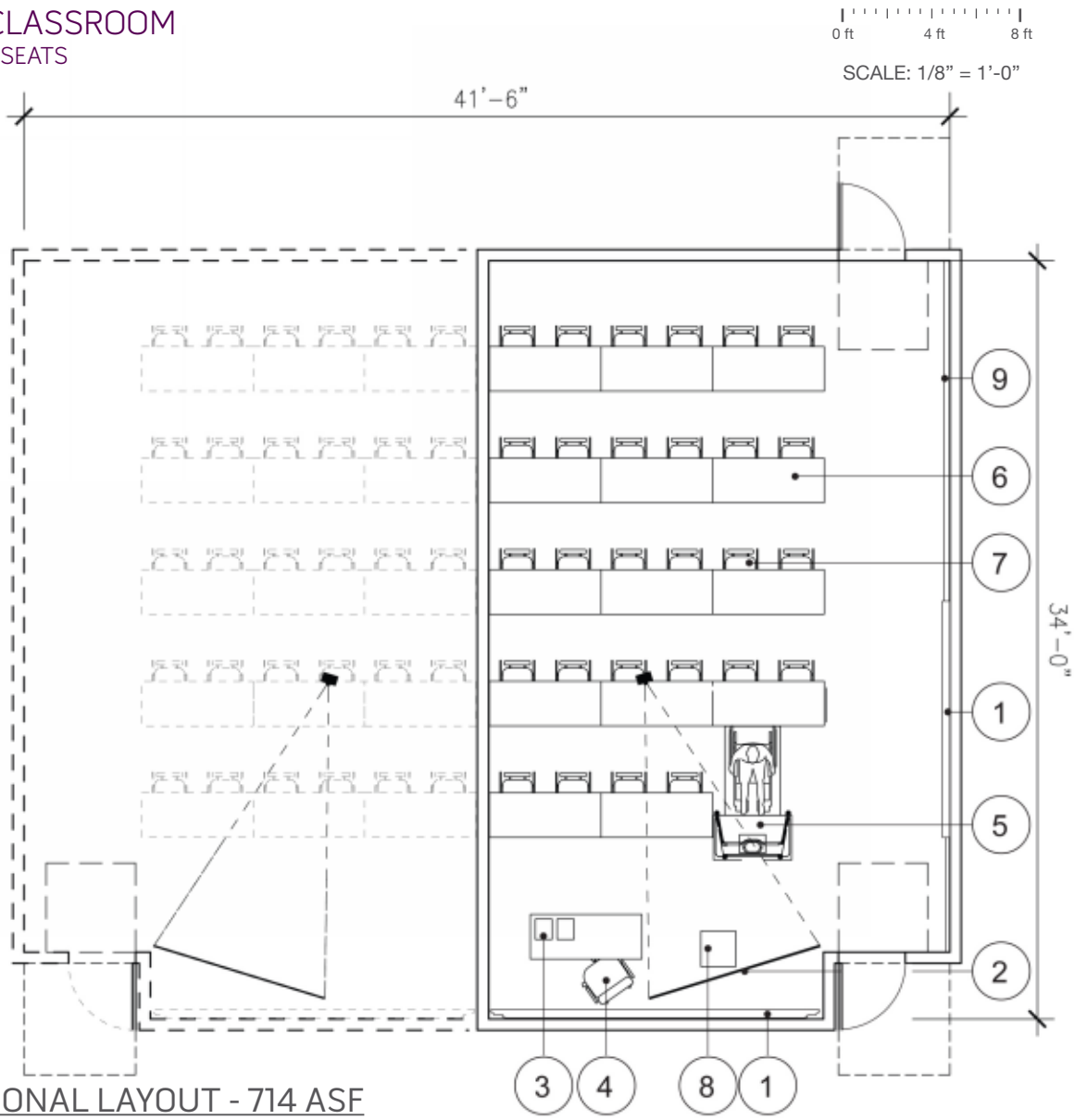
Refer to the *California Community College Space Inventory Handbook* for suggested standard patterns for numbering.

PART B
CLASSROOMS

CONTENTS:

SMALL CLASSROOM

- 30 SEATS



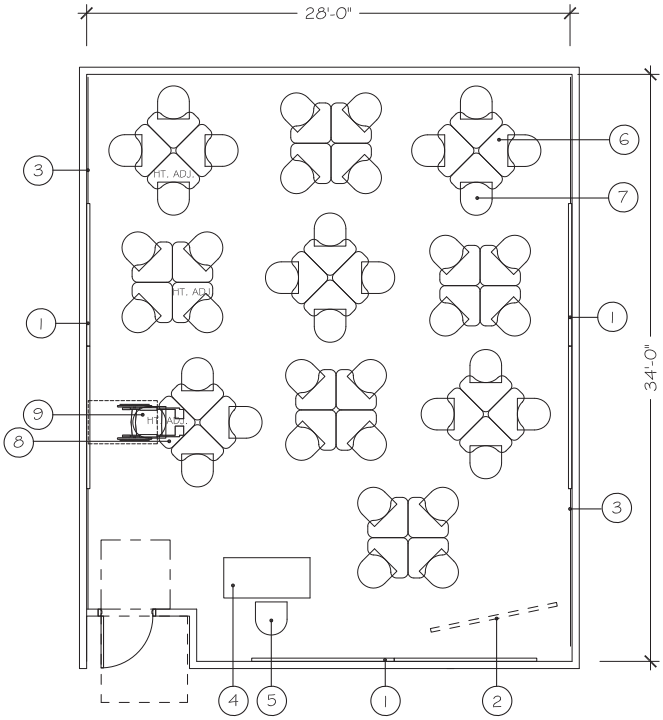
TRADITIONAL LAYOUT - 714 ASF

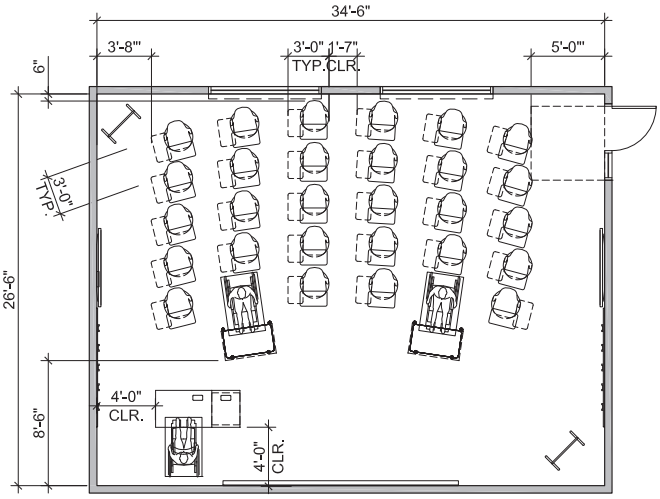
LEGEND

1. Writable Surface
2. Projector Screen
3. Movable Lectern Desk
4. Movable Lectern Chair
5. ADA Seat
6. Movable Student Desk
7. Movable Student Chair
8. Student Podium
9. Tackable Surface

0 ft 8 ft 16 ft

SCALE: 1/16” = 1’-0”





FLEXIBLE LAYOUT - 953 ASF

LEGEND

① Writable Surface (Group 1)
② Projector Screen (Group 1)
③ Tackable Surface (Group 1)
④ Instructor Station
⑤ Instructor Chair
⑥ Movable Student Desk
⑦ Stackable Student Chair
⑧ Ada Desk
⑨ Ada Chair

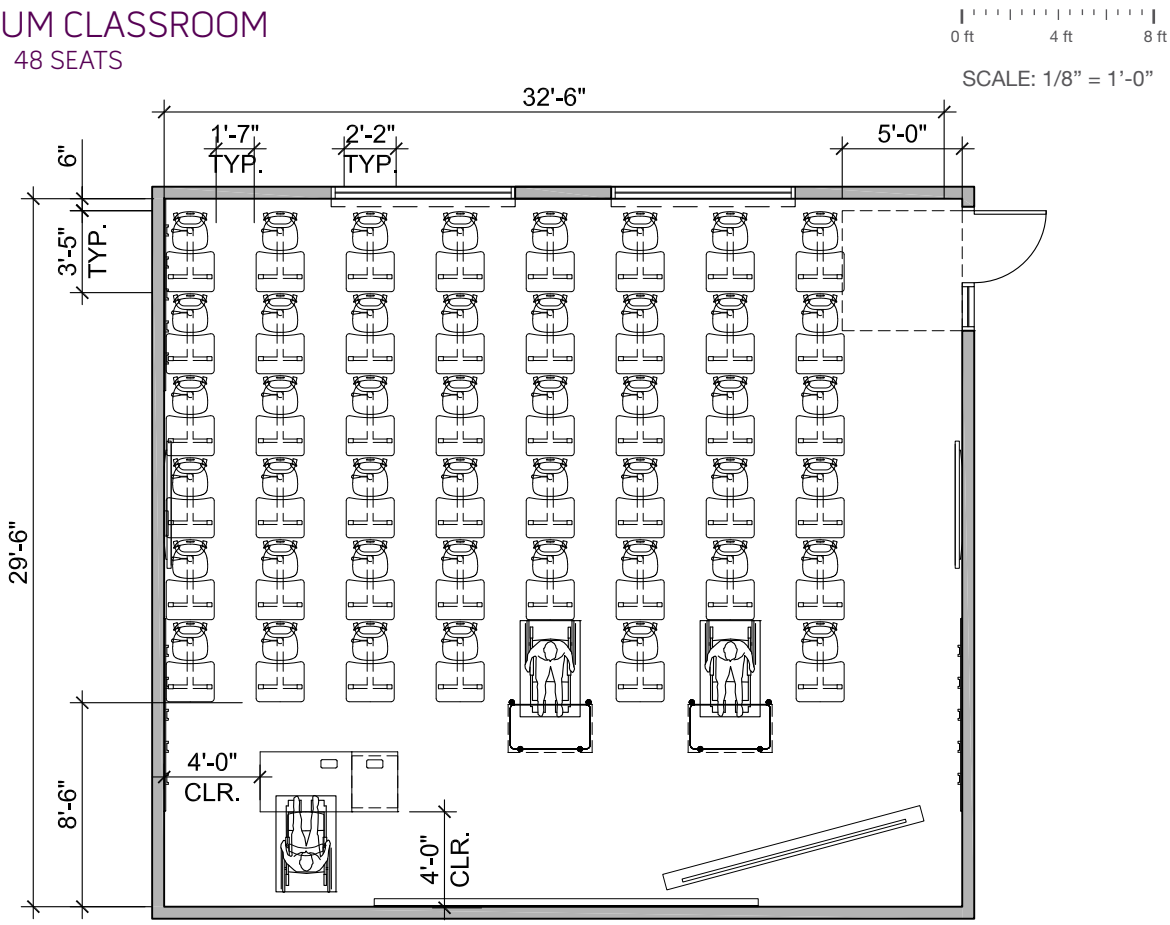
ACTIVE LAYOUT - 953 ASF

SURFACES

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

MEDIUM CLASSROOM

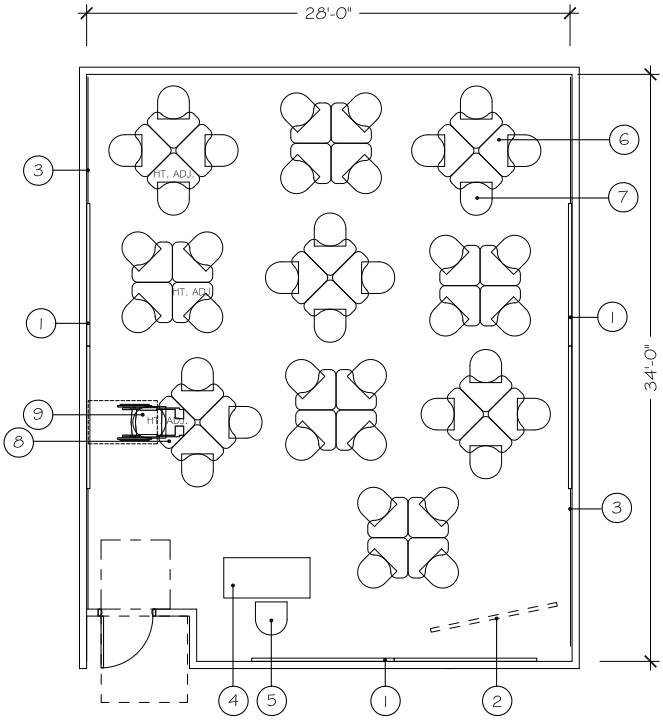
- 48 SEATS



TRADITIONAL LAYOUT - 980 ASF

0 ft 8 ft 16 ft

SCALE: 1/16" = 1'-0"



FLEXIBLE LAYOUT - 980 ASF

LEGEND

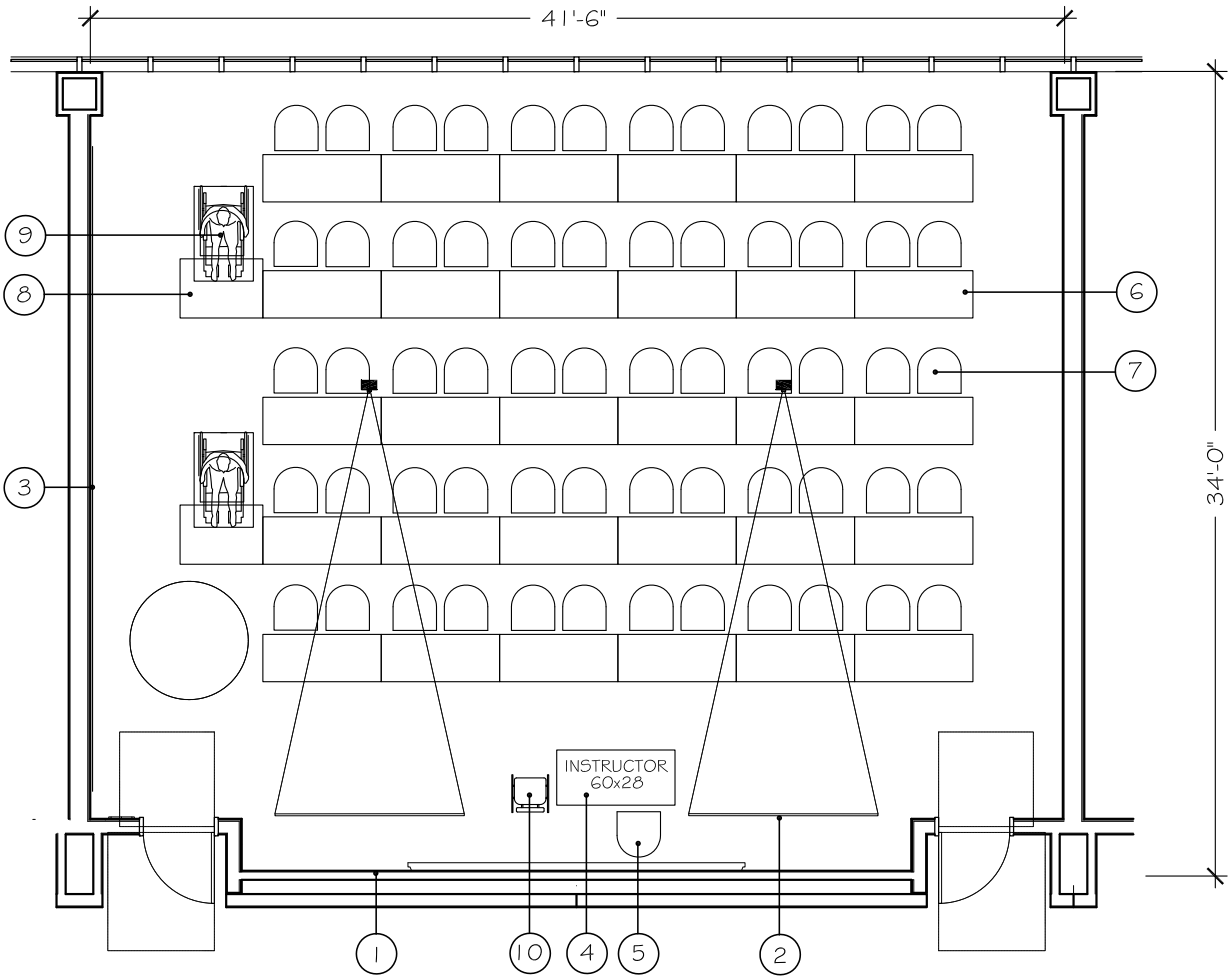
1. Writable Surface (Group 1)
2. Projector Screen (Group 1)
3. Tackable Surface (Group 1)
4. Instructor Station
5. Instructor Chair
6. Movable Student Desk
7. Stackable Student Chair
8. Ada Desk
9. Ada Chair

LARGE CLASSROOM

- 60 SEATS

0 ft 4 ft 8 ft

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



TRADITIONAL LAYOUT - 1,428 ASF

LEGEND

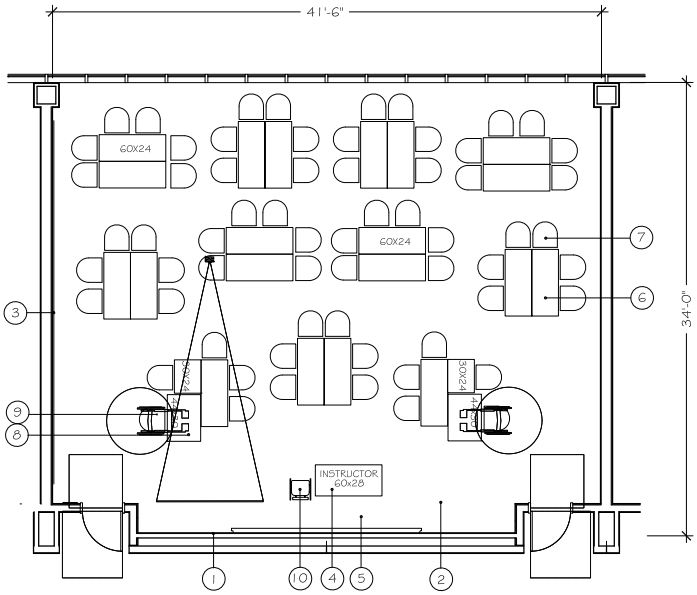
1. Writable Surface (Group 1)
2. Projector Screen (Group 1)
3. Tackable Surface (Group 1)
4. Instructor Station
5. Instructor Chair
6. Movable Student Table
7. Student Chair, Casters or Stacking
8. ADA Desk
9. ADA Chair
10. Lectern

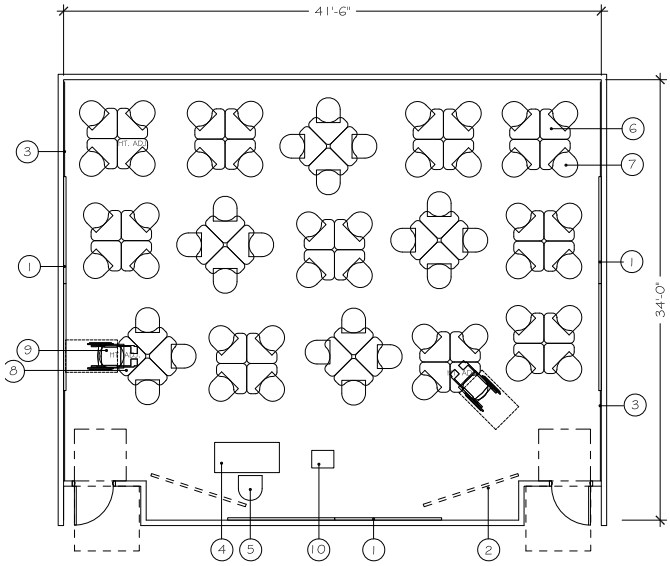
SURFACES

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

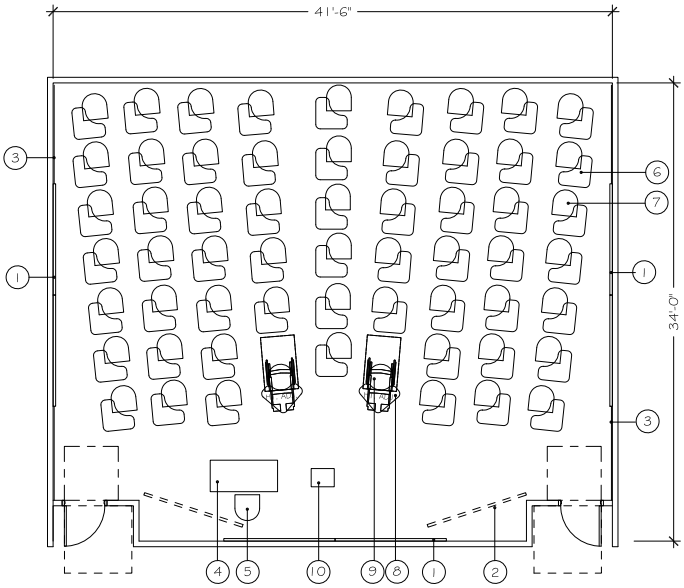
0 ft 8 ft 16 ft

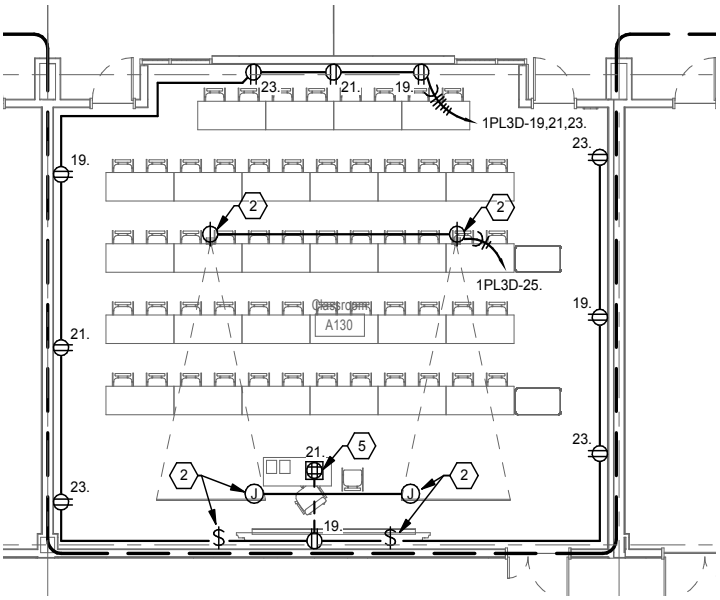
SCALE: 1/16" = 1'-0"





FLEXIBLE LAYOUT - 1,428 ASF





ACTIVE LAYOUT - 1,428 ASF

POWER/DATA/AV PLAN

PART C
LEARN LABS

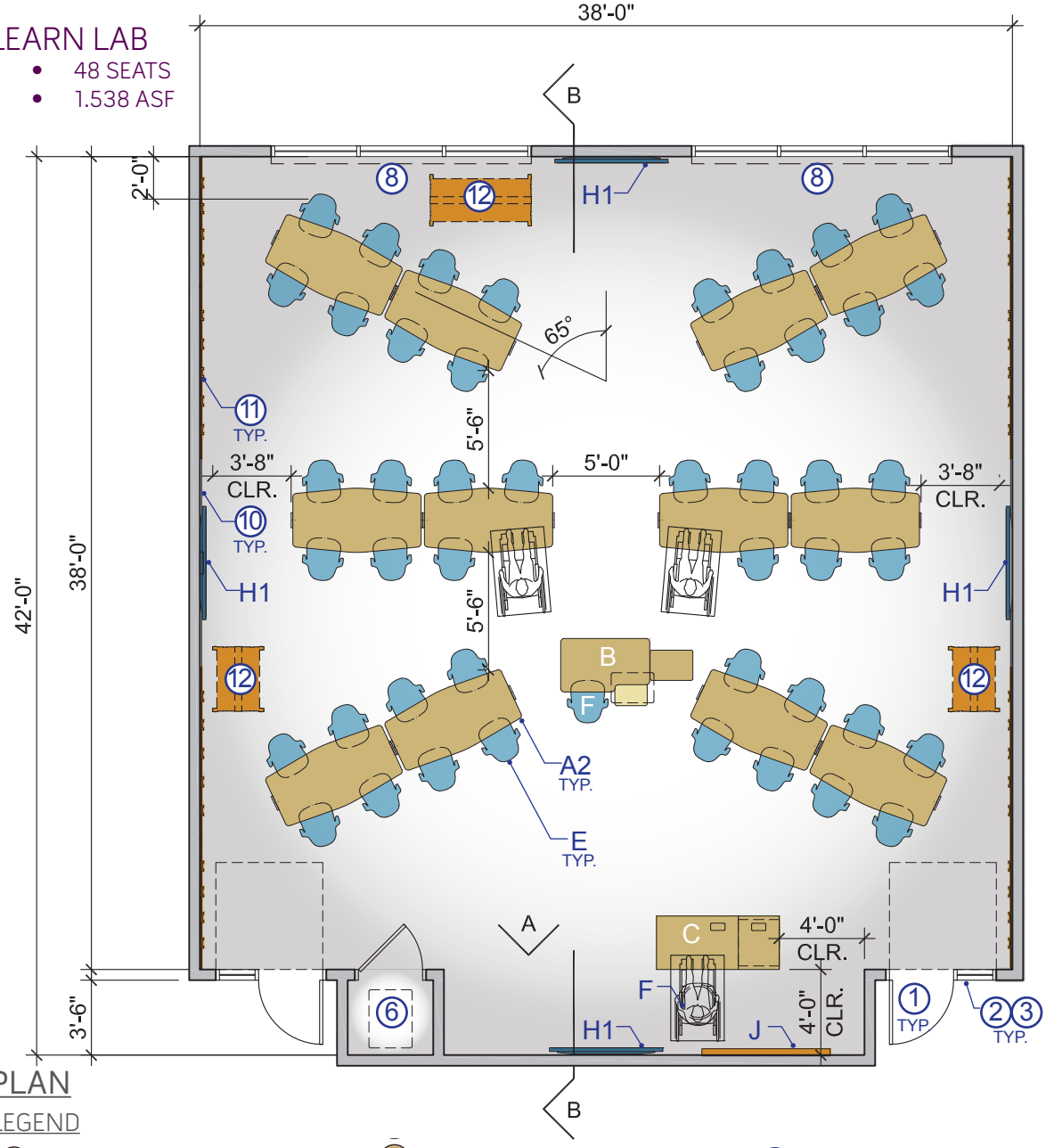
- Flexible learn labs offering a variety and combination of furnishings
- Table and chairs
- Collaborative and and individual work
- Tutoring use
- Adaptable to accommodate a variety of students

0 ft 4 ft 8 ft

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

LEARN LAB

- 48 SEATS
- 1.538 ASF



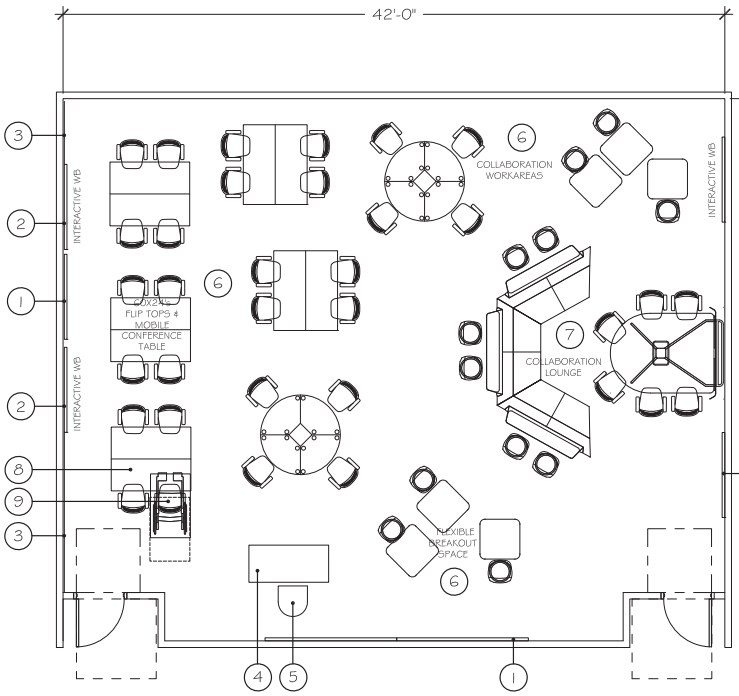
PLAN

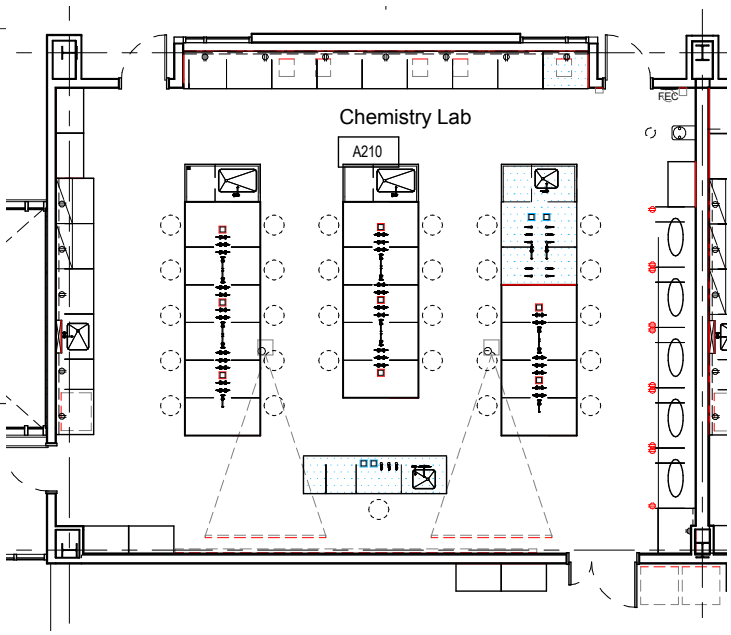
LEGEND

- A2 Mobile student tables
- B Mobile instructor station
- C Fixed accessible lectern
- E Mobile student seating
- F Mobile instructor seating
- H1 70" flat panel display, wall mounted
- J Writable surface area
- K Tackable surface area
- 1 Solid wood door
- 2 Sidelight
- 3 Room signage
- 4 ALS signage
- 5 Battery operated atomic clock
- 6 Media closet (42"x48" clear)
- 7 Direct / indirect pendant lighting
- 8 Double roller shade (window treatment and room darkening)
- 10 Chair rail
- 11 Markerboard rail
- 12 Whiteboard easel

0 ft 8 ft 16 ft

SCALE: 1/16" = 1'-0"





ALTERNATE LAYOUT

LEGEND

1. Writable Surface (Group 1)
2. Interactive Whiteboard
3. Tackable Surface (Group 1)
4. Facilitator/Instructor Station
5. Facilitator/Instructor Chair
6. Flexible/Collaborative Tables
7. Media Center
8. Ada Adjustable Table
9. Ada Chair
10. Lectern

SURFACES

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

POWER/DATA/AV PLAN

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (duplex)
- Flush floor-mounted quadruplex
- Flush floor-mounted data (6 outlets at instructor station)
- A/V connector
- $ Light switch
- Ceiling Speaker

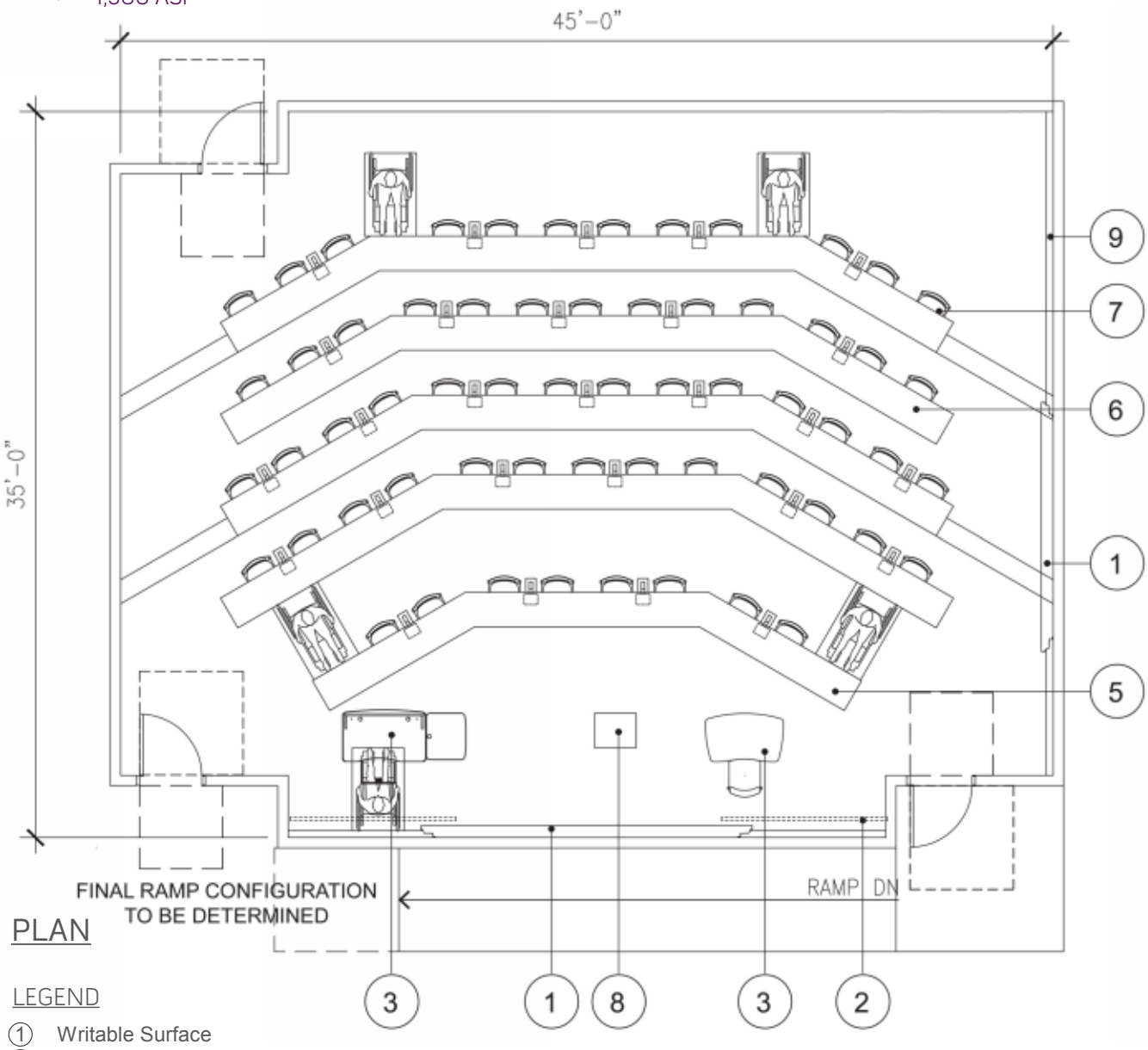
PART D
LECTURE HALLS

LECTURE HALL

- 64 SEATS
- 1,500 ASF

0 ft 4 ft 8 ft

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



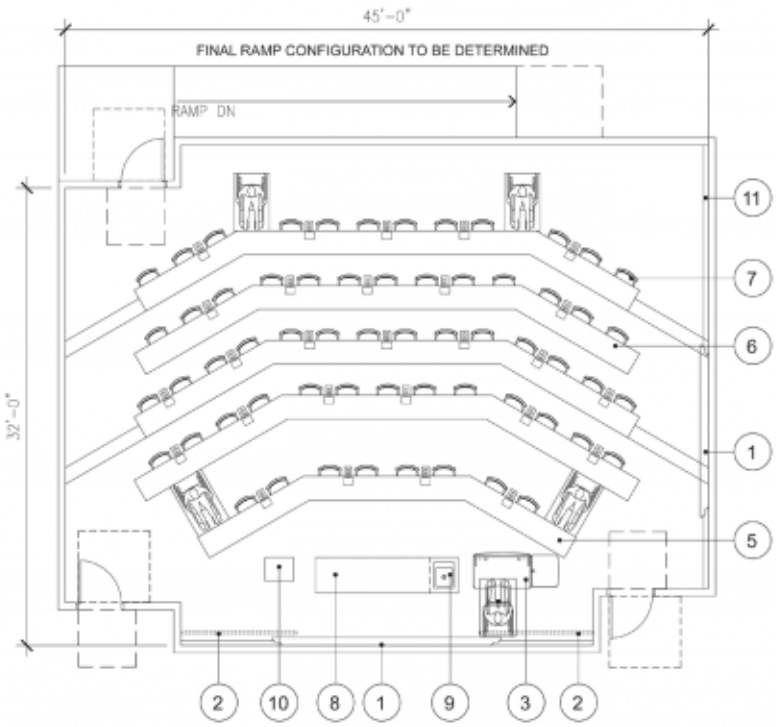
PLAN

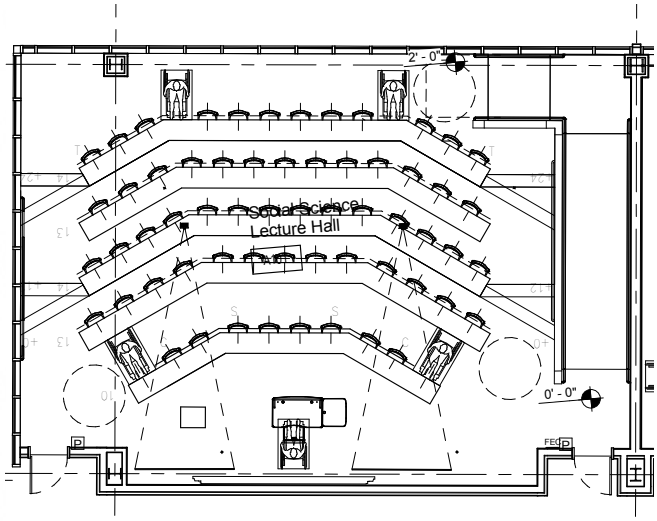
LEGEND

1. Writable Surface
2. Projector Screen
3. Movable Lectern Desk
4. Movable Lectern Chair
5. ADA Seat
6. Fixed Student Desk
7. Movable Student Chair
8. Student Podium
9. AC Panel & Tackable Surface

0 ft 8 ft 16 ft

SCALE: 1/16" = 1'-0"





ALTERNATE LAYOUT

SURFACES

Floor:	Resilient flooring
Wall:	Painted drywall
Ceiling Ht:	
Ceiling Type:	Acoustical ceiling tile

POWER/DATA/AV PLAN

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (duplex)
- Flush floor-mounted quadruplex
- Flush floor-mounted data (6 outlets at instructor station)
- A/V connector
- $ Light switch
- Ceiling Speaker

PART E

PRIVATE OFFICES

CONTENTS:

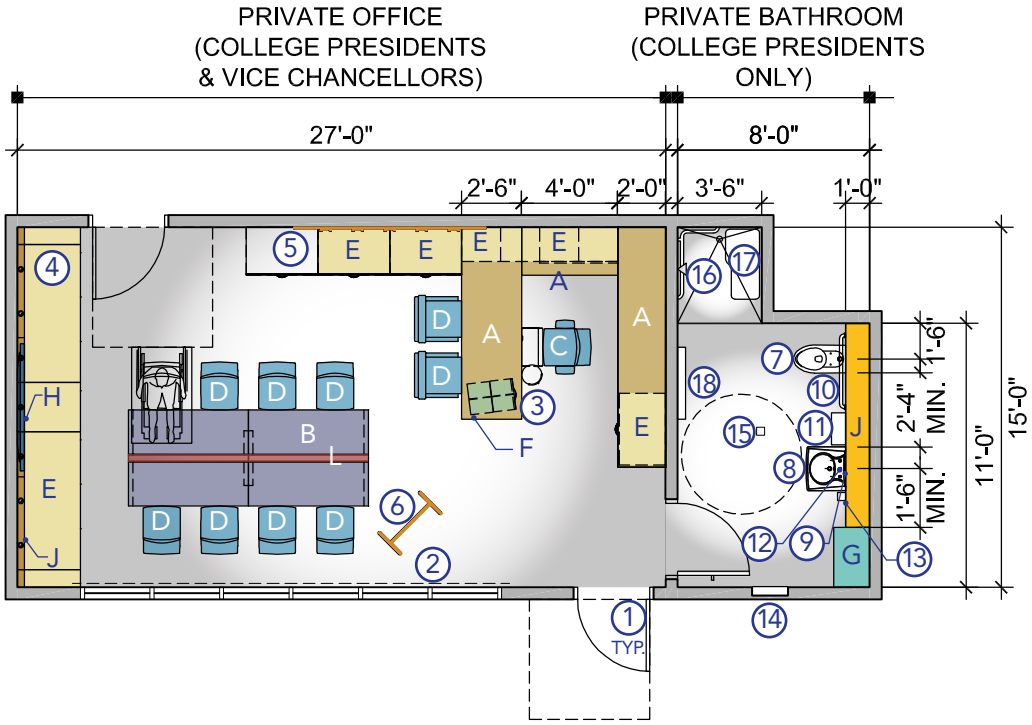
- Office components should offer a wide variety of worksurface options to adaptive to various space sizes
- Closed filing, open or closed shelving and bookcases should be offered in the product statement of line
- A tack board should be provided for posting
- Ergonomic task chair with multiple options to allow adjustability for a variety of users including arm adjustments in both height and width
- Work areas to be designed and provided with ADA compliant features
- Furnishings shall be reviewed and specified for conformance to LEED “Recyclable Materials”

I. ADMINISTRATOR/DEAN'S OFFICE WITH ADMIN & CONFERENCE ROOM

405 ASF (507 WITH RESTROOM) | SINGLE OCCUPANCY

0 ft 4 ft 8 ft

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



PLAN

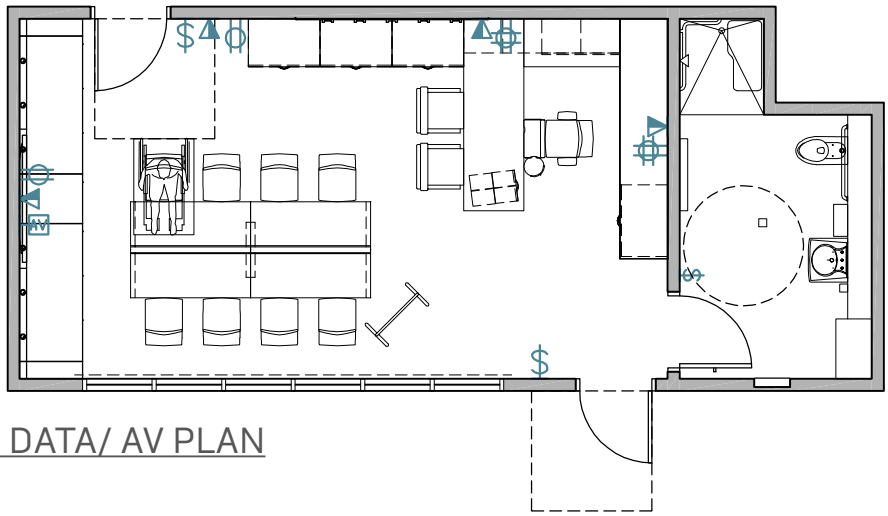
LEGEND

- A Worksurface
- B Conference table
- C Task seating
- D Guest seating
- E Storage
- F Mobile, lockable pedestal file with seat cushion
- G Closet
- H 70" flat panel display, wall mounted
- J Shelf
- K Tackable surface area
- L Power/data access

1. Solid wood door with vision panel
2. Single roller shade
3. Keyboard/mouse tray
4. Media console
5. Markerboard rail
6. Whiteboard easel
7. Water closet
8. Lavatory - wall hung
9. Mirror
10. Horizontal grab bar (2 walls)
11. Combination toilet seat cover, sanitary napkin disposal, and toilet tissue dispenser - recessed preferred
12. Faucet
13. Soap dispenser - surface mounted
14. Combination paper towel dispenser and waste receptacle - recessed
15. Floor drain with trap prime connection
16. ADA shower
17. ADA shower seat
18. Diaper changing station

0 ft 4 ft 8 ft

SCALE: 1/8” = 1’-0”



POWER / DATA/ AV PLAN

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9’-0” to 11’-0”
Ceiling Type:	Acoustical ceiling tile

NOTE

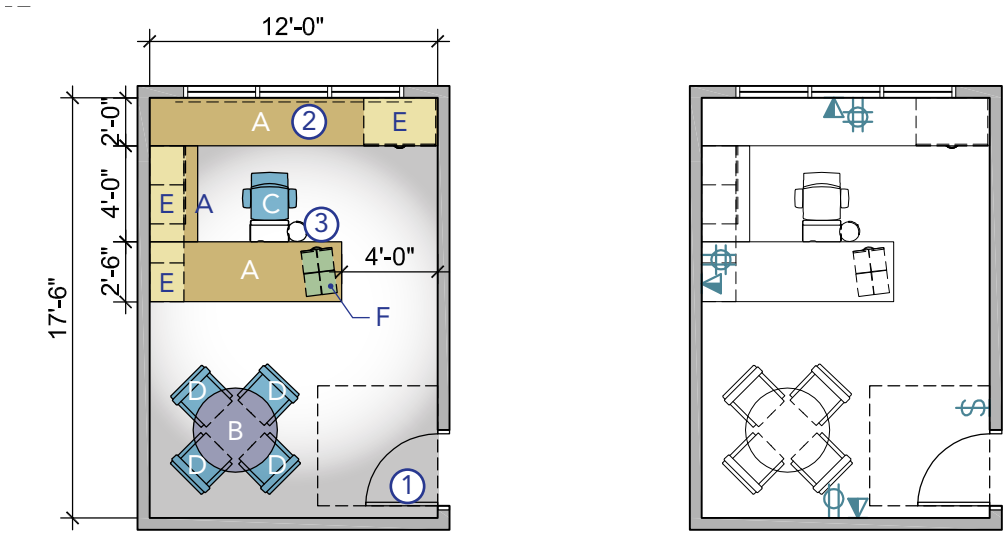
Provide adjacent restroom at college president office only.

II. VICE PRESIDENT / ASSOCIATE VICE CHANCELLOR PRIVATE OFFICE

210 ASF | SINGLE OCCUPANCY

0 ft 4 ft 8 ft

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



PLAN

LEGEND

- (A) Worksurface
- (B) Collaboration table
- (C) Task seating
- (D) Guest seating
- (E) Storage
- (F) Mobile, lockable pedestal file with seat cushion
- (1) Solid wood door with vision panel
- (2) Single roller shade
- (3) Keyboard/mouse tray

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

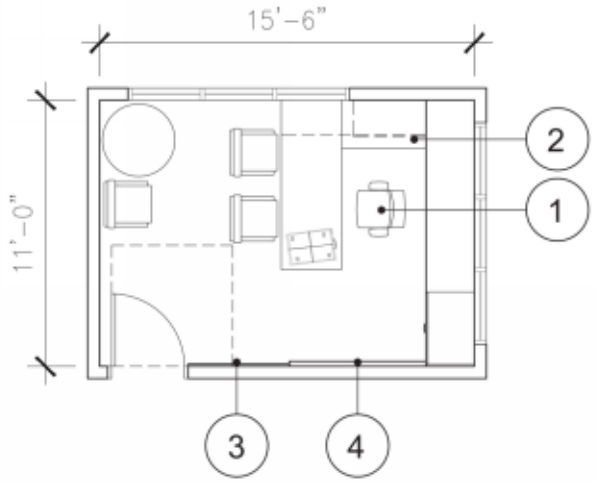
SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

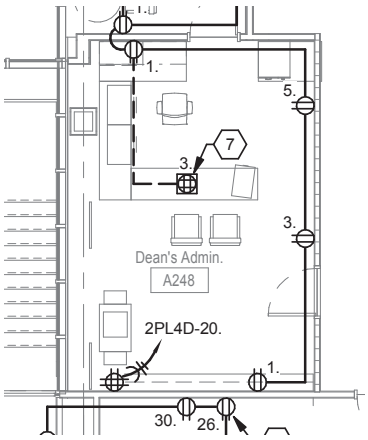
III. ADMINISTRATOR/DEAN'S OFFICE
170 ASF | SINGLE OCCUPANCY

0 ft 4 ft 8 ft

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



PLAN



POWER / DATA / AV PLAN

LEGEND

1. Movable chairs (1 task + 3 side)
2. Work Station to include: Table, Desk, Upper Cabinets, File Cabinets, Bookshelf, Movable Storage
3. Tackboard
4. Writable Surface

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

SURFACES

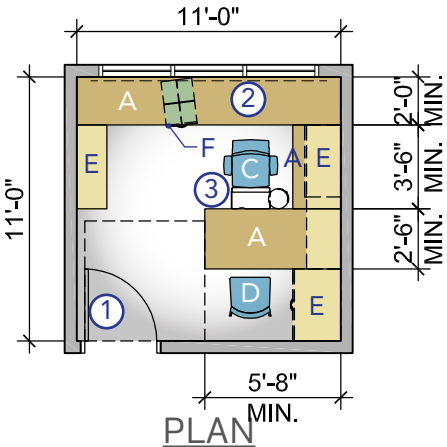
Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

IV. MANAGER/SUPERVISOR OFFICE

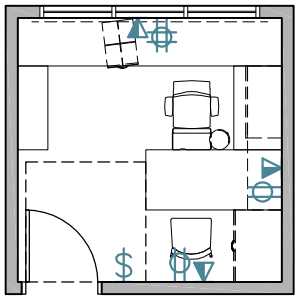
121 ASF | SINGLE OCCUPANCY

0 ft 4 ft 8 ft

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



PLAN



POWER / DATA / AV PLAN

LEGEND

- (A) Worksurface
- (C) Task seating
- (D) Guest seating
- (E) Storage
- (F) Mobile, lockable pedestal file with seat cushion
- (1) Solid wood door with vision panel
- (2) Single roller shade
- (3) Keyboard/mouse tray

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

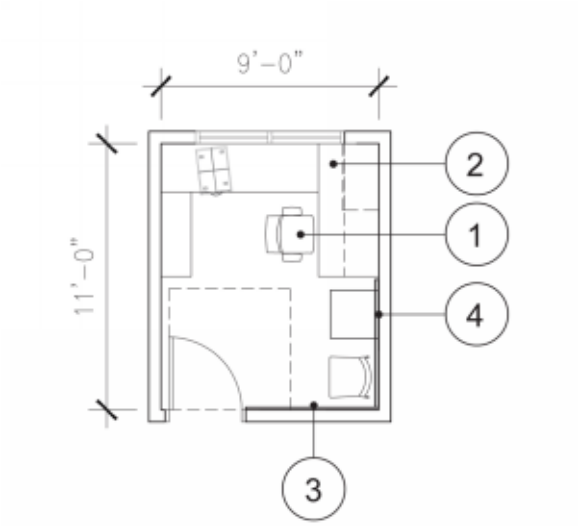
SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

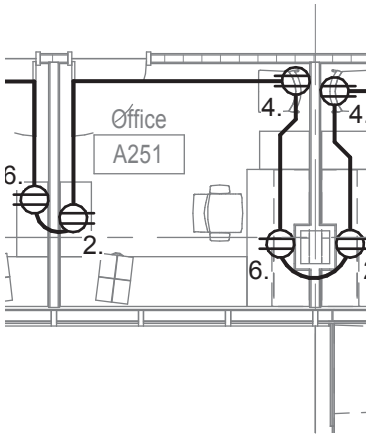
V. STANDARD OFFICE
100 ASF | SINGLE OCCUPANCY

0 ft 4 ft 8 ft

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



PLAN



POWER / DATA / AV PLAN

LEGEND

1. Movable chairs (1 task + 1 side)
2. Work Station to include: Table, Desk, Upper Cabinet, Bookshelf, Movable Storage
3. Tackboard
4. Writable Surface

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

PART F
WORKSTATIONS

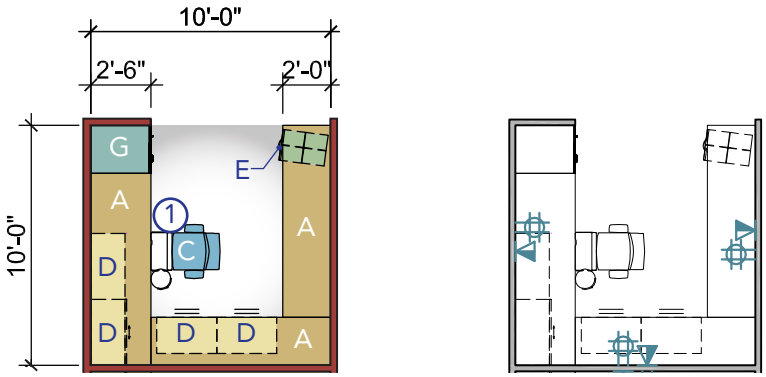
CONTENTS:

- Providing minimal dividers allows some privacy yet supports open space and light
- Desking should provide power for laptop use
- Chairs should be fully ergonomic to allow adjustability for a variety of users
- Minimal storage to be provided at shared stations
- Storage needs should be provided for in adjacent space with the use of lockers or defined areas within workrooms
- When possible adjustable height work surfaces should be provided offering a greeter degree of flexibility
- Work areas to be designed and provided with ADA compliant features

I. DEAN'S ADMINISTRATIVE ASSISTANT
100 ASF

0 ft 4 ft 8 ft

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



PLAN POWER / DATA / AV PLAN

LEGEND

- A Worksurface
- C Task seating
- D Storage
- E Mobile, lockable pedestal file with seat cushion
- G Small wardrobe
- H Power/data access
- 1 Keyboard/mouse tray

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

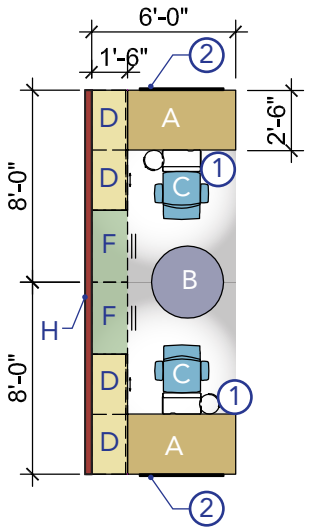
SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

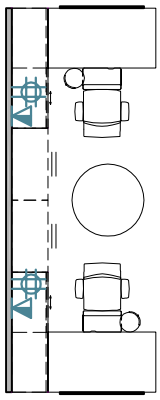
II. ADJUNCT OFFICE
48 ASF

0 ft 4 ft 8 ft

SCALE: 1/8” = 1’-0”



PLAN



POWER / DATA / AV PLAN

LEGEND

- (A) Worksurface
- (B) Collaboration Table
- (C) Task seating
- (D) Storage
- (E) Mobile, lockable pedestal file with seat cushion
- (F) Lateral file with seat cushion
- (H) Power/data access
- (1) Keyboard/mouse tray
- (2) Privacy panel

SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9’-0” to 11’-0”
Ceiling Type:	Acoustical ceiling tile

PART G

CONFERENCE ROOMS

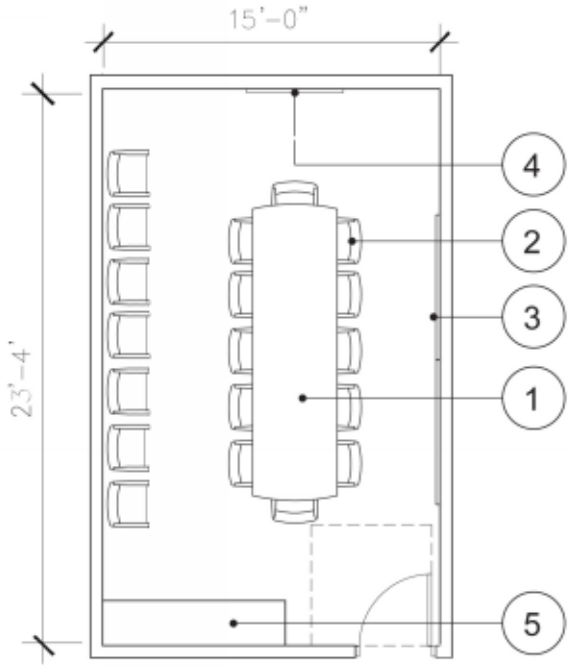
CONTENTS:

- Smaller conference rooms can be furnished with a one or two piece top
- Larger sized conference rooms should be provided with multiple tabled to allow flexibility of use
- Seating should be supportive and comfortable
- Fabric options should be offered with manufacturer's mid-range grades and be highly durable and stain resistant
- Table selections should offer options such as "pop-up" power & data modules at table level, locking casters on multiple table set-ups, optional base positions to allow greater use around ends of tables

I. LARGE CONFERENCE ROOM
350 ASF | 12-15 SEATS

0 ft 4 ft 8 ft

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



PLAN

LEGEND

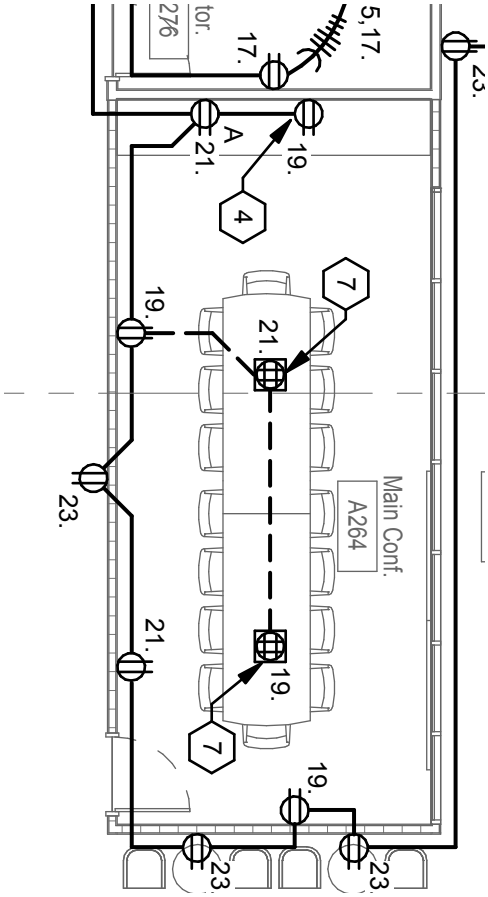
1. Table for 12-15 people
2. (12) Chairs
3. Writable Surface
4. LCD Screen
5. Credenza

SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

0 ft 4 ft 8 ft

SCALE: 1/8” = 1’-0”



POWER / DATA / AV PLAN

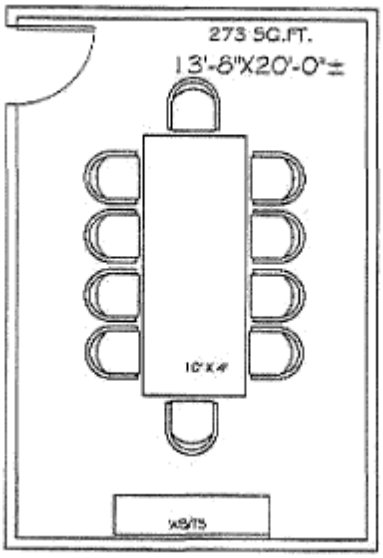
SYMBOLS

- Duplex
- Tel/Data
- Flush floor-mounted duplex
- Flush floor-mounted data
- A/V connector
- $ Light switch with occupancy sensor
- Ceiling Data
- Ceiling Speaker
- Ceiling Quadruplex

II. MEDIUM CONFERENCE ROOM
273 ASF | 10-12 SEATS

0 ft 4 ft 8 ft

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



PLAN

LEGEND

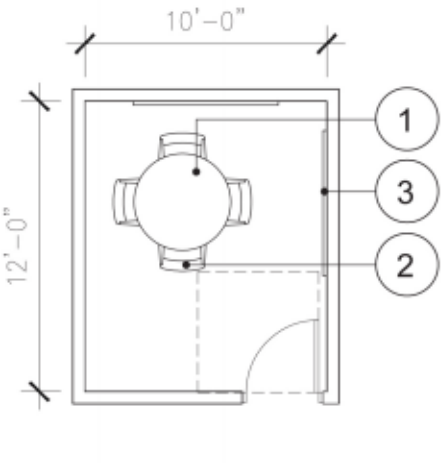
SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

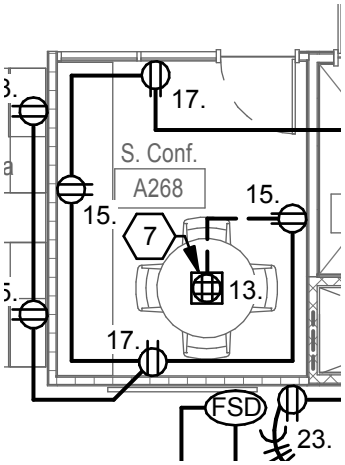
III. SMALL CONFERENCE ROOM
120 ASF | 4-6 SEATS

0 ft 4 ft 8 ft

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



PLAN



POWER / DATA / AV PLAN

LEGEND

1. Table for 4-6 people
2. (4-6) Chairs
3. Writable Surface

SURFACES

Floor:	Carpet tile
Wall:	Painted drywall
Ceiling Ht:	9'-0" to 11'-0"
Ceiling Type:	Acoustical ceiling tile

SYMBOLS

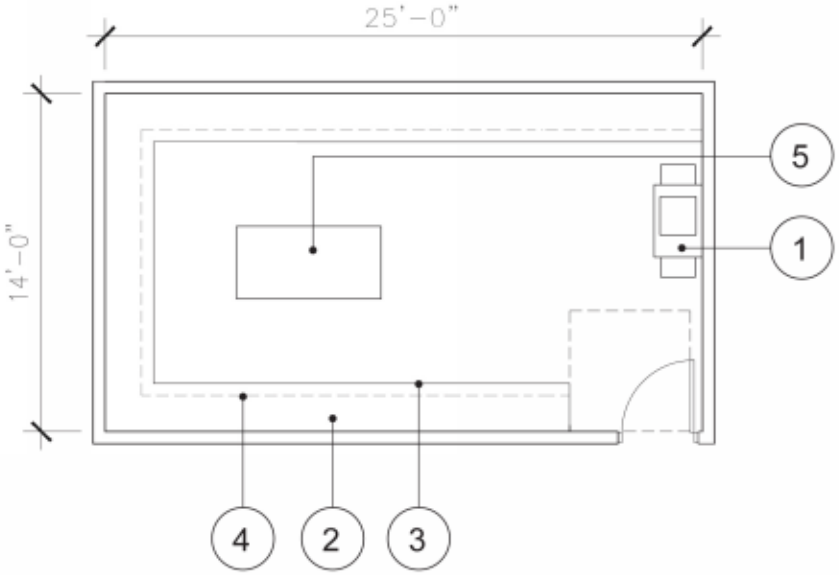
- Duplex
- Tel/Data
- Flush floor-mounted duplex
- Flush floor-mounted data
- A/V connector
- $ Light switch with occupancy sensor
- Ceiling Data
- Ceiling Speaker
- Ceiling Quadruplex

PART H
WORK ROOMS

WORK ROOM
350 ASF

0 ft 4 ft 8 ft

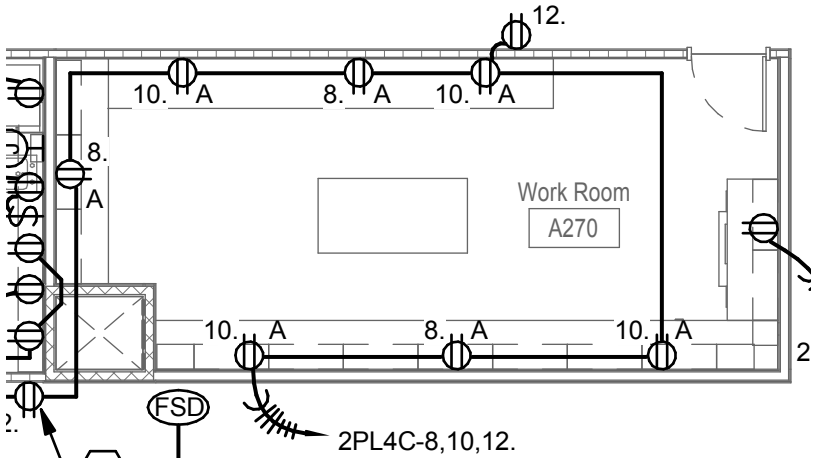
SCALE: 1/8" = 1'-0"



LEGEND

1. Copy Machine/ Scanner/ Fax/ Printer
2. Counter Top Area
3. Under Counter File Cabinets
4. Upper Cabinets
5. Central Work Table

PLAN



SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (coordinate with furniture location)
- $ Light switch with occupancy sensor

POWER / DATA / AV PLAN

PART J
BREAK OUT SPACES

CONTENTS:

BREAK OUT SPACES

- Break our seating areas offering individual or group study
- Lounge style seating with optional tablet arms
- Tablets arms when provided should allow movement to accommodate a greater population
- Mobile whiteboard easels provided to encourage interactive learning
- Furnishings selections shall be reviewed and specified for conformance to LEED "Recyclable Materials"

PART K
TOILET ROOMS

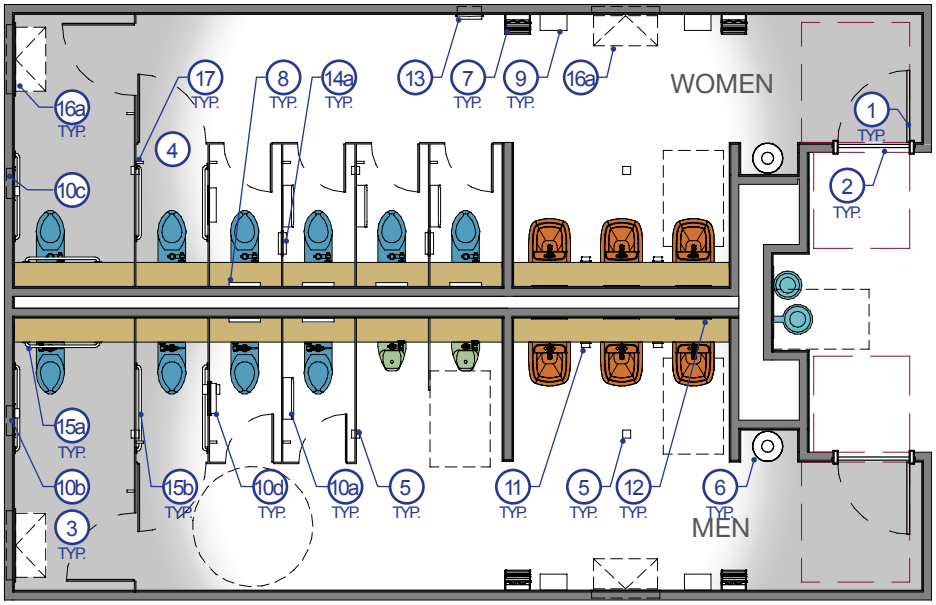
CONTENTS:

I. MULTIPLE ACCOMMODATION STUDENT TOILET ROOM

846 SF | TOTAL OCCUPANCY

0 ft 4 ft 8 ft

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



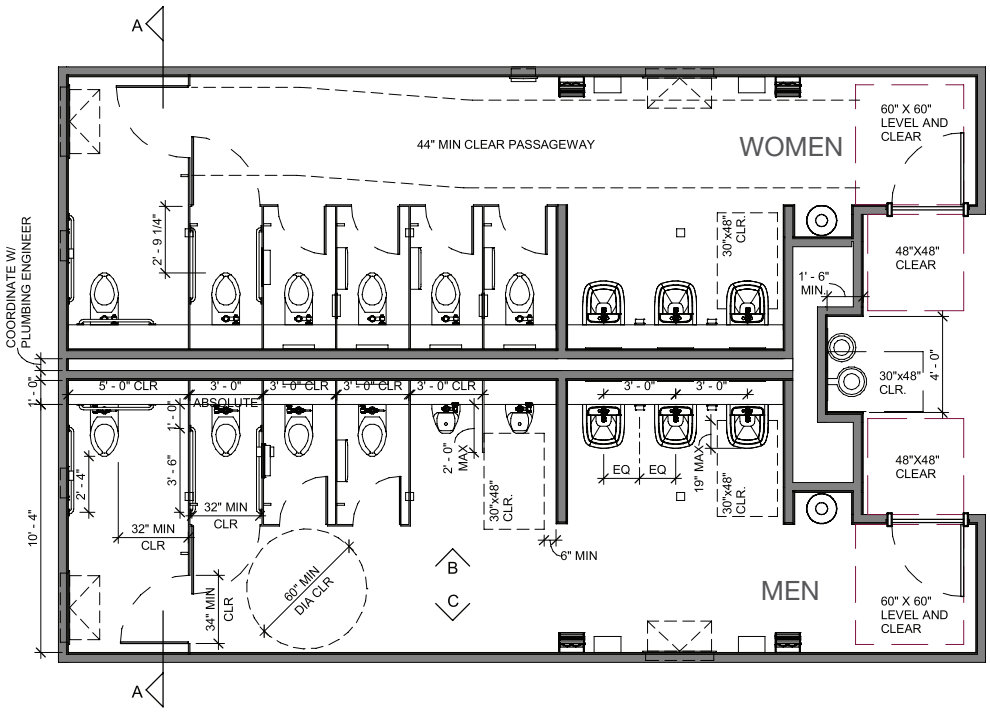
PLAN

LEGEND

- (A) Ledge
- (B) Lavatory - wall hung
- (C) Water closet - wall hung
- (D) Urinal
- (E) Electric water cooler (EWC)
- (1) Solid wood door
- (2) Threshold
- (3) Wheelchair accessible stall
- (4) Semi-ambulatory accessible stall (where required)
- (5) Floor drain with trap primer connection
- (6) Freestanding waste receptacle
- (7) Hand dryer - recessed preferred
- (8) Toilet seat cover dispenser - surface mounted
- (9) Paper towel dispenser - surface mounted
- (10a) Jumbo roll toilet tissue dispenser - surface mounted
- (10b) Combination toilet seat cover and toilet tissue dispenser - recessed preferred

0 ft 4 ft 8 ft

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



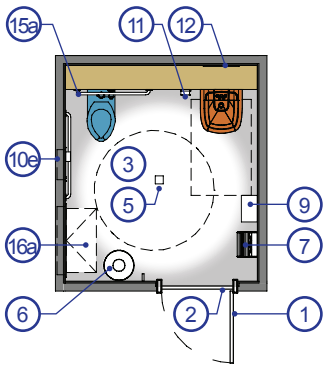
DIMENSION PLAN

- 10c Combination toilet seat cover, sanitary napkin disposal, and toilet tissue dispenser
  - recessed preferred
- 10d Combination toilet seat cover and toilet tissue dispenser
  - partition mounted
- 10e Combination toilet seat cover, sanitary napkin disposal, and toilet tissue dispenser
  - partition mounted
- 11 Soap dispenser
  - surface mounted
- 12 Mirror
- 13 Napkin/tampon vendor
  - recessed
- 14a Sanitary napkin disposal
  - surface mounted
- 14b Sanitary napkin disposal
  - recessed
- 15a Horizontal grab bar (2 perpendicular walls)
- 15b Horizontal grab bar (2 parallel walls)
- 16a Diaper changing station
  - recessed
- 16b Diaper changing station
  - surface mounted
- 17 Coat hook with bumper (2 per stall)

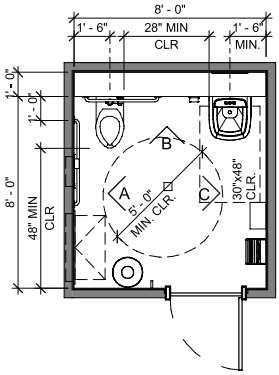
II. SINGLE OCCUPANCY TOILET ROOM
MINIMUM 60 SF

0 ft 4 ft 8 ft

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



PLAN



DIMENSION PLAN

LEGEND

- (A) Ledge
- (B) Lavatory - wall hung
- (C) Water closet - wall hung
- (D) Urinal
- (E) Electric water cooler (EWC)

- (1) Solid wood door
- (2) Threshold
- (3) Wheelchair accessible stall
- (4) Semi-ambulatory accessible stall (where required)
- (5) Floor drain with trap primer connection
- (6) Freestanding waste receptacle
- (7) Hand dryer - recessed preferred
- (8) Toilet seat cover dispenser - surface mounted
- (9) Paper towel dispenser - surface mounted
- (10a) Jumbo roll toilet tissue dispenser - surface mounted
- (10b) Combination toilet seat cover and toilet tissue dispenser - recessed preferred
- (10c) Combination toilet seat cover, sanitary napkin disposal, and toilet tissue dispenser - recessed preferred
- (10d) Combination toilet seat cover and toilet tissue dispenser - partition mounted
- (10e) Combination toilet seat cover, sanitary napkin disposal, and toilet tissue dispenser - partition mounted

0 ft 4 ft 8 ft

SCALE: 1/8” = 1’-0”

11 Soap dispenser
- surface mounted
12 Mirror
13 Napkin/tampon vendor
- recessed
14a Sanitary napkin disposal
- surface mounted
14b Sanitary napkin disposal
- recessed
15a Horizontal grab bar
(2 perpendicular walls)
15b Horizontal grab bar
(2 parallel walls)
16a Diaper changing station
- recessed
16b Diaper changing station
- surface mounted
17 Coat hook with bumper
(2 per stall)

SURFACES

Floor:	Sealed concrete, fluid-applied flooring, or porcelain tile
Base:	Porcelain tile
Wall:	Ceramic tile
Ceiling Ht:	9’-0” to 11’-0”
Ceiling Type:	Painted drywall

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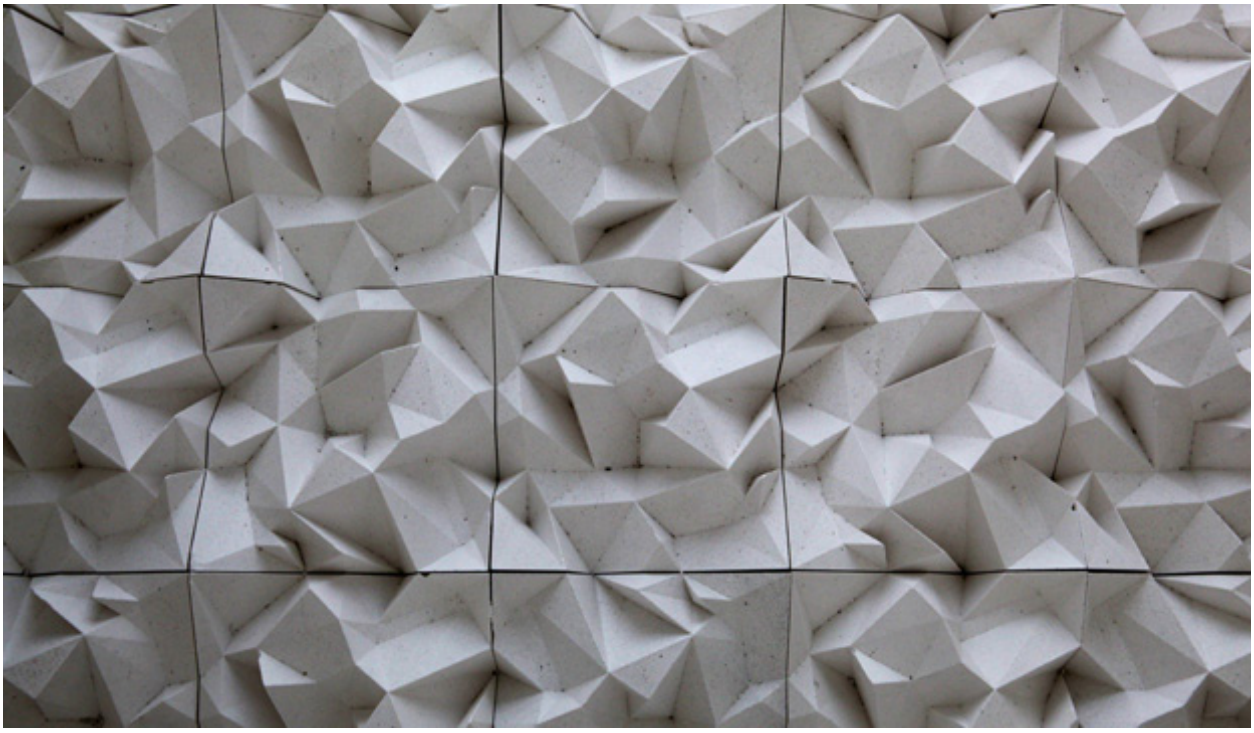
END OF SECTION 7 - SAN JOSÉ CITY COLLEGE

8 ACOUSTICS GUIDELINES



INTRODUCTION

The main purpose of establishing acoustical guidelines is to provide acoustical performance criteria that will ensure that the acoustical environments in San José • Evergreen Community College District (SJECCD) classrooms, lecture halls, and other learning spaces are of high quality for the majority of instructors and students.

In particular guidelines ensure that excellent verbal communication is possible between students and teachers. This is achieved by ensuring, at all seats, sufficiently high levels and sufficiently low noise levels, as well as appropriate reverberation. Spaces with acoustical environments that do not meet these criteria would be expected to present barriers to teaching and learning.

PART A

GENERAL BUILDING REQUIREMENTS

GENERAL ACOUSTICAL STANDARDS

1. Summary: The acoustical standards established in this and referenced documents are intended to provide an adequate level of acoustical performance and quality. These standards include:

    a. Sound isolation, including sound transmission between interior spaces and exterior noise intrusion.

    b. Sound absorbing finishes as required to control reverberation, eliminate or minimize reflected noise (i.e. discrete and flutter echoes), and enhance speech intelligibility.

    c. Building system noise and vibration control, including heating, ventilating, and air-conditioning (HVAC), electrical, plumbing, and elevator.

2. Refer to the “Offices” section for additional acoustical standards that apply to administrative and faculty office spaces.

3. Refer to the “Classroom Guidelines” for additional acoustical standards that apply to classrooms, lecture halls, laboratories and related spaces.

4. Acoustical standards for space types not included in the above references should be set on a case-by-case basis.

5. Rooms where acoustics is a principal concern, such as audio or media recording rooms, lecture halls, theaters, concert halls, or other performance spaces, an acoustical consultant shall review the acoustical criteria based on the specific needs of each space on a case-by-case basis.

6. Sound-Rated Construction

   a. The sound-rated partitions identified in Table 1 are considered to meet the stated Sound Transmission Class (STC) ratings when built according to the following standards and as shown in Figures 1 through 4.

Table 1: Sound-Rated Partitions

Partition Figure Number	Sound Transmission Class (STC)
1, 2	45
3, 4, 5	50
6, 7, 8	55
9, 10	60

   b. The gypsum board at sound-rated partitions must be held back ¼-inch and the gap caulked airtight with acoustical sealant at the floor and head intersection.

   c. All manner of penetrations in sound-rated construction must be sealed, including ducts, pipes, conduits, junction boxes, and any other penetrations or recessed fixtures. Refer to Figures 11, 12, and 13 for typical details.

   a. The only acceptable method for building a fire-rated double-stud partition is defined by UL-U493. The studs in double-stud construction must not be bridged rigidly with bracing, conduit, piping, or other items.

7. Building Mechanical System Exterior Noise

   a. Building systems shall not exceed an A-weighted sound level of 50 decibels when measured at a distance of 30 feet from the building. Where equipment producing tones or narrow band tonal noise is utilized, this requirement shall be reduced by 5 decibels.

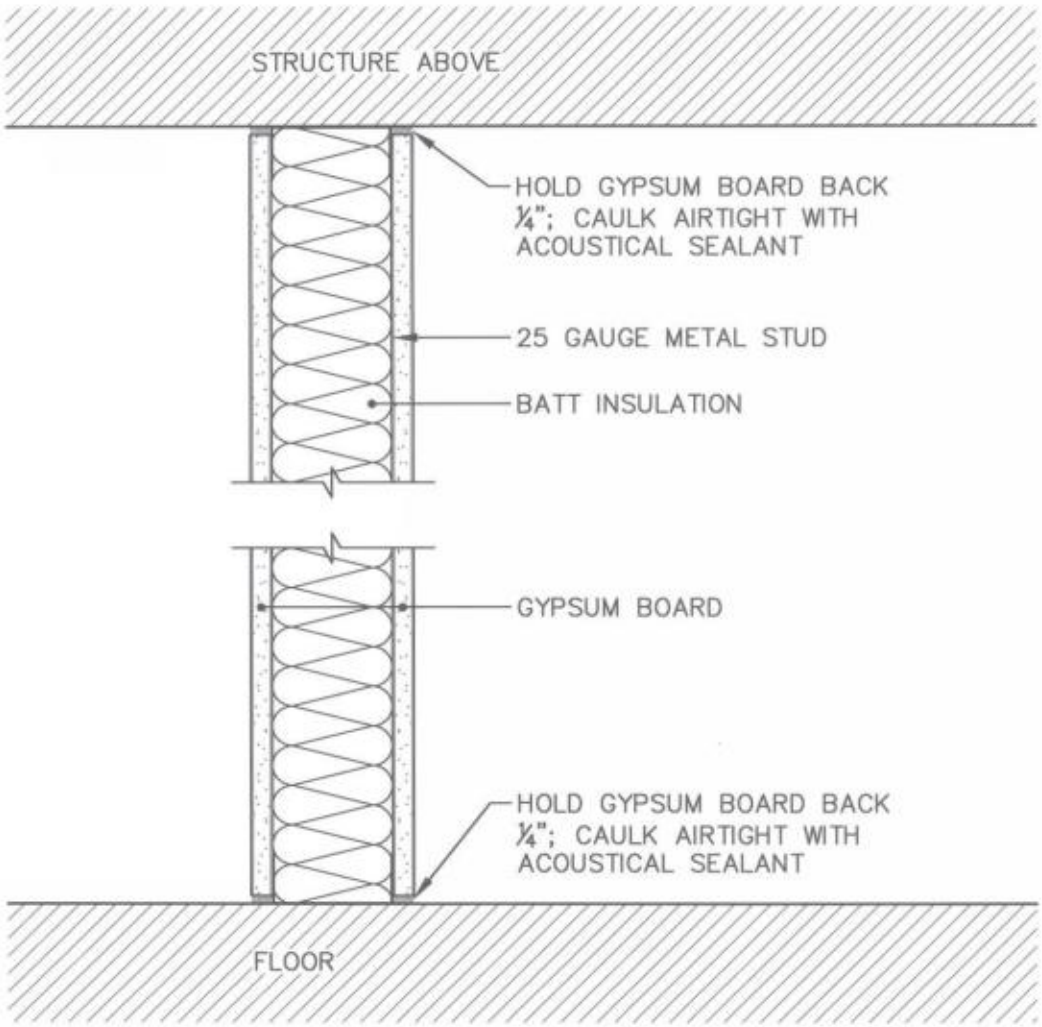
8. Quality Assurance

   a. An acoustical consulting firm shall be retained that has been in business continuously for 10 years and is either a member of the National Council of Acoustical Consultants or the Institute of Noise Control Engineers. The acoustical consultant shall provide the project with recommendations to meet acoustical requirements and criteria as generated from the standards stated above.

   b. When the project is substantially complete, measurements shall be made to verify that the project meets the acoustical requirements and criteria. If necessary, the consultant shall provide input to the punch list and recommend any necessary corrective measures to be undertaken by the Contractor. Measurements are to include noise criteria in a representative sample of noise-sensitive rooms with the HVAC system operating at full load. A representative sample of typical wall conditions and floor-ceiling assemblies are to be measured. In addition, sound isolation of operable partitions shall be tested when the installation has been completed.

9. Industry Acoustical Standards to be considered

a.	ASTM E 90	Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
b.	ASTM E 492	Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine
c.	ASTM E 336	Sound Transmission: Measurement of Airborne Sound Attenuation between Rooms in Buildings
d.	ASTM E 413	Sound Transmission: Rating Sound Isolation
e.	ASTM E 1007	Impact Sound Transmission: Field Measurement of Tapping Machine Impact Sound Transmission Through Floor-Ceiling Assemblies and Associated Support Structures
f.	ASTM E 989	Impact Sound Transmission: Rating Impact Insulation
g.	ASTM E 477	Test for Duct Lining and Silencer Performance
h.	ASTM E 497	Application of Acoustical Materials and Systems: Installing Sound-Isolating Lightweight Partitions
i.	ASTM E 557	Application of Acoustical Materials and Systems: The Installation of Operable Partitions
j.	ADC 1062R-4	Air Diffusion Council: Certification Rating and Test Manual
k.	ANSI S1.13	American National Standards Institute: Measurement of Sound Pressure Levels
l.	ARI 575	Air-Conditioning and Refrigeration Institute: Measurement of Sound in Equipment Rooms
m.	ARI 443	Air-Conditioning and Refrigeration Institute: Standard for Sound Rating of Fan Coil Air Conditioners
n.	ARI/ADC 880	Air-Conditioning and Refrigeration Institute/Air Diffusion Council: Industry Standard for Air Terminals

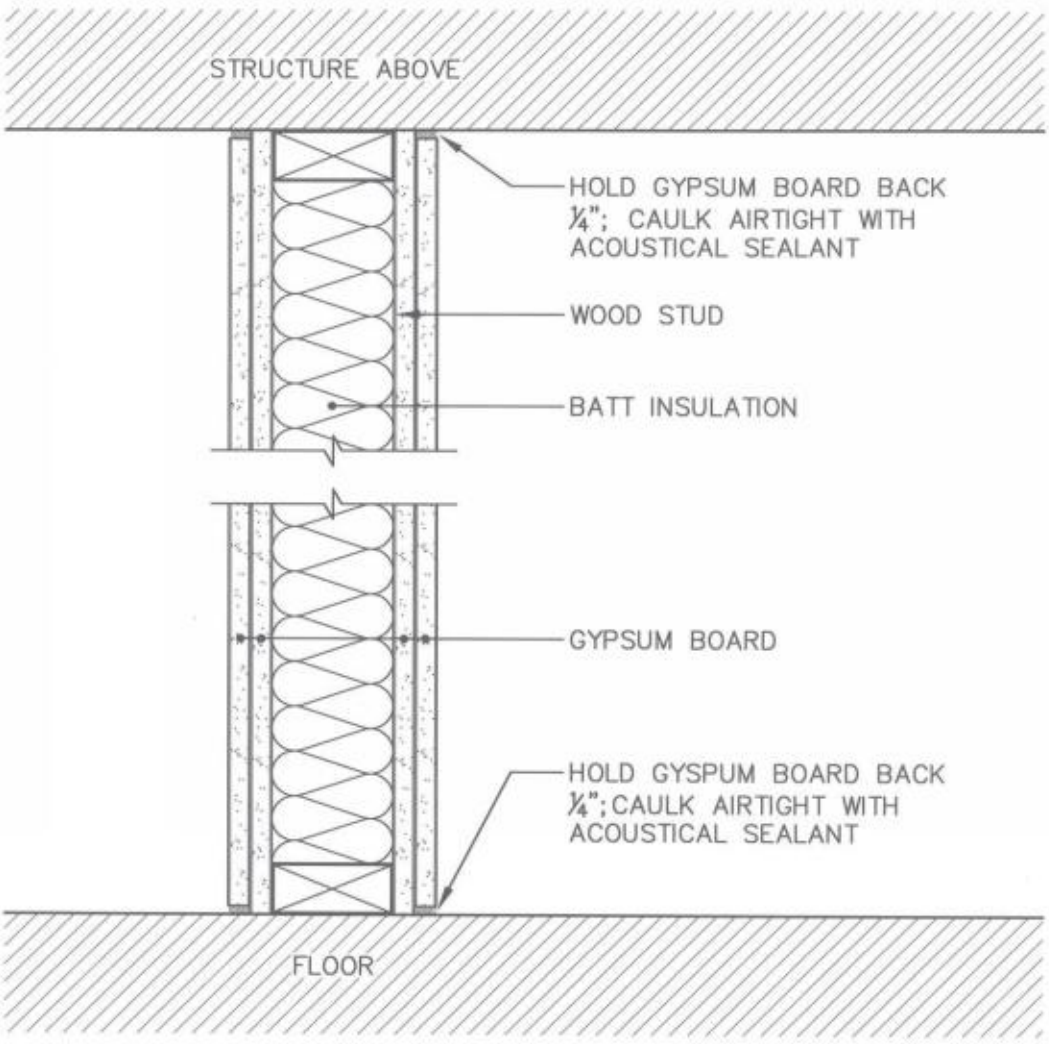


NOTE: STUDS SHOULD BE 25 GAUGE METAL, OTHERWISE USE RESILIENT CHANNEL

SOUND–RATED PARTITION
STC 45

FIGURE 1

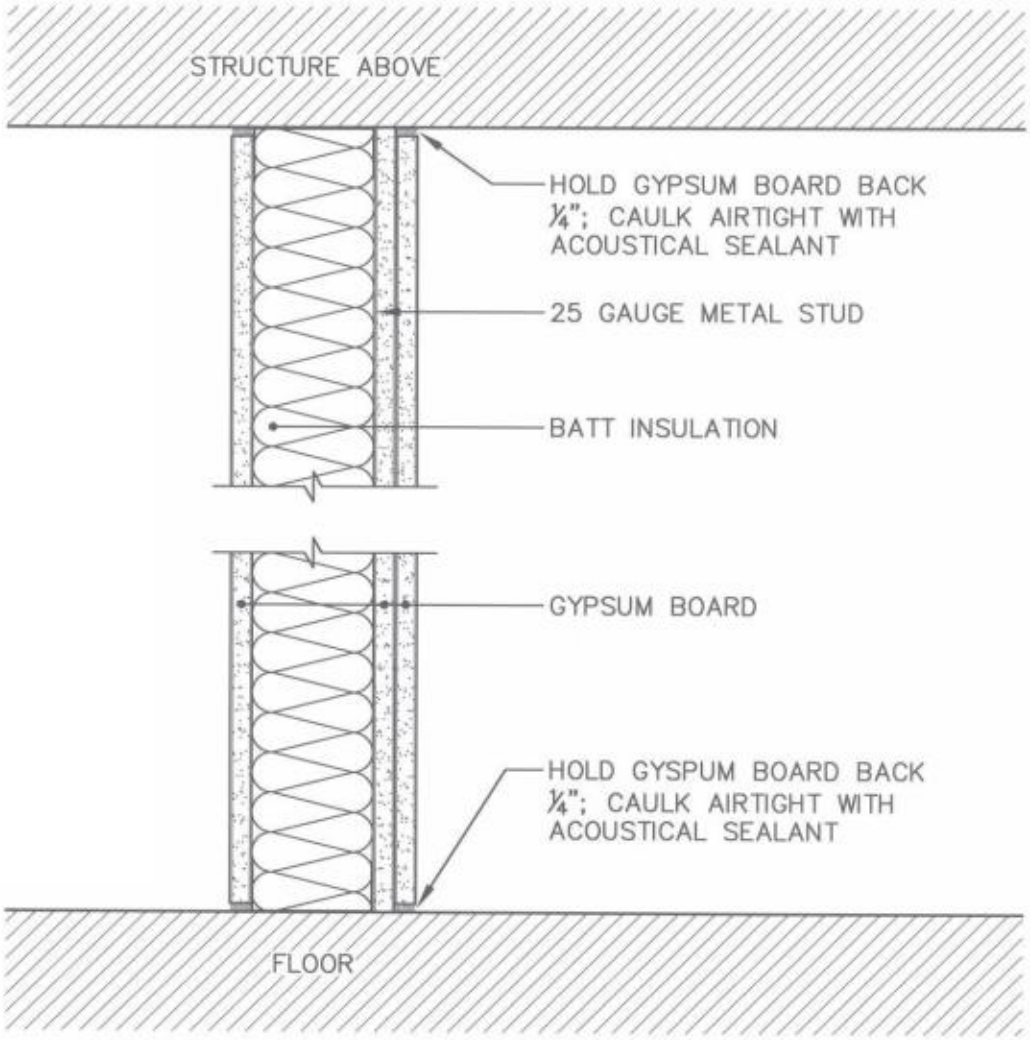
1014D
1.1.2.2 12.22.04



SOUND–RATED PARTITION
STC 45

FIGURE 2

1014F
1.1.1.1 04.29.04



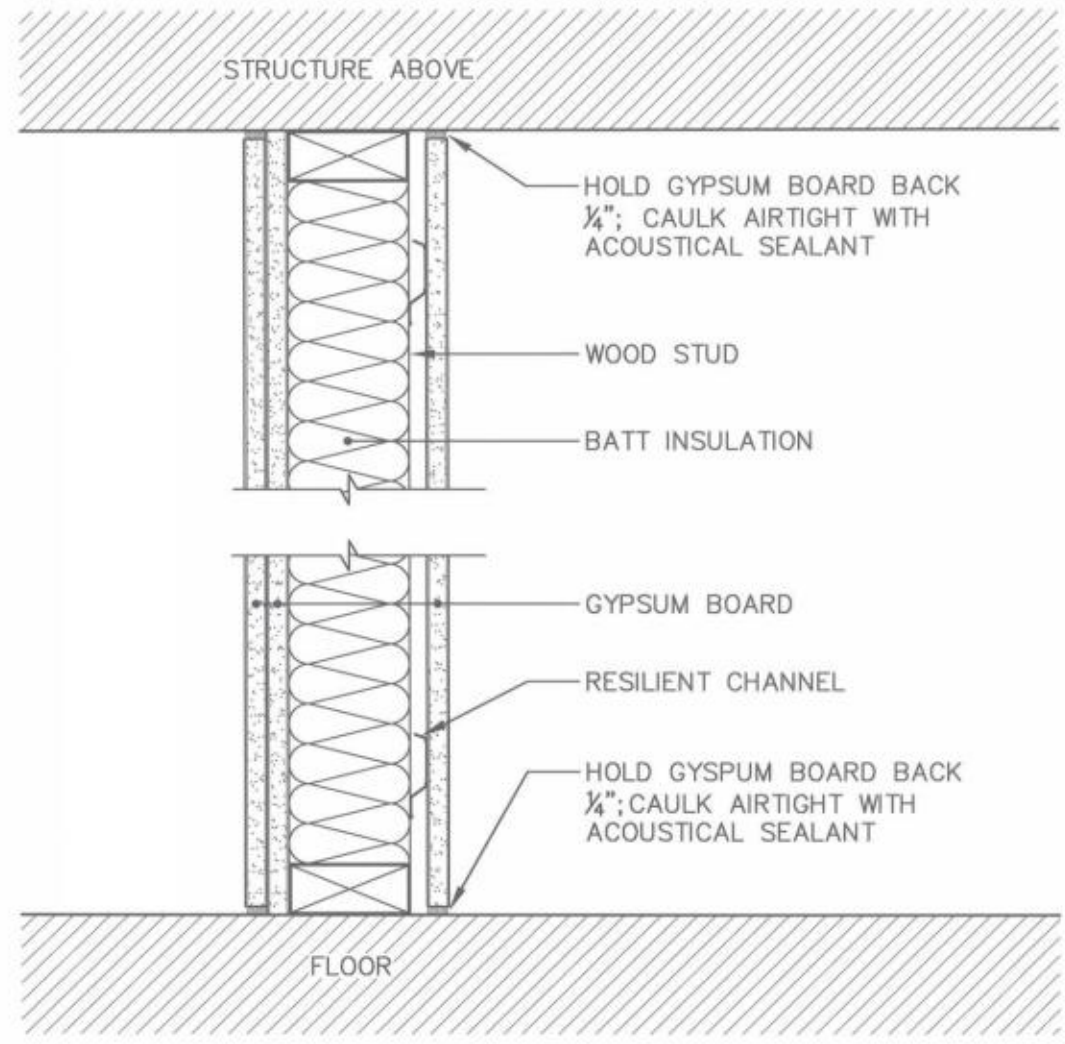
NOTE: STUDS SHOULD BE 25 GAUGE METAL, OTHERWISE USE RESILIENT CHANNEL

SOUND–RATED PARTITION
STC 50

FIGURE 3

1014C
1.1.2.2

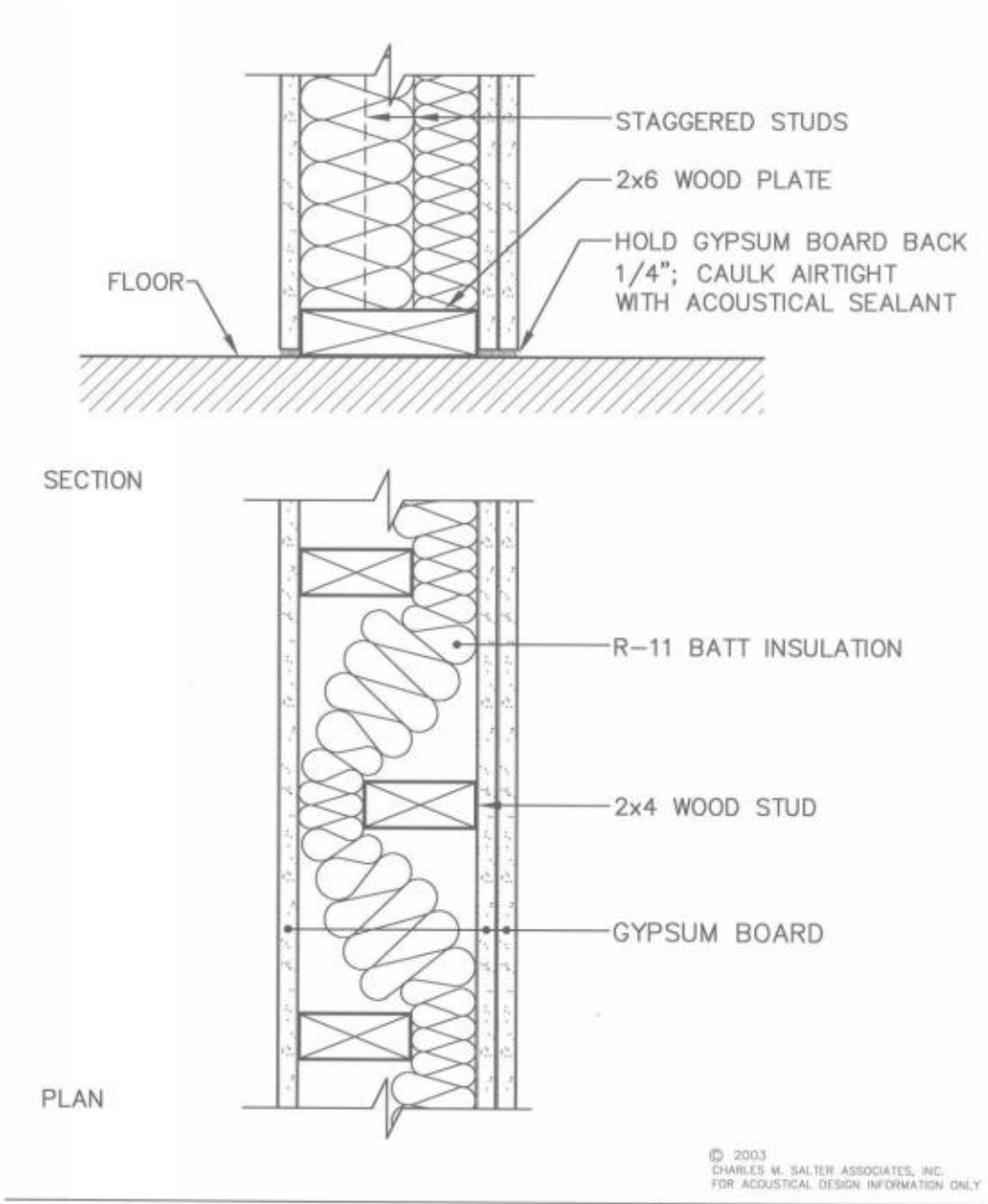
DRS
12.22.04



SOUND–RATED PARTITION
STC 50

FIGURE 4

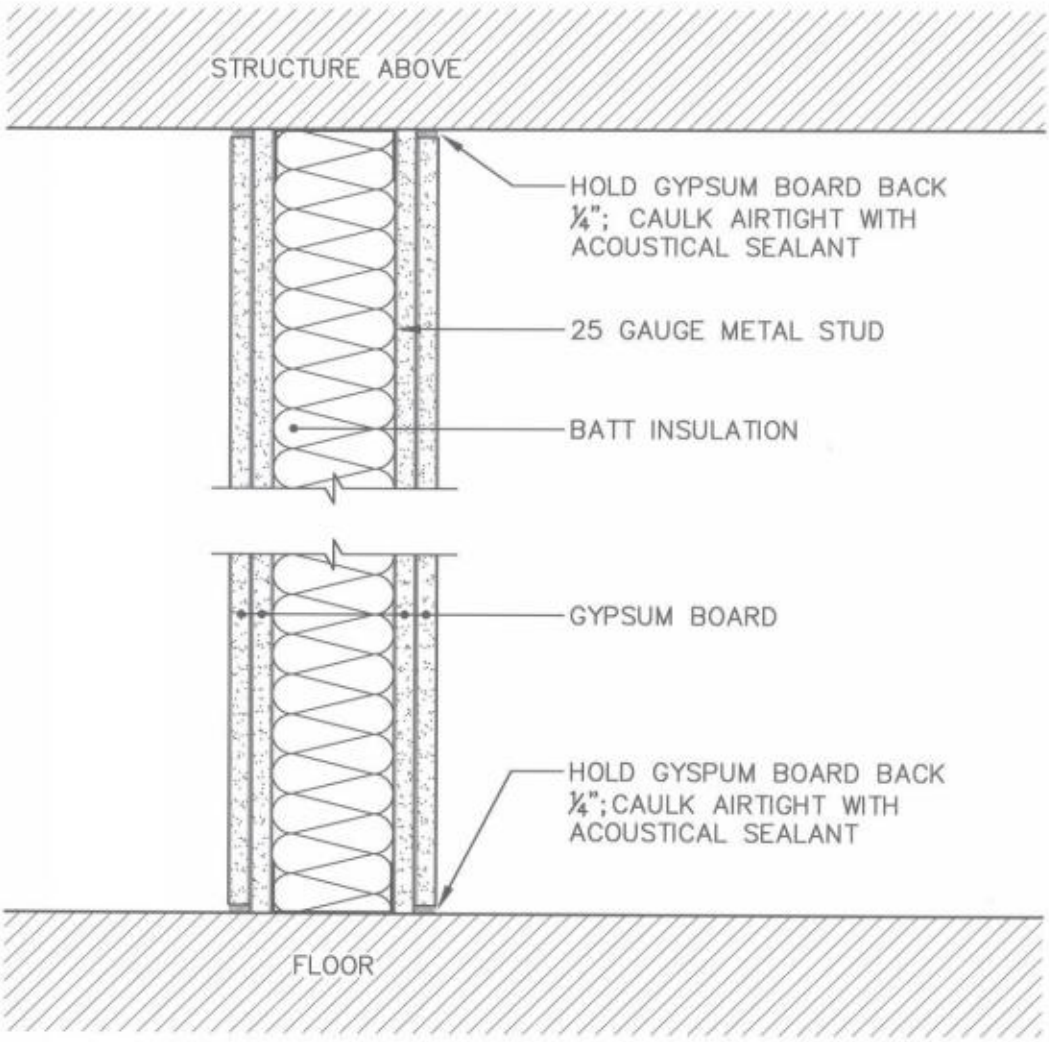
1014J
1.1.2.1, 1.1.2.2 04.29.04



SOUND-RATED PARTITION
STC 50

FIGURE 5

1256 KWG
1.1.1.3 10.21.02

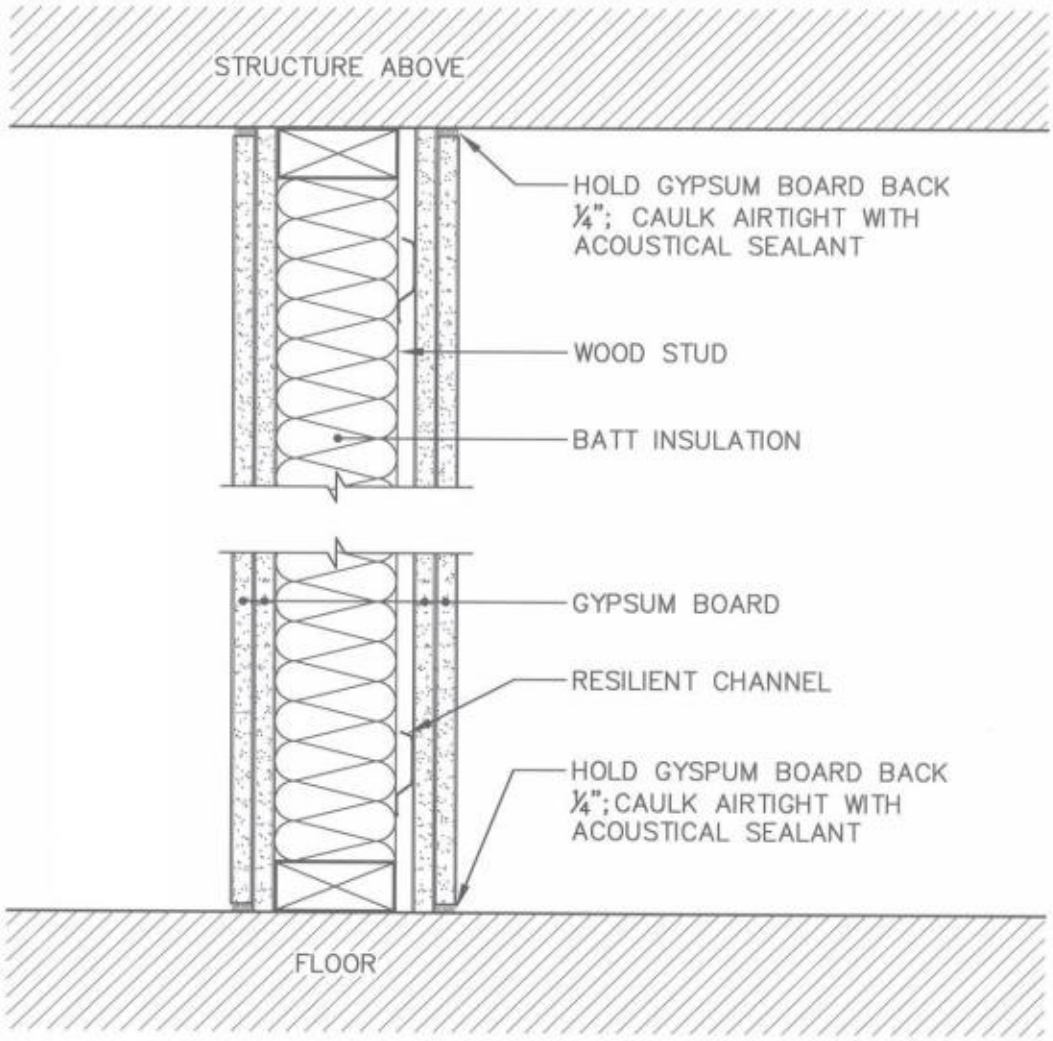


NOTE: STUDS SHOULD BE 25 GAUGE METAL, OTHERWISE USE RESILIENT CHANNEL

SOUND–RATED PARTITION
STC 55

FIGURE 6

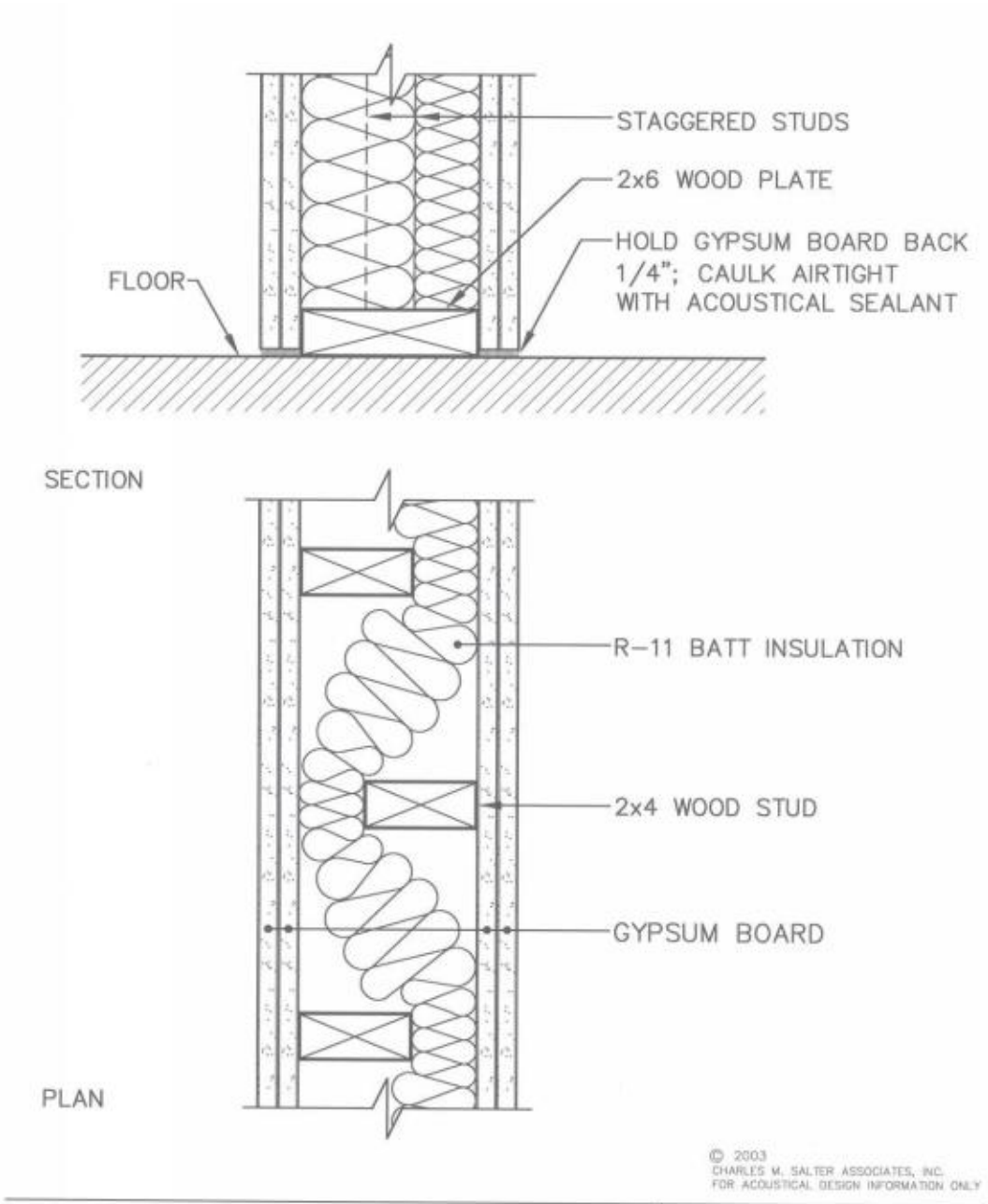
1014
STC 55 10.11.02



SOUND–RATED PARTITION
STC 55

FIGURE 7

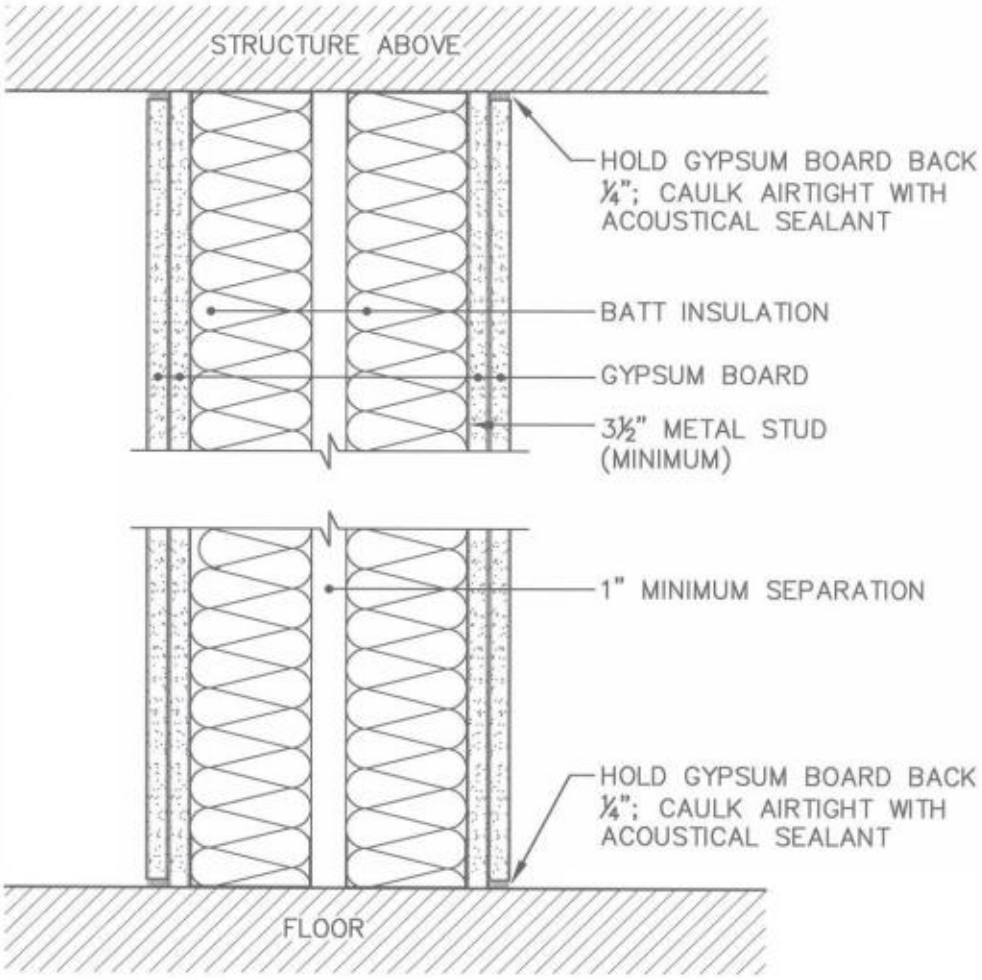
1014J
1.1.2.1, 1.1.2.2 04.29.04



SOUND-RATED PARTITION
STC 55

FIGURE 8

1256 KWC
1.1.1.3 10.21.02

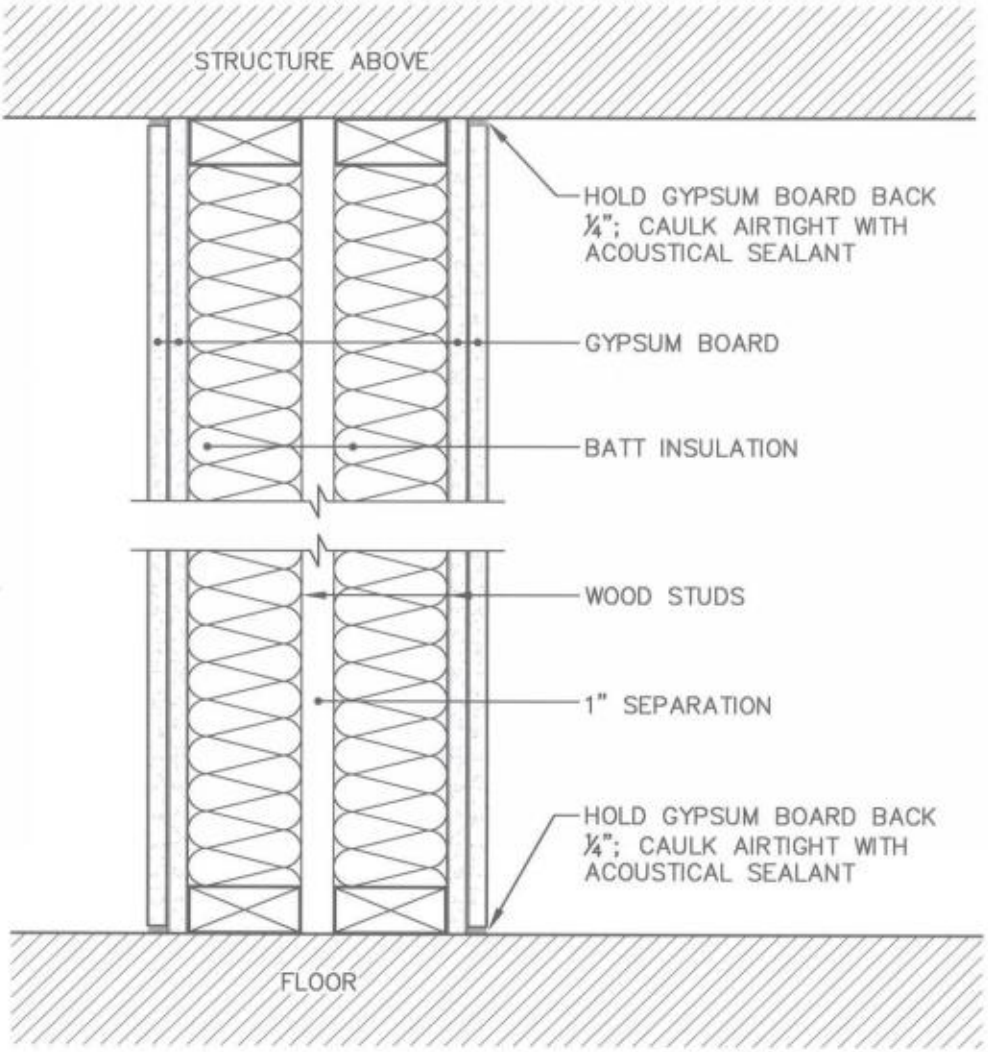


NOTES:
1. STUDS SHOULD BE STAGGERED IN DOUBLE–STUD WALL CONSTRUCTION TO PREVENT RIGID BRIDGING
2. FOR 1 OR 2–HOUR FIRE RATING USE UL DESIGN U493

SOUND–RATED PARTITION
STC 60

FIGURE 9

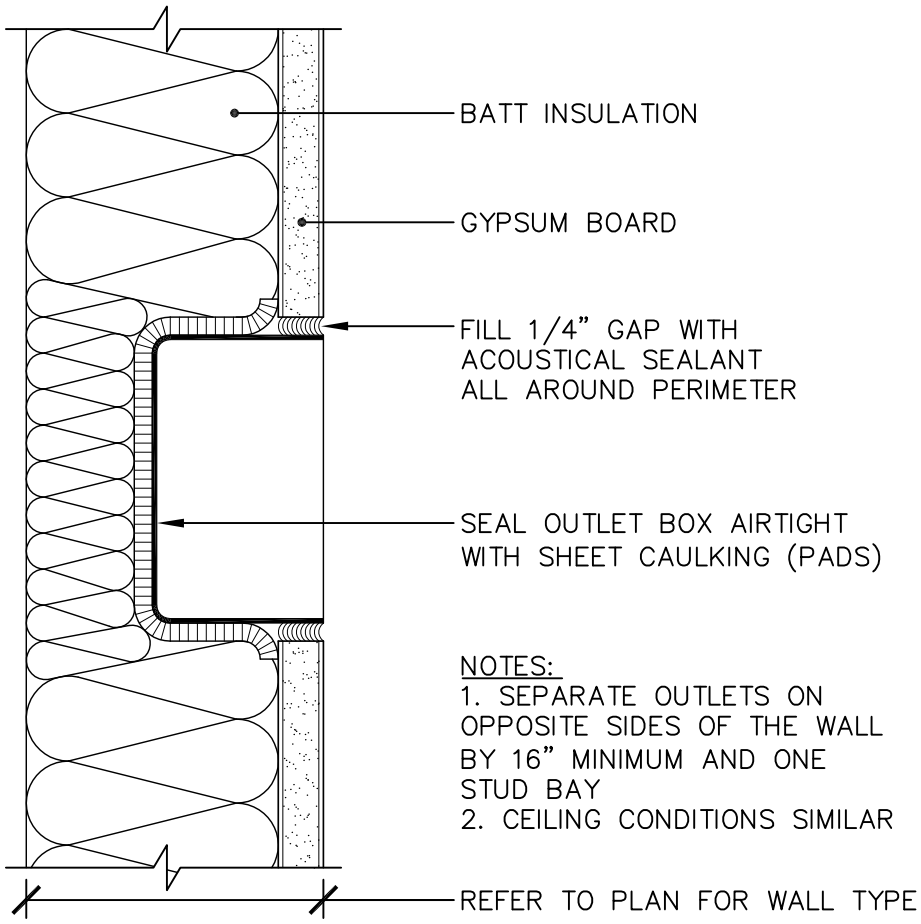
578J 1.1.2.2 DRS 04.06.05



SOUND–RATED PARTITION
STC 60

FIGURE 10

179E 1.1.1.2 JLD 03.27.06

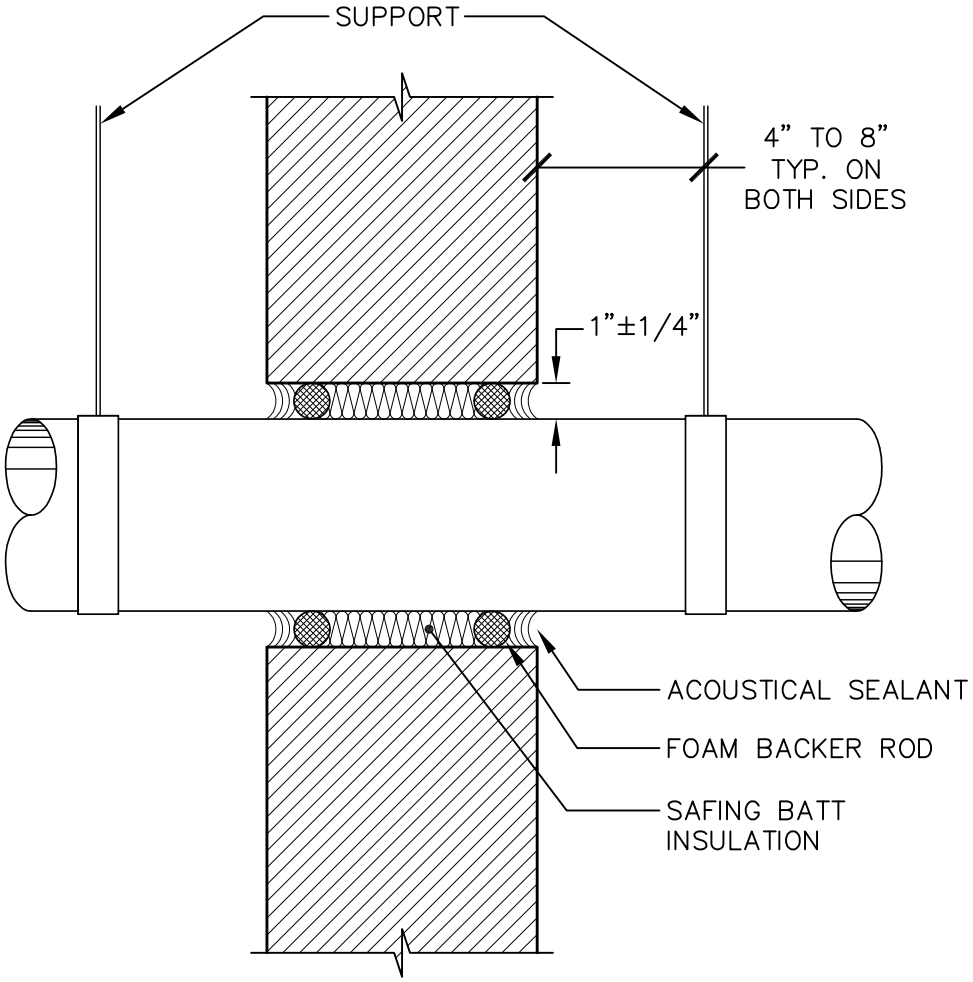


PADS MANUFACTURED BY:
HARRY A LOWRY & ASSOCIATES
EGS ELECTRICAL GROUP – NELSON FIRESTOP
OR EQUAL

TYPICAL JUNCTION BOX IN SOUND–RATED CONSTRUCTION

FIGURE 11

49 ELB

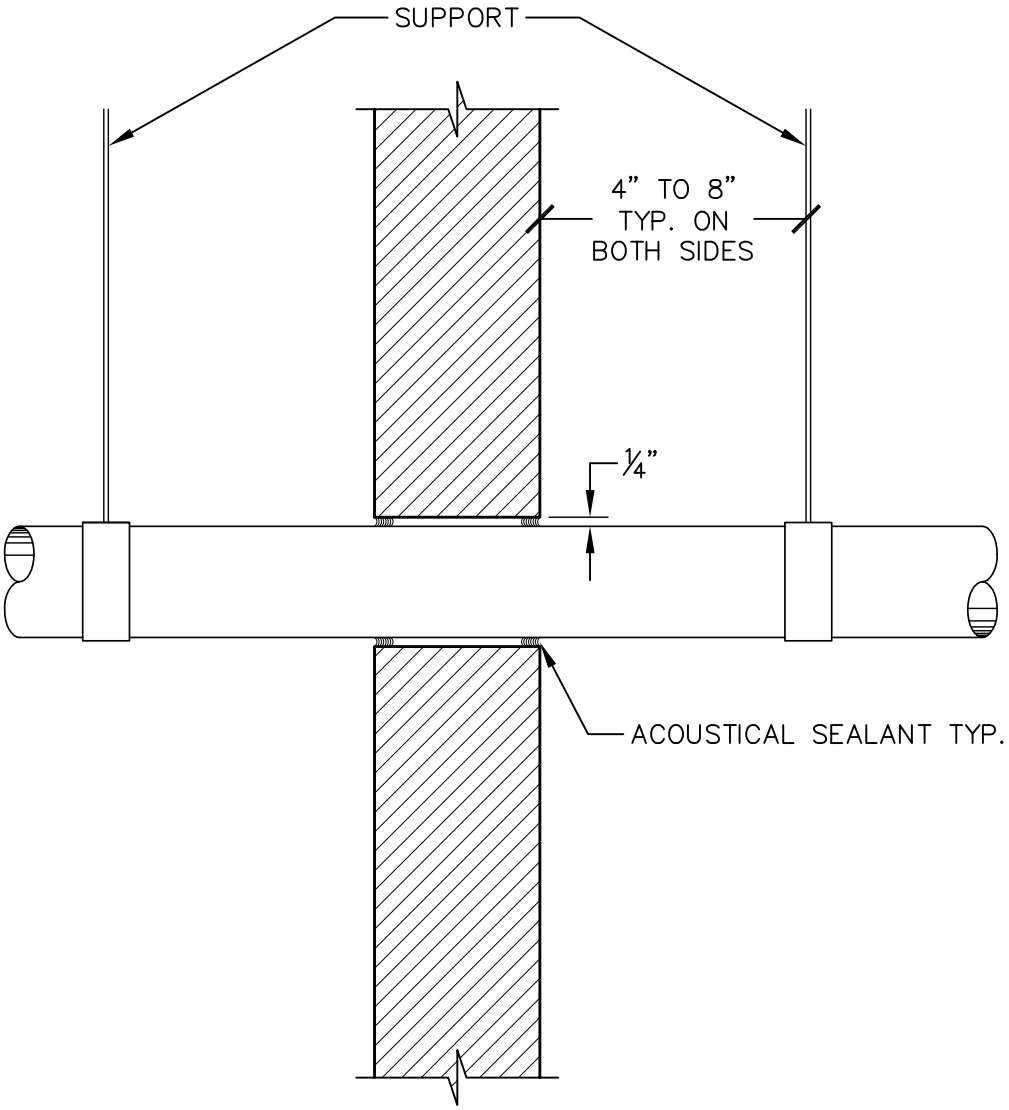


(DUCT, PIPE OR CONDUIT 3" DIA. OR GREATER)

TYPICAL DUCT, PIPE, OR CONDUIT PENETRATION THROUGH

FIGURE 12

181 DRS



(PIPE OR CONDUIT 3" DIA. OR LESS)

TYPICAL PIPE OR CONDUIT PENETRATION THROUGH

FIGURE 13

182 DRS

PART B

CLASSROOM GUIDELINES

ACOUSTICAL STANDARDS

1. Sound Isolation

   a. Exterior Noise Intrusion

      1) The Noise Element shall be reviewed to determine if a noise survey is required based on the Day/Night Noise Level (DNL) contours and land use compatibility for the community noise environment. Use the criteria in Table C1 to design the acoustical performance of the building facade and roof to reduce intrusive noise from exterior sources, including adjacent building equipment, vehicular sources, such as road traffic, aircraft, and railways:

Table C1: Standards for Exterior Noise Intrusion

Space Type	**Average A-weighted Sound Level (dBA)** *(equivalent sound level, L_{eq}, measured over any 10-minute period)*
Theater, Distance Education Classroom, Audio Recording Room	30
Classroom, Laboratory, Lecture Hall, Study/Meeting Room, Computer Lab	35

b. Interior Sound Transmission

1) Airborne noise isolation between spaces, both horizontal and vertical, shall meet Sound Transmission Class (STC) standards by space type as shown in Table C2.

Table C2: Interior Sound Isolation Standards

Partition STC Ratings Between Spaces	Electrical Room*	Mechanical Room*	Storage/Janitor Closet	Stairwell	Restroom	Corridor with Entry Door	Corridor	Lobby/Reception	Open Plan Office Area	Private Office	Conference Room	Study/Meeting Room	Computer Lab	Teaching Laboratory	Classroom	Lecture Hall	Distance Education Classroom	Theater
Theater	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Distance Education Classroom	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	
Lecture Hall	55	60	45	60	60	45	50	55	55	60	60	55	55	60	60	60		
Classroom	55	60	45	55	55	45	45	50	50	55	55	50	50	50	50			
Teaching Laboratory	55	60	45	55	55	45	45	50	50	55	55	50	50	50				
Computer Lab	50	60	45	55	55	45	45	50	50	50	55	50	50					
Study/Meeting Room	50	60	45	55	55	45	45	50	50	50	55	50						
Conference Room	50	60	50	60	60	45	50	50	50	55	55							
Private Office	50	60	45	60	55	NR	50	50	50	50								
Open Plan Office Area	50	60	45	55	50	NR	45	45	45									
Lobby/Reception	45	55	45	45	50	NR	NR	45										
Corridor	NR	50	NR	NR	45	NR	NR											
Corridor with Entry Door	NR	45	NR	NR	45	NR												
Restroom	NR	45	NR	NR	45													
Stairwell	NR	NR	NR	NR														
Storage/Janitor Closet	NR	NR	NR															
Mechanical Room*	NR	NR																
Electrical Room*	NR	Does not need to be Sound-Rated																NR

*Structure borne noise must be addressed separately by isolating vibration-generating equipment.

2) Impact noise through the floor-ceiling assemblies shall meet Field Impact Insulation Class (IIC) 52 decibels, or greater.

3) Sound transmission ratings, STC and IIC, of interior partitions apply to the entire assembly, including all penetrations, transfer through ductwork, and other flanking paths with the exception of doors.

4) Certain doors may need to be sound-rated. The door sound-rating shall have a minimum STC rating of 10 rating points below that indicated for partitions in which they are located as specified in Table F2. This decision shall be made on a case-by-case basis.

5) Entry doors to Distance Education Classrooms, Theaters, and music or other audio recording facilities should use vestibules having fully gasketed solid-core wood or insulated metal doors in tandem.

6) Operable partitions shall have a minimum STC rating of 49. Installed operable partitions shall achieve a minimum NIC rating of 42.

7) Vending machines and water fountains should be isolated from noise-sensitive spaces by an insulated double stud wall or a functional equivalent for noise and vibration.

2. Acoustical Finishes

   a. Provide sound absorbing acoustical ceilings having a minimum Noise Reduction Coefficient (NRC) of 0.65 in all Lecture Halls, Classrooms, Teaching Laboratories, Study/Meeting Rooms, Computer Labs. Otherwise, provide sound absorbing finishes necessary to meet the criteria in Table C3.

Table C3: Reverberation Time Standards

Floor Area	Maximum Reverberation Time at 500 Hz (seconds)
200 sq. ft. and less	0.35
200 – 500 sq. ft.	0.50
500 – 1000 sq. ft.	0.60
1000 – 2000 sq. ft.	0.70
Over 2000 sq. ft.	0.85

   b. These spaces should also be designed to eliminate any noticeable echoes in both the seating and presenter areas.

   c. High performance acoustical spaces such as Theaters, Distance Education Classrooms, and other audio recording facilities should have interior room acoustics criteria set on a case-by-case basis.

   d. The above Reverberation Time values apply to the 500 Hz Octave Band. Table C4 provides multipliers applied to the value at 500 Hz to obtain the maximum acceptable values in other Octave Bands.

Table C4: Reverberation Time Multiplier

Octave Bands								
	63	125	250	***500***	1000	2000	4000	8000
Multiplier	1.5	1.3	1.1	***1.0***	1.0	1.0	0.9	0.8

3. Building System Noise

   a. The building systems shall not exceed the interior noise criteria when all sources and all paths are considered including vibration, structure-borne noise, and airborne noise.

   b. Heating, Ventilation, and Air-Conditioning

      1) The background noise from all HVAC equipment shall meet the minimum criteria in Table C5.

Table C5: Mechanical Equipment Noise Criteria

Space Type	Noise Criteria
Theater, Distance Education Classroom	NC 25
Lecture Hall	NC 30
Classroom, Study/Meeting Room, Teaching Laboratory, Computer Lab	NC 35
Corridor	NC 40
Restroom	NC 45

      2) Noise Criteria (NC) in general are discussed in the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) System Handbook chapter titled, “Sound and Vibration Control.”

c. Plumbing: Plumbing noise shall not exceed the maximum A-weighted sound levels stated in Table C6.

Table C6: Plumbing Noise Limits

Space Type	L_{max} *(dBA, slow meter response)*
Distance Education Classroom	30
Theater	35
Lecture Hall, Classroom, Study/Meeting Room	40
Teaching Laboratory Computer Lab	45
Corridor, Restroom	50

d. Elevator: Limit overall elevator noise emissions to the following maximum A-weighted sound pressure levels in any mode of operation:

1) 80 decibels measured three feet from any piece of equipment in the machine room.

2) 50 decibels measured five feet above the cab floor near the center during all sequences of operation, including door operation, and exhaust air blower.

3) 45 decibels measured in the elevator lobby, 10 feet from the elevator doors.

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PART C

STANDARDS FOR OFFICES AND RELATED SPACES

ACOUSTICAL STANDARDS OF OFFICES AND RELATED SPACES

1. Sound Isolation

   a. Interior Sound Transmission

      1) Airborne noise isolation between spaces, both horizontal and vertical, shall meet Sound Transmission Class (STC) standards by space type as shown in Table F1.

Table F1: Interior Sound Isolation Standards

Partition STC Ratings Between Spaces	Electrical Room*	Mechanical Room*	Stairwell	Data Closet*	Storage/Janitor Closet	Workroom/Copy Room	Restroom	Corridor with Entry Door	Corridor	Lobby/Reception	Open Plan Office Area	Private Office	Conference Room
Conference Room	50	60	60	50	50	55	60	45	50	50	55	55	55
Private Office	50	60	60	50	45	55	55	NR	50	50	50	50	
Open Plan Office Area	50	60	55	50	45	45	50	NR	45	45	45		
Lobby/Reception	45	55	45	50	45	NR	50	NR	NR	45			
Corridor	NR	50	NR	NR	NR	NR	45	NR	NR				
Corridor with Entry Door	NR	45	NR	NR	NR	NR	45	NR					
Restroom	NR	45	NR	NR	NR	NR	45						
Workroom/Copy Room	NR	NR	NR	NR	NR	NR							
Storage/Janitor Closet	NR	NR	NR	NR	NR								
Data Closet*	NR	NR	NR	NR									
Stairwell	NR	NR	NR										
Mechanical Room*	NR	NR											
Electrical Room*	NR	Does not need to be Sound-Rated											NR

*Structure borne noise must be addressed separately by isolating vibration-generating equipment.

2) Impact noise through the floor-ceiling assemblies over occupied spaces shall meet an Impact Insulation Class (IIC) rating of 52, or greater.

3) Sound transmission ratings, STC and IIC, of interior partitions apply to the entire assembly, including all penetrations, transfer through ductwork, and other flanking paths with the exception of doors.

4) Certain doors may need to be sound-rated. The door sound-rating shall have a minimum STC rating of 10 rating points below that indicated for partitions in which they are located as specified in Table F2. This decision shall be made on a case-by-case basis.

5) If partitions separating Private Offices with acoustical tile ceilings are not constructed full-height, the tile ceiling shall have a minimum Ceiling Attenuation Class (CAC) rating of 40.

2. Acoustical Finishes

   a. Provide sound absorbing acoustical ceilings having a minimum Noise Reduction Coefficient (NRC) of 0.65 in all Conference Rooms, Private Offices, and Lobby/ Reception Areas. Otherwise, provide sound absorbing finishes necessary to meet the criteria in Table F3.

Table F3: Reverberation Time Standards

Floor Area	Maximum Reverberation Time at 500 Hz (seconds)
200 sq. ft. and less	0.35
200 – 500 sq. ft.	0.50
500 – 1000 sq. ft.	0.65
Over 1000 sq. ft.	0.75

   b. These spaces should also be designed to eliminate any noticeable echoes in the seating and otherwise occupied areas.

   c. The above Reverberation Time values apply to the 500 Hz Octave Band. Table F4 provides multipliers applied to the value at 500 Hz to obtain the maximum acceptable values in other Octave Bands.

Table F4: Reverberation Time Multiplier

Octave Bands								
	63	125	250	***500***	1000	2000	4000	8000
Multiplier	1.5	1.3	1.1	***1.0***	1.0	1.0	0.9	0.8

3. Open Plan Offices

   a. Since the level of speech privacy attained in open plan office areas is much less than between private offices, breakout rooms will be required for open-office occupants to have private conversations.

   b. A sound-masking system would provide improved speech privacy. The ventilation system cannot be relied upon to provide a continuous background noise, since it is typically a variable air-volume system and the noise may vary according to the thermal load.

   c. Landscape office partitions between workstations should be at least 60 inches tall and have a minimum NRC rating of 0.80 and an STC rating of 20.

   d. Provide a sound absorbing acoustical ceiling having a minimum Noise Reduction Coefficient (NRC) of 0.80 in Open Office Areas.

   e. Sound-absorbing panels should be placed on large wall areas adjacent to Open Office Areas. These panels should have a minimum NRC rating of 0.80.

4. Building System Noise

   a. The building systems shall not exceed the interior noise criteria when all sources and all paths are considered including vibration, structure-borne noise, and airborne noise.

   b. Heating, Ventilation, and Air-Conditioning

      1) The background noise from all HVAC equipment shall meet the minimum criteria in Table F5.

Table F5: Mechanical Equipment Noise Criteria

Space Type	Noise Criteria
Conference Room	NC 30
Private Office	NC 35
Open Plan Office, Area Lobby/Reception, Corridor, Staff Support, Supply/Copy Room	NC 40
Data Closet, Restroom	NC 45

      2) Noise Criteria (NC), in general, are discussed in the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) System Handbook chapter titled, "Sound and Vibration Control."

   c. Plumbing: Plumbing noise shall not exceed the maximum A-weighted sound levels stated in Table F6.

Table F6: Plumbing Noise Limits

Space Type	L_{max} *(dBA, slow meter response)*
Conference Room	35
Private Office	40
Open Plan Office Area, Lobby/Reception, Corridor, Staff Support, Supply/Copy Room, Data Closet, Restroom	50

d. Elevator: Limit overall elevator noise emissions to the following maximum A-weighted sound pressure levels in any mode of operation:

1) 80 dBA measured three feet from any piece of equipment in the machine room.

2) 50 dBA measured five feet above the cab floor near the center during all sequences of operation, including door operation, and exhaust air blower.

3) 45 dBA measured in the elevator lobby, 10 feet from the elevator doors.

9 AUDIO VISUAL + INFORMATION TECHNOLOGY GUIDELINES

INTRODUCTION

The following audio visual and information technology standards were provided by the District Technology Committee (DTC), the Technology Committee at San José City College, and the Campus Technology Committee (CTC) at Evergreen Valley College. Refer to *Section 7: Space Standards* for diagrams illustrating these guidelines.

CONTENTS

PART A

AUDIO VISUAL

1 PURPOSE, CONTENT AND ORGANIZATION

SJECCD implements educational technology and communications systems on its campuses to support the Education Master Plan and to serve the campus community including the students, staff and administration. In broad terms the areas of focus of this document are design standards for:

- Audio-visual systems, including Instructional Presentation Systems.

The purpose of this implementation standards document is intended to communicate and document the goals, issues, objectives and approaches to be used by persons with an interest in the implementation of the Technology Programs for the Community College of San Francisco including:

- District Facilities Staff, including Program Managers
- District ITS staff
- Site administration, operations and instructional personnel
- Facilities Planning Office Project Managers
- Architectural Teams working on the design of new and modernization projects.

As such, the intent of this document addresses several audiences with differing interests.

1.1 TIMELINE FOR STANDARD

While the interior conduit and outside plant infrastructure described by this document have intrinsically long useful lifespans, the communications cabling and equipment does not. AV hardware may be obsolete in as little as 5-7 years, and certainly in need of replacement due to incremental failure in a 10-12 year span. It is therefore expected that this document will need to be reviewed and updated at least biannually to ensure its continuing relevance to ongoing District construction.

2 GOALS

The principal goal of this document is to promote consistency in the implementation of technology based systems across the District's sites. The reasons to do so are reviewed in the following summary sections.

2.1 PROMOTE STANDARDIZATION

A standardized implementation across all sites will yield several positive benefits:

Common capabilities. If all sites have a common core infrastructure, it becomes possible to easily roll out Districtwide programs or upgrades to the communications facilities, despite the infrastructure having been constructed by differing subcontractors. It is further possible to easily replicate successful programs in use at one site to other sites knowing that their physical facilities are similar.

Increased staff familiarity. A standard implementation will be easier for District level staff to maintain and troubleshoot. Instructional staff can also expect to transfer between sites and find similar capabilities available.

Reduced costs. By standardizing on common components, maintenance personnel and outside contractors serving the District will need to inventory fewer parts and pieces, thereby reducing their cost in responding. This is particularly important to Districtwide infrastructure systems that touch each campus and will need to be adjusted and updated by a common pool of District and outside systems (hardware) contractors.

Equity. Use of identical components at all sites promotes equity between sites.

The purpose of the standard is to permit implementation of both best current practice today, but also to permit ready adaptation of the current implementation to new practices when and if the District chooses to do so.

This document will therefore seek to achieve the benefits outlined above by presenting the District's staff and designers with a standard for implementing Audio-visual Systems and related aspects of implementation in a manner that is standardized across the District.

3 AUDIO-VISUAL IMPLEMENTATION

This section describes design standards related to design of audio-visual facilities at campus auditoriums, lecture halls, classrooms and conference rooms.

SJECCD supports diverse spaces where formal and informal presentation facilities are required.

Among these are:

- Auditoriums and Theaters
- Lecture Halls (seat 50 to 120)
- Standard classrooms (seat 20 to 50)
- Small classrooms and conference rooms (seat 20 or fewer)

This chapter defines instructional presentation facility requirements for each of these spaces.

3.1 AUDITORIUM/THEATERS

Auditoriums and theaters are primarily designed to support a program broader than that purely instructional uses. Typically, such spaces may be programmed to present artistic performances and presentation media (including film) not typically supported in lecture or classroom space. This document does not address requirements beyond those of instruction and general communications – refer to the building program and SJECCD representatives for the functional artistic and performance systems requirements of such space.

Auditoriums should provide at minimum for a permanently installed projection system consisting of a motorized screen, permanently installed projector and distribution cabling and switching electronics. Refer to the relevant requirements for Lecture Halls below.

3.2 LECTURE HALLS

3.2.1 General Design Considerations

- Comfortably accommodate instructional audiences of 50 to 120 people in fixed seating arrangement.
- Provide a good line of sight for all program attendees with no columns or other obstructions to limit visibility from any part of the room.
- When defining the spatial relationship of the Program Room to the public entry, be aware that students will wish to enter and exit the room while an event is in progress. Consider a layout that will minimize disruption to an event in progress.

General audio-visual functional issues:

- Easy to use with minimal training.
- Easy to change room functions.
- Minimum required setup time.
- Technical facilities as indicated.

3.2.2 Group 1, Built-In Equipment and Furniture

- Wall or ceiling mounted projection screen, motorized. Ceiling mounted video/data projector, coordinated with projection screen.
- Stereo program audio playback loudspeakers located to either side of screen.
- Overhead sound reinforcement audio loudspeakers (mono)
- Assistive Listening System (ALS) summed from output of program audio and reinforcement audio. Provide receivers and signage in accordance with applicable edition of California Access Compliance Manual.
- Permanently installed presentation podium.

Criteria sketches SK-7 and SK-7.1 depicts prototypical Lecture Hall elements described further below. See Audio Visual criteria herein for additional information.

3.2.3 Acoustics

Specific recommendations should be prepared by the Project acoustical consultant. Refer to the Acoustics Standard.

3.2.4 Audio Visual

3.2.4.1 Projector

1. Minimum inputs, at least 1 each
    a. RGBHV wideband component analog video,
    b. HDMI DVI
    c. Serial port or IP network control interface.
2. SJECCD standard projector manufacturer and lamp assembly
3. Telephoto, standard and wide angle lenses available from manufacturer or 3rd party to suit application.
4. Securely mounted to shelf or ceiling mount with tamper proof fasteners or Kensington® type cable lock assembly, U-bolted to wall.

5. Technical Performance

   a. Optical path: Projection lamp, dichroic mirrors or filters, 3 Liquid Crystal Display (LCD) transmission panels or Texas Instruments DLP source, zoom lens.

   b. Where LCD projection provided: Active matrix, TFT.

   c. Resolution, graphics: Not less than 1920x1200 pixels (native WUXGA).

   d. Contrast ratio: Not less than 2000:1.

   e. Aspect ratio 16:10 native.

   f. Keystone correction: ≥ 6 degrees.

   g. Light flux: Not less than 7,000 lumens, ANSI IT7.215 test procedure.

   h. Projection lamp: user replaceable, long life, 2000 hour minimum at specified light flux.

   i. Lens:

      i. Zoom lens with optical focus.

      ii. Zoom ratio 1.27:1 minimum.

   j. Switchable reverse scan for rear projection.

   k. Switchable image inversion for front projection with projector installed upside down.

   l. Power consumption: Not to exceed 500 Watts at 120 Volts, single phase.

   m. Dimensions: Not to exceed 15 inches high x 12 inches wide x 22 inches deep.

   n. Weight: Not to exceed 20 pounds.

6. Control:
    a. Method: Infrared, Network (TCP/IP) or wired serial.
    b. Parameters, at least.
        i. On/off.
        ii. Source select.
        iii. Luminance.
        iv. Chroma.
        v. Gamma.
7. Heat management: Forced air
8. Manufacturers:
    a. NEC
    b. Epson
    c. Panasonic
    d. Hitachi
    e. or equal
9. Lenses
    a. Provide long throw (telephoto) lenses to adapt projector throw to indicated installation location and screen size.
    b. Manufacturers:
        i. By projector manufacturer.
        ii. Buhl
        iii. or equal.

3.2.4.2 Projection Screen

1. Provide a motorized projection screen, wall or ceiling mounted with an image surface of unsupported vinyl with an edge-tensioning mechanism.
2. Locate the projection screen at the front of the room, reasonably close to a wall. Preserve at least 8 feet of horizontal whiteboard on this wall for use by the instructor while the screen is lowered.
3. Provide the screen with the image aspect ratio in the computer industry HD Video format, 16:10.
4. Select the screen image height based on the maximum reasonable viewing distance.
5. Legible text requires a viewing distance-to-character height ratio of nominally 1:150. For contemporary computer programs and Web materials, provide for projected image height not less than 0.22 times the maximum viewing distance. Round up the image size to the nearest standard stock manufactured projection screen size.
6. To provide reasonably unobstructed viewing conditions for adult observers seated in chairs on a flat floor, locate the bottom of the active image area at plus 4 feet 0 inches relative to the finished floor. In cases where ceiling height is strongly constrained, the bottom of the image may be as low as 3 feet 6 inches. Review such conditions with SJECCD representatives not later than Design Development.
7. Where the ceiling elevation is higher than the minimum condition, provide the screen with black drop material above the image area.
8. Provide the image surface with high-contrast grey material or matte white. Do not provide material with high gain (gain to be less than 1.3).

3.2.4.3 Projector Mount

1. Provide a wall or ceiling projector mount. Wall mounted projection may require specification of a telephoto lens, however, such mounting conditions may be generally simpler than the DSA compliant bracing necessary to mount a projector suspended in the middle of ceiling plane.

2. Design shall comply with the California Building Code when loaded with a projector and lens weight of up to 20 pounds.

3. In plan, locate the projector mount on the center of the screen image area, on an axis perpendicular to the plane of the screen. Provide a design that allows for adjustment of up to 4 inches to each side of the projection centerline.

3.2.4.4 Podium

1. Provide high pressure laminate or similar permanently installed podium with:

2. Presenter surface adjacent to presentation screen with sufficient space for a presenter's laptop computer, top control panel, video insertion interface panel and quad power receptacle. Review provisions for accessibility at podium with SJECCD

3. Adjacent well/surface for presenter notes and/or use of image magnification unit. Well is located on end of podium that is remote from presentation screen.

4. Space below well is a locking compartment with access on the presenter side to compartment sized for 19" EIA rack mounted equipment internal to the lectern to permanently install Audio Visual equipment, including at least:

    a. Integrated control system/computer video interface/ program audio amplification/ sound reinforcement amplification/ audio signal processing/video switching.

    b. MPEG Decoder.

    c. DVD player.

    d. ALS interface

    e. Power for audiovisual systems

3.2.4.5 Sound Reinforcement Ceiling Loudspeakers

1. Provide ceiling-distributed loudspeakers for monophonic speech sound reinforcement.
2. Design and lay out to provide uniform coverage in the 4 Kilohertz octave band at target plane defined as an average seated ear elevation of plus 4 feet 0 inches.
3. Absent a detailed product selection and design effort, assume the coverage pattern of a single ceiling loudspeaker is a conical solid with a 60 degree included angle.

3.2.4.6 Program Audio Wall-Mounted Loudspeakers

1. At the front wall, to left and right of the projection screen, provide wall mounted playback loudspeakers.
2. Align loudspeaker centerline ideally with vertical centerline of screen. In no case should bottom of loudspeaker be below 9 feet above finish floor.
3. Horizontal location to be symmetrical about the projection centerline axis in plan, approximately 1 foot outboard of the projection screen image edge.
4. At each wall loudspeaker location, provide backing suitable for a loudspeaker weight of up to 15 pounds, with the centroid of the load at up to 12 inches from the face of the wall. Secure with tamper proof fasteners.
5. At each wall loudspeaker location, provide rough-in consisting of a 4 inch square box with a 1 gang ring, with minimum 0.75 inch raceway home run to permanently installed podium.

3.2.5 Lighting Criteria

Room lighting must be conveniently adjustable to meet the requirements of the variety of uses.

1. Reading of printed text and graphical materials by readers of all ages For suitable recommended practices, see Illuminating Engineering Society of North America (IESNA) RP-3-00 Lighting for Educational Facilities
2. At podium, provide sufficient light level incident to the vertical plane such that the most distant viewer in the room (with normal corrected vision) can discern facial features.
3. Audio Visual projection
    1. Provide for reduced light level.
    2. Provide a minimum light level not less that required by Code minimum egress lighting.
    3. Theater darkness is not required or desired. See the Audio Visual design assumptions herein. Provide room lighting in the projection mode such that the contrast ratio achieved on the projection screen surface will be not less than 200 to 1.
    4. Provide for control of daylight during daytime projection use. Blackout shades may or may not be required to meet the criteria herein.
4. Pendant fixtures are not permitted to obstruct the optical projection path.
5. Separately circuit and switch or dim the fixtures in the immediate vicinity of the projection screen.

3.2.6 Lighting Control

Provide a reasonably self-evident room lighting control system.

Provide lighting controls in a convenient, accessible location in the room that has a view of the entire room. Locate the controls where they will not prone to accidental or mischief operation. Coordinate such that at least 1 full-function control location is within easy reach of the podium.

A preset memory lighting control system is acceptable, but is not required. If a preset memory system is used:

1. Provide an entry station near the main public entry to provide basic on-off functions.
2. Provide a scene memory and recall panel at a convenient location with a view of the entire room.
3. Provide a serial interface to the control system installed at the podium.
4. Locate the dimming panel (power control portion) in an electrical equipment room or other suitable utility space where the acoustic noise and heat output of the panel may be mitigated.
5. Provide a dimming system with a manual backup feature that will allow for at least limited on-off operation of the room lighting in the event of a failure of the memory control system.

3.2.7 Impact from Adjacent Spaces

Consider the impact of lighting of adjacent spaces on the program room under various conditions of use. In particular, for the case when the Program Room is in use for media projection, consider and to the extent possible, mitigate potential sources of stray light that will impact the screen or the viewer's cone of vision. Consider the possible impact of stray lighting through the entry doors when students to enter an event in progress.

3.2.8 Signage

Outside the lecture hall public entry, provide signage to include at least the following elements:

- Pursuant to California Access Compliance Manual, the text "Assistive Listening System Available" and the graphic of the international symbol of access for the hearing impaired.

3.3 "SMART" CLASSROOMS

3.3.1 General Design Considerations

Comfortably accommodate instructional audiences of 20 to 49 people in flexible seating arrangement.

Provide a good line of sight for all program attendees with no columns or other obstructions to limit visibility from any part of the room.

When defining the spatial relationship of the Smart Classroom to the public entry, be aware that students will wish to enter and exit the room while an event is in progress. Consider a layout that will minimize disruption to an event in progress.

General audio-visual functional issues:

- Easy to use with minimal training.
- Easy to change room functions.
- Minimum required setup time.
- Technical facilities as indicated.

3.3.2 Group 1, Built-In Equipment and Furniture

1. Wall or ceiling mounted projection screen, non-motorized. Ceiling mounted video/data projector,
2. Stereo program audio playback loudspeakers located to either side of screen.
3. Permanently installed presentation podium
4. Criteria sketch SK-8 depicts prototypical Classroom elements described further below. See Audio Visual criteria herein for additional information.

3.3.3 Acoustics

Specific recommendations should be prepared by the Project acoustical consultant. Refer to the Acoustics Standard.

3.3.4 Audio Visual

Sketch SK-9 presents the general components of a Smart Classroom audio-visual system in single line form.

3.3.5 Projector

As for Lecture Hall above, with a minimum light flux of 4,000 lumens.

3.3.6 Projection Screen

1. Provide a manual projection screen, wall or ceiling mounted with an image surface of unsupported vinyl with an edge-tensioning mechanism. Where screen size exceeds 8'Wx5'H, provide a motorized screen.

2. Locate the projection screen at the front of the room, reasonably close to a wall. Preserve at least 4 feet of horizontal whiteboard on this wall for use by the instructor while the screen is lowered. This may require placing the screen off-center with respect to the centerline of the room.

3. Provide the screen with the image aspect ratio in the HDTV/DVD format, 16:9.

4. Select the screen image height based on the maximum reasonable viewing distance.

5. Legible text requires a viewing distance-to-character height ratio of nominally 1:150. For contemporary computer programs and Web materials, provide for projected image height not less than 0.22 times the maximum viewing distance. Round up the image size to the nearest standard stock manufactured projection screen size.

6. To provide reasonably unobstructed viewing conditions for adult observers seated in chairs on a flat floor, locate the bottom of the active image area at plus 4 feet 0 inches relative to the finished floor. In cases where ceiling height is strongly constrained, the bottom of the image may be as low as 3 feet 6 inches. Review such conditions with SJECCD representatives not later than Design Development.

7. Where the ceiling elevation is higher than the minimum condition, provide the screen with black drop material above the image area.

8. Provide the image surface with high-contrast grey material or matte white. Do not provide material with high gain (on axis gain to be less than or equal to 1.1).

3.3.7 Projector Mount

1. Provide a wall or ceiling projector mount. Wall mounted projection may require specification of a telephoto lens, however, such mounting conditions may be generally simpler than the DSA compliant bracing necessary to mount a projector suspended in the middle of ceiling plane.

2. Design shall comply with the California Building Code when loaded with a projector and lens weight of up to 19 pounds.

3. In plan, locate the projector mount on the center of the screen image area, on an axis perpendicular to the plane of the screen. Provide a design that allows for adjustment of up to 4 inches to each side of the projection centerline.

3.3.8 Podium

Provide high pressure laminate or similar permanently installed podium with:

1. Presenter surface adjacent to presentation screen with sufficient space for a presenter's laptop computer, top control panel, video insertion interface panel and quad power receptacle. Review provisions for accessibility at podium with SJECCD

2. Adjacent well/surface for presenter notes and/or use of image magnification unit. Well is located on end of podium that is remote from presentation screen.

3. Space below well is a locking compartment with access on the presenter side to compartment sized for 19" EIA rack mounted equipment internal to the lectern to permanently install Audio Visual equipment, including at least:

    a. Integrated control system/computer video interface/ program audio amplification/ sound reinforcement amplification/ audio signal processing/video switching.

    a. MPEG Decoder.

    b. DVD Player

    c. Power for audiovisual systems

3.3.9 Program Audio Wall-Mounted Loudspeakers

1. At the front wall, to left and right of the projection screen, provide wall mounted playback loudspeakers.

2. Align loudspeaker centerline ideally with vertical centerline of screen. In no case should bottom of loudspeaker be below 8'-6" feet above finish floor.

3. Horizontal location to be symmetrical about the projection centerline axis in plan, approximately 1 foot outboard of the projection screen image edge.

4. At each wall loudspeaker location, provide backing suitable for a loudspeaker weight of up to 15 pounds, with the centroid of the load at up to 12 inches from the face of the wall. Secure with tamper proof fasteners.

5. At each wall loudspeaker location, provide rough-in consisting of a 4 inch square box with a 1 gang ring, with minimum 0.75 inch raceway home run to permanently installed podium.

3.3.10 Lighting Criteria

Room lighting must be conveniently adjustable to meet the requirements of the variety of uses.

1. Reading of printed text and graphical materials by readers of all ages For suitable recommended practices, see Illuminating Engineering Society of North America (IESNA) RP-3-00 Lighting for Educational Facilities

2. At podium, provide sufficient light level incident to the vertical plane such that the most distant viewer in the room (with normal corrected vision) can discern facial features.

3. Audio Visual projection.

    a. Provide for reduced light level.

    b. Provide a minimum light level not less that required by Code minimum egress lighting.

    c. Theater darkness is not required or desired. See the Audio Visual design assumptions herein. Provide room lighting in the projection mode such that the contrast ratio achieved on the projection screen surface will be not less than 200 to 1.

    d. Provide for control of daylight during daytime projection use. Blackout shades may or may not be required to meet the criteria herein.

    e. Pendant fixtures are not permitted to obstruct the optical projection path.

4. Separately circuit and switch or dim the fixtures in the immediate vicinity of the projection screen.

3.3.11 Lighting Control

Provide a reasonably self-evident room lighting control system.

Provide lighting controls in a convenient, accessible location in the room that has a view of the entire room. Locate the controls where they will not prone to accidental or mischief operation. Coordinate such that at least 1 full-function control location is within easy reach of the podium.

3.4 SMALL CLASSROOM

For small classrooms and conference spaces seating fewer than 20 people, Group 1, Built-In Equipment and Furniture audio-visual provisions will be limited to provision of a manually operated rolldown screen, fabric backed, non-tab tensioned. Portable projectors and A/V cart mounted televisions will be used for presentation in spaces of this size.

Refer Standard Classroom Audio Visual criteria above for sizing and placement criteria of screen above finished floor. Center screen on conference table, where indicated.

4 MATV SYSTEMS

This section describes design standards related to design of the campus and building bi-directional CATV/MATV distribution systems.

Campuswide Bi-Directional MATV/CATV Distribution Systems will be installed in new buildings following reviewing by the SJECCD Broadcast, Facilities Planning and departments that will occupy the building of the building program and requirements for MATV systems operations.

Performance Requirements

Refer to SK-06 for a typical distribution diagram of a standard SJECCD MATV distribution system. System to achieve the following functional performance standards.

1. General

    a. Summary Description

        i. System receives feed in broadband optical format on single mode fiber over District owned fiber, and in broadband coaxial format from franchise CATV carrier

        ii. Broadband Optical Fiber Receivers convert the optical signal to radio frequency format.

        iii. Distribution equipment includes distribution amplifiers, cable, splitters, couplers, tapoffs, attenuators, tilt (equalization) networks, termination hardware related devices located at the BDF and on-floor IDF Rooms.

        iv. Station (subscriber drop) wiring connects from the distribution equipment at the on-floor IDF Room to the receptacles.

    b. Performance Requirements, Broadband Cabling

        i. The specified cable performance, pro-rated for total link distance.

c. Performance Requirements

i. Performance Requirements, Broadband Cabling

(1) The specified cable performance, pro-rated for total link distance

ii. Performance Requirements, Broadband System

(1) Radiation shall comply with Title 47, Code of Federal Regulations, Part 76, Cable Television Rules and Regulations

(2) The Television Allocation Study Organization (TASO) Grade of the signal of any channel when viewed on a standard commercial television receiver at any Broadband System receptacle tapoff outlet shall not be less than the TASO Grade of the same channel viewed on the same receiver when connected directly to the Broadband Optical Fiber Receiver through a passive attenuator.

(3) Provide for Cable Television (CATV) compatible adjacent channel operation with bandwidth to at least seven hundred fifty (750) MHz.

(4) Bandwidth of amplifiers shall be from 54 MHz to 750 MHz in the forward direction, unless otherwise noted

(5) Passive elements shall permit upstream (reverse channel) transmission of 5 MHz to 42 MHz sub-low band Very High Frequency (VHF) television channels from any drop to the individual building BDF.

(6) At each drop provide output levels of:

(7) Plus 6 to plus 12 dBmV from 54 to 450 MHz nominal, not greater than plus 15 dBmV at any drop location.

(8) Plus 3 dBmV above 450 MHz.

(9) The signal level from any channel to any adjacent channel shall not vary more than 2 dB at the drop location.

(10) Long Term Variations in Amplitude: Not to exceed 3 dB.

(11) Amplitude Response within any TV Channel: Not to exceed plus 1.0 dB.

(12) Amplitude Response for Entire Spectrum Sector: Not to exceed plus /minus 2 dB.

(13) Visual Carrier to Noise Ratio: Not less than 50 dB.

(14) Composite Triple Beat Ratio: Not less than 55 dB.

(15) Cross Modulation Ratio: Not less than 57 dB.

(16) Visual Carrier to Hum Modulation Ratio: Not less than 63 dB.

(17) Visual Carrier to Reflections Ratio: Not less than 46 dB.

iii. Connectors at all SJECCD cable ends shall meet serving franchised CATV carrier's specification at time of project design. If no specification provided, provide two-piece cylindrical clamping design equivalent to Thomas & Betts Augat LRC Snap-n-seal, or equivalent by Pico Macom. Hexagonal crimp connectors will not be accepted.

d. Channel Allocation Summary, Broadband System

i. Per the District basic service lineup at time of system commissioning.

2. Products

a. Manufacturers:

i. Active components

(1) Blonder Tongue

(2) Pico Macom

(3) QRF

ii. Passive components, General

(1) Blonder Tongue

(2) Pico Macom

(3) C-Cor

(4) Microwave Filters.

(5) Communications & Engineering Corp

iii. Splitters

(1) Regal Gold Series.

(2) Pico Macom TSB-1GFR series

(3) TVC GHS, GVS Series

(4) Blonder-Tongue SXRS, SCVS Series

iv. Cabling

(1) Belden

(2) Commscope

5 GLOSSARY

Audio-visual Terms	
Term	Definition
Audio/Visual	In this document, the term is used collectively to describe a wide variety of sound and video systems and subsystems, including sound reinforcement, audio playback, public address, foreground and background music, television (satellite, CATV, MATV), baseband video (composite), HDMI, HD Analog), computer graphics (VGA and higher speed) and production intercommunications systems.
Audio Playback	The reproduction, through use of processing hardware, amplifiers and loudspeakers, of either pre-corded program material (e.g. a CD, a tape, a digital audio track, the audio portion of a television feed, a videotape or DVD) or the playback of live sound originating from a physically different space or property (overflow seating, Webcast, simulcast, etc.).
Audio-TeleConferencing	At a small scale, what is done with a speakerphone (e.g. Polycomm). At a larger scale, a dedicated system that relays audio between two points over telephone lines, while preventing the emergence of echo or audio feedback. Other audio issues involve control of background noise (HVAC Noise Control, sound isolation) and control of reflections within the room (Room Acoustic treatment).
Background Music	Generally, music that is played so softly and innocuously in a space as to fade into the "background", forming more of a subliminal stimulus or masking of other sounds than a focal point itself. Using inexpensive loudspeakers, the sound is usually further shaped to remove the bass/beat (lows) and syllables (highs) to prevent the sound from drawing attention to itself. Contrast with Foreground Music.

Audio-visual Terms	
Term	Definition
Balun	A transformer applied to each end of standard Category rated structured cabling to permit its use to transmit line level audio, composite and other AV signals, computer graphic video and MATV (broadband). Baluns come in a variety of form factors, ranging from something the size of a pencil to the size of a garage door remote, and ranging in cost from $150 to $250 for a pair of ends.
CATV	The signal delivered by a franchised cable television carrier, such as Comcast.
CobraNET	A recently evolved standard for distributing up to 64 channels of professional audio (line level, 24 bit, 48 kHz) as Switched 100BaseT Ethernet.
Composite Video	A legacy analog video format video most commonly associated with consumer VCR's. In the U.S., this is technically NTSC standard video. Not suitable a medium for transmitting computer graphics. By comparison with Computer Graphics, a simplistic evaluation of Composite Video would assign it a maximum resolution of 440x330 "pixels".
Computer Graphics	The type of video created by a computer and displayed by a computer monitor. Beginning with lower resolution standards, such as VGA (640Hx480Wx60 frames/sec), an almost limitless and increasingly high resolution number of standards are supported. Commodity computer monitors and video projectors support WUXGA resolution (1920×1200) at 76+ frames/second), however yet higher standards are supported on engineering workstations, high-end PC's and premium priced Projectors.

Audio-visual Terms	
Term	Definition
Contrast Ratio	The difference between the brightest and darkest perceived object within the field of view. The typical design ratio for computer screen environments is 4:1 with a maximum ratio of 10:1. A Comparison of Contrast Ratio Limits 100,000:1 Human eye. 10,000:1 Still photography, large format, museum quality silver gelatin print. 1,000:1 Cinema photography, 35mm Panavision camera with Panavision prime lens, Kodak wide latitude stock, custom negative processing, positive print struck directly from camera negative, observed in a laboratory quality control screening room conforming to SMPTE standards. 150:1 Typical 35mm cinema viewing conditions in a first-run venue. 100:1 Professional (i.e. Hollywood production house) video photography. Digital processing camera, digital recorder, monitor with SMPTE type C phosphor, adjusted per SMPTE recommended practices. Viewing room meeting SMPTE standards. 20:1 Typical limitation on over-the-air NTSC broadcasting. 10:1 VHS tape, typical. 4:1 Compressed video for Web distribution.
Device	Generic term for any computer or peripheral with a network address.
Display Device	Generic term for any item of equipment that produces a visible image.
Facility Panel	In essence, a plate placed in the wall or floor that contain specialized inputs and outputs associated with Audio-Visual uses. Whereas the plates commonly used for structured cabling systems are small, standardized, high-density and inexpensive (see Glossary entry above), those associated with A/V are larger, custom, less dense, and use specialized connectors.

Audio-visual Terms	
Term	Definition
Feedback	The unpleasant condition of "howling" caused when a sound system makes a noise that is picked up by its own microphones which causes the system to make the same noise, only louder, in an ever increasing spiral. Proper selection, separation and orientation of microphones and loudspeakers and acoustic treatment can alleviate this condition, as can use of modern "feedback suppression" audio processing hardware.
Foreground Music	The next step in the continuum from background music. Foreground music is music played loud enough to interfere with normal conversation and to become a focal element of the space it is in. In addition to simply increasing the level the spectral shape of the sound is generally boosted at either the "treble" (high) end, or the "bass" (low) end in order to give it prominence. Better loudspeakers are required than with background music in order to retain fidelity.
Front Projection	An image display produced by projecting light on to a reflective surface (front projection screen). The method used in a motion picture theater. Scatter (ambient) light in the room is also reflected off the image surface, reducing contrast ratio. Functions best only in spaces with minimum ambient light, as for example, theater darkness.
MATV	The delivery of CATV and other locally derived video sources within a property using multichannel (broadband) techniques that a conventional television or VCR can "tune" to. Typical modern MATV systems can deliver an analog bandwidth of at least 750 MHz, suitable for delivery of at least 110 NTSC channels of analog service.
Pixel	In a display device, the smallest element of the device that may be individually addressed to assemble the entire image. For example, a laptop computer with an XGA display provides an image made up of an array of pixels 1024 wide by 768 high.
Production Intercom	A system of "backstage" communications used by technical staff in producing live events. Typically, participants wear headphone/ microphones and beltpacks and connect by wired or wireless means to a system providing one or more discrete channels of communications.

Audio-visual Terms	
Term	Definition
Satellite Video	Can mean a multitude of things. Most facilities receive satellite video ("downlink"), but do not locally originate it ("uplink"). Commercial television reception is most commonly done today with a Dish or DirectTV/Echostar compact dish, providing a broad range of programming. An increasingly smaller number of institutional and educational distance learning programs are distributed via C and Ku band satellites.
Sharpness	A relative metric of human perception of detail when viewing an image on a display system. A function of both pixel size and contrast ratio.
SMPTE	Society of Motion Picture and Television Engineers. Professional society that sets standards used in television and cinema presentation.
Sound Reinforcement	The use of a system of microphones, processing hardware, amplifiers and loudspeakers to make a live talker/presenter/singer sound louder and more intelligible to the listener. The use of open microphones creates the possibility of audio "feedback". The presence of a physical source of sound (the talker) places constraints on the location of the loudspeakers to ensure that the "suspension-of-disbelief" is maintain by making the audio image match the visual one. By contrast, audio playback is much simpler.
Video Conferencing	As the name implies, two way audio and video communications between two groups of people over telephone lines (or the Internet, or similar links). Passing the video images between parties requires considerable bandwidth in the link between the sites. Other video issues relate to how the cameras on the two ends are controlled (requiring operators and multiple cameras whenever more than a 6-8 people are involved at one end), how the audio is switched to follow changes in the video, how the faces are lit to present a useable camera image, and control of the sources of stray light and reflection in the room. All of the challenges in audio-conferencing noted above are also present in the Video Conferencing application.

Audio-visual Terms	
Term	Definition
Videowall	A large scale display surface made stacking together an array of individual smaller display devices. A videowall processor is used to assign pixels of an incoming signal to pixels of an individual display device. Mullions may be a distraction. Matching the individual display devices to one another is required. Can be reasonably bright. Requires 3 to 5 feet of depth. Usually maintenance intensive to own and operate.
Viewing Distance	Distance of the viewer from the visual display device, usually expressed in terms of image height (H). Controlled by visual acuity, contrast ratio, and image content. Comparison to viewing distance for typical conditions. Reading this document, 1.5H Desktop computer, 1.5H to 2.0H. Direct view television set in typical home living room, 4H to 9H typical, 12H maximum. Motion picture theater, SMPTE recommended practice, 2H to 6H. Multiplex theater, seats 1H to 4H, preferred seating at about 3H.
Visual Acuity	The limit of the human vision system, when corrected to population normal vision, to resolve detail. For text characters, a typical limit is reached when the character is less than 150th of the distance from the observer

PART B

INFORMATION TECHNOLOGY

1 PURPOSE, CONTENT AND ORGANIZATION

SJECCD implements educational technology and communications systems on its campuses to support the Education Master Plan and to serve the campus community including the students, staff and administration. In broad terms the areas of focus of this document are design standards for:

- Communications Rooms
- Structured cabling systems and related building infrastructure
- Provisions to support Distributed Antenna (DAS) Systems

The purpose of this implementation standards document is intended to communicate and document the goals, issues, objectives and approaches to be used by persons with an interest in the implementation of the Technology Programs for the San Jose Evergreen Community College District including:

- District Facilities Staff, including Program Managers
- District ITSS staff
- Site administration, operations and instructional personnel
- Facilities Planning Office Project Managers
- Architectural Teams working on the design of new and modernization projects.

As such, the intent of this document addresses several audiences with differing interests. To aid in each party in locating the information they require, the document includes short subject focused chapters, beginning with general issues, and working toward increasingly specific and technical ones. Campuswide distribution issues (outside plant) are covered before issues of distribution within individual buildings (riser and horizontal).

This document does not address the design of campus electrical systems (except as they relate to communications and educational technology design) nor that of other low voltage systems, including campus fire alarms, intrusion detection, access control and/or CCTV systems, which are be addressed in separate standards.

1.1 NOMENCLATURE

To aid in ready comprehension of this document by ts primary intended readership, terms used throughout to identify building termination locations and materials reflects terminology currently most familiar to architects and engineers, The terms used are based on historical telephone company nomenclature and/or electrical service nomenclature that continue to be widely used in university, college and K-12 construction. The two systems of labeling are related as follows:

Nomenclature used in this document	BISCI/ANSI/TIA Nomenclature
Communications Rooms	
ADF	MC
BDF	IC
IDF	TC
End user terminations	
Plates and Jacks	Work Area Outlets (WAO)

The requirements for locations identified by this matrix remain those as recommended by BISCI, the American National Standards Institute (ANSI), the Telecommunications Industry Association (TIA) and Electronic Industries Alliance (EIA) standards, where specific information is not provided in this document.

1.2 TIMELINE FOR STANDARD

While the interior conduit and outside plant infrastructure described by this document have intrinsically long useful lifespans, the communications cabling and equipment does not. Communications cabling typically has experienced a 10-15 year lifespan before obsolescence; IT networking hardware may be obsolete in as little as 5-7 years, and certainly in need of replacement due to incremental failure in a 10-12 year span. It is therefore expected that this document will need to be reviewed and updated at least biannually to ensure its continuing relevance to ongoing District construction.

2 GOALS

The principal goal of this document is to promote consistency in the implementation of technology based systems across the District's sites. The reasons to do so are reviewed in the following summary sections.

2.1 PROMOTE STANDARDIZATION

A standardized implementation across all sites will yield several positive benefits:

Common capabilities. If all sites have a common core infrastructure, it becomes possible to easily roll out Districtwide programs or upgrades to the communications facilities, despite the infrastructure having been constructed by differing subcontractors. It is further possible to easily replicate successful programs in use at one site to other sites knowing that their physical facilities are similar.

Increased staff familiarity. A standard implementation will be easier for District level staff to maintain and troubleshoot. Instructional staff can also expect to transfer between sites and find similar capabilities available.

Reduced costs. By standardizing on common components, maintenance personnel and outside contractors serving the District will need to inventory fewer parts and pieces, thereby reducing their cost in responding. This is particularly important to Districtwide infrastructure systems that touch each campus and will need to be adjusted and updated by a common pool of District and outside systems (hardware) contractors.

Equity. Use of identical components at all sites promotes equity between sites.

It should be noted that at within the District campuses, completely new communications infrastructure has already been placed in the last few years. Where a site is has been largely implemented using techniques contrary to the new District standard, it will often be necessary to assess whether continuing the existing site standard will be less disruptive and confusing than implementing a limited quantity of new work based on the new standard.

2.2 PROMOTE TECHNOLOGICALLY APPROPRIATE STANDARDS

Finally, it is important that the implementation of the technology based systems at the separate campuses reflect a similar recognition of appropriate and current technology implementation standards. For many areas of communications practice, particularly for commercial office buildings, appropriate design standards can be found in the ANSI/TIA-569-C (2012) Telecommunications Pathways and Spaces and in the current BISCI Telecommunications Distribution Methods Manuals. BISCI is the communications professional society most closely identified with several of the technologies the District is proposing to implement. BISCI's numerous professional practice manuals, however, are largely silent of the topic of school infrastructure, thus necessitating the preparation of the materials herein.

The purpose of the standard is thus to permit implementation of both best current practice today, but also to permit ready adaptation of the current implementation to new practices when and if the District chooses to do so.

This document will therefore seek to achieve the benefits outlined above by presenting the District's staff and designers with a standard for implementing a Structured Wiring Plant, and Broadband Video Distribution and related aspects of implementation in a manner that is standardized across the District.

3 Campus and DSA Approvals

SJECCD's ITSS department is responsible for SJECCD's inside and outside communications system facilities, network connectivity, and the associated backbone equipment. The SJECCD's ITSS department must approve all communication designs. DSA approval must be obtained on all projects with a construction cost greater than $20,000, including communications projects. The design team shall utilize the services of a BISCI RCDD to prepare the contract documents for SJECCD projects.

3.1 SUMMARY OF ITSS REVIEW PROCESS

In order for ITSS to complete its review, complete project information relevant to communications is needed at each review milestone in the development of a project's plans. During the design phase of the project, the SJECCD Facility Planning Office Project Manager will typically be the primary point of interface between the external A/E/C (architect/engineer/consultant) team, campus departments and ITSS. Through its review and input to the Facility Planning Office, ITSS will oversee the development of the telecommunications portion of a project, and will provide review and comment at each phase of work - programming, schematic, design development, construction, and closeout

At each increment listed below, the SJECCD ITSS Project Manager shall be provided a full set of drawings, which should include Title Sheet, Architectural drawings, demolition drawings, single line diagrams, details, site plans, HVAC, Plumbing, Fire Protection and Electrical drawings. SJECCD ITSS Project Manager comments and requests must be incorporated into the reviewed documents in full for the next review of documents, or an explanation must be provided to ITSS Project Manager through the Facility Planning Office Project Manager, regarding the status of comments and requests.

- Programming. The A/E/C team should develop the detailed project program, part of which should identify the telecommunications, a/v, and education technology needs. The SJECCD ITSS Project Manager shall be provided copies of the programming documents describing the college approved program.

- Schematic Design. These are the initial planning documents and design drawings outlining general project parameters in the early stage of the project. The Schematic Design IT documents shall consist of a System Narrative, and plan locations for communications rooms, including locations and gross areas for Building Distribution Frame (BDF), Intermediate Distribution Frame(s) (IDF), Critical Pathways and Campus Connection Points on the floor plans, and there should be a schematic cost estimate with break outs for the telecomm + a/v infrastructure and for Group II telecomm and educational technology equipment. SJECCD ITSS Project Manager shall be provided schematic design (SD) documents and Specification Documents for each stage of the schematic design process, and provided a minimum of ten workdays from date documents are received by ITSS for review and return of comments.

- Design Development. As the architectural design process progresses, more detailed information is developed to show the enhanced structures and systems planned for the building. Design Development IT documents shall consist of outline specifications, in the CSI format and drawings including title sheet, single line diagrams, site plans, floor plans showing placement of BDF, IDF, and major pathways, as well as typical plate distributions for each type of space present in the building, indicating conformance with the plate placement standards outlined herein and the ability of the proposed communications rooms to house them according the SJECCD rack density standards. The SJECCD ITSS Project Manager shall be provided Design Development (DD) drawings and specification for each submittal stage of the Design Development process, and be allowed a minimum of ten workdays from date documents are received by ITSS for review and return of comments. SJECCD will use the Design Development process to evaluate whether there is sufficient funding to build out all the spaces to meet the communications and educational technology standards for all of the building's spaces. If not, then the District's Project Manager in Facilities Planning will need communicate with affected departments to resolve how much of the systems will be built out and how much will be stub-out for completion at another time.

- Contract Documents. These documents depict the final design before bid submittal is undertaken. The compled communications Construction Documents to include:

  1 Site Plans - The infrastructure necessary to interconnect buildings, to include conduit, maintenance holes, hand holes, pull boxes, building entrances, and connection to the nearest serving facility.

    A Outside plant ductbanks, including size, depth of placement, manhole and vaults sized and uniquely numbered consistent with the campus numbering system.

    B Coordination with Civil and Electrical Plans and Building Footings, indicating how required bend radii will be maintained.

  2 Floor plans indicating horizontal and vertical pathways and cabling infrastructure.

    A Faceplates.

    B Cabling and wiring for a complete telecommunications system.

    C The infrastructure necessary to support the horizontal, riser and campus cable plants – including a complete system of conduits, raceways, backboxes, floor boxes, cable trays, J-hooks and sleeves.

3 The BDF and IDF locations.

A Closets - BDF & IDF locations with closet specific detailing of at least the following:

1. Floor plans showing dimensioned racks and cabinets conforming to SJECCD standards, ITSS reference workstation, clearances, convenience power, electrical ground

2. Interior elevations – showing backboard, AT&T and Comcast clear areas, campus MATV and telephone wiring cross-connection blocks, conduit routing, and slack storage and wiring management, vertical relationship of racks to tray

3. Rack elevations for each rack, showing arrangements of copper and fiber patch panels, wire management, full height outlet strips, hold clears for college provided communications equipment, labeling of rack.

4. Reflected ceiling plans, showing cable tray routes, overhead electrical feeds, lighting and sleeves to floors above.

5. Additionally, detail each of the following as they occur:

a. Major pathway entries including fire stopping.

b. Amperage requirements for electrical panel & outlets (refer to the requirements for each communications closet type).

c. HVAC (refer to the requirements for each communications closet type).

d. Fire protection (at ADF's).

4 Details

A Through penetration sealant details.

B Grounding and bonding requirement in conformance with ANSI/EIA/TIA 607 - Commercial Building Grounding and Bonding Requirements for Telecommunications.

C Electrical service requirements and service points for BDF's and IDF's, as well as, any necessary ancillary electrical work as part of the project.

D Campus standard plate arrangements

E A/V control panel details.

5 CSI Format Specifications

6 Cut sheets of design basis materials where not already a campus standard item.

7 Detailed cost estimate provided at 90% CD's that should have break outs for telecomm + a/v base building infrastructure and for necessary Group II equipment. ITSS will assist the A/E/C team in identifying relevant Group II equipment costs.

A The SJECCD ITSS Project Manager shall be provided Construction Documents (CD) and Design Specification Documents for review at each stage of the Construction Document process, and be allowed a minimum of ten workdays from date documents are received by ITSS for review and return of comments.

8 Closeout Documents. These documents are prepared by the Construction Contractor and should include:

1. As-built Drawings – These drawings and documents represent the project as it is finally constructed and are deliverable prior to final inspection of the project. The as-builts should reflect the final numbering system for both the rooms and plates as it appears in the as-built conditions in the field as well as any field changes to the major pathways and communications rooms after the issuance of the bid set. The contractor is to be required to update such field changes to their field set on a daily basis.
2. Test reports for all communications cabling installed for the project in CD-ROM format.

4 BACKGROUND ON CURRENT SJECCD INFORMATION TECHNOLOGY SYSTEMS

Summary: This section describes existing and planned active components and systems being implemented by SJECCD have influenced the structured cabling and educational technology standards of this document.

Several of the core communications systems of SJECCD have new, expanded or soon-to-be realized capabilities that bear on the implementation of the new infrastructure and systems described by this document.

4.1 VOICE-OVER-IP VOICE SWITCH

As noted in the section above, the District has recently committed to a voice telephony system based on Voice-over-IP (VoIP) switches. As a practical matter, a pure VoIP telephony implementation resembles that of computer networking more closely than that using a traditional PBX. Like data networks, VoIP telephony transports its signal from building to building as data packets over fiber optic cabling. The signal is further delivered from an entrance closet at the ground level to a closet close to the end device in the building over fiber. Power to drive the end VoIP telephone is then combined with the signal and delivered over up to 295 feet of copper category rated cabling. The extensive use of fiber in the path means that VoIP instruments are vulnerable to outage when power is lost at any of the serving closets along the path. To overcome this obstacle, SJECCD uses two techniques. VoIP instruments are only being deployed in offices and other secure areas of the campus. In these areas, a least one instrument in 10 will be a traditional multi-line digital PBX instrument. Such instruments can be supported from a central campus battery over a continuous copper path of typically more than 3,000 feet. In addition, classroom telephones, potentially exposed to abuse, will continue to be analog instruments, which are also supported on continuous lengths of spliced copper cabling that provides functionality at distances of 4,000 feet or more.

4.2 WIRELESS NETWORKING

SJECCD ITSS currently plans to implement systems based on the IEEE 802.11n standard, with available density of in-ceiling wired ports to transition to 802.11ac .

5 CABLE PLANT - GENERAL CONSIDERATIONS

In the sections that follow, specific cabling systems and their arrangements are described. To preserve their utility, adhere to the following guidelines:

5.1 TERMINATION

All communications cabling to be terminated. Unterminated cabling cannot be tested. Without testing, the value of the work provided by the contractor can not be established - the presence of kinks, slit jackets and/or the results of excessive pulling tension can not be detected by merely looking at the ends of the cable.

5.2 LABELING

5.2.1 General

All cabling runs to be labeled in conformance with ANSI/TIA-606-B (2012) Administration Standard Telecommunications Infrastructure and the following. The Contractor shall provide tags, straps, and adhesive labels. These tags, straps, and adhesive labels must be of high quality that will endure heat, water and time. The Contractor is required to provide labels for all cables at each termination end and at each cross-connect.

5.2.2 Outside Plant & Riser

In the outside plant, the cabling needs to be labeled at each pullbox, vault and manhole, fiber patch panel, fiber terminal box, lightening protector, terminal blocks and/or building MATV splitter.

Fiber backbone cable labeling shall follow the convention “Fiber strand type/campus assigned strand count/three char source building designation – closet termination designation/ three char destination building designation – closet termination designation”.

Example: MMF/1-12/XXX-MC2.1/YYY-TC2.2

where XXX is the campus approved abbreviation for the source building, YYY is campus approved abbreviation for the destination building, MC2.1 is the campus approved designation for the source closet/room and TC2.2 the campus approved designation for the destination closet/room.

Similarly copper backbone cable labeling shall follow the convention “V/campus assigned pair count/three char source building designation – closet termination designation/ three char destination building designation – closet termination designation”.

Example: V/1-25/XXX-MC2.1/YYY-TC2.2

Coaxial backbone cable labeling shall follow a similar convention “CATV/three char source building designation – closet termination designation/ three char destination building designation – closet termination designation”.

Example: CATV/XXX-MC2.1/YYY-TC2.2

5.2.3 Inside Plant

Inside data/voice and MATV cabling to be labeled at the jack, at the cable behind the plate, where the cable terminates in the closet and at the point of termination, where the patch panels and terminal blocks. Interior plates are to be labeled in the following manner:

1. Voice/Data station cable labeling shall follow the convention:
    a. Each jack will be assigned a unique number beginning with G001, and incrementing through each outlet.
    b. Data outlets will be labeled with the suffix D. Voice jacks will be labeled with the suffix V.
    c. The jacks will be labeled from top to bottom in each outlet location.
    d. Where multiple outlets exist in a room, the Contractor shall label the outlets, proceeding clockwise, beginning with the nearest outlet on the left, when standing in the main doorway to the room.
2. Video drop cable labeling: The Contractor shall label the video drop cables with the individual room number and an A or B suffix.

5.3 TESTING

All cabling and terminations to be tested as follows:

- Inside Data/Voice station cabling to be Permanent Link tested with a Level IIE, Level III or later tester for full compliance with ANSI/TIA 568-C.1 and C.2, (to include all current addendums) Category 6 specifications as follows

Frequency (Mhz)	Insertion Loss	NEXT (Worst pair to pair)	Power Sum NEXT	ELFEXT (Worst pair to pair)	Power Sum ELFEXT	Return Loss
.772	-	-	-	-	-	-
1.0	1.9	65.0	62.0	64.2	61.2	19.1
4.0	3.5	64.1	61.8	52.1	49.1	21.0
8.0	5.0	59.4	57.0	46.1	43.1	21.0
10.0	5.5	57.8	55.5	44.2	41.2	21.0
16.0	7.0	54.6	52.2	40.1	37.1	20.0
20.0	7.9	53.1	50.7	38.2	35.2	19.5
25.0	8.9	51.5	49.1	36.2	33.2	19.0
31.25	10.0	50.0	47.5	34.3	31.3	18.5
62.5	14.4	45.1	42.7	28.3	25.3	16.0
100.0	18.6	41.8	39.3	24.2	21.2	14.0
200.0	27.4	36.9	34.3	18.2	15.2	11.0
250.0	31.1	35.3	32.7	16.2	13.2	10.0

- Outside plant and riser voice cabling to be tested to meet USOC standards, with the following parameters documented for end-to-end performance for each termination location on each pair:

  1 Continuity

  2 Reversals

3 Shorts

4 Opens (Unbalanced)

5 Splits

6 Transpositions

7 Grounds

8 Overall loop resistance measured in Ohms

9 Total cable length measured in Feet

- Installed fiber cabling to meet the performance as described below when tested with the applicable methods specified in as referenced in TIA/EIA-568-B.1. Tests of link attenuation (i.e. power insertion loss, power meter test to be performed bidirectionally using a power meter):

Maximum Loss Measurements for Installed Fiber Optic Cables	
Mated Connector Loss:	0.75 dB per mated pair
Splice Loss: (Fusion or Mechanical)	0.3 dB
Fiber loss: Multimode	3.5 dB/km @ 850 nm 1.5 dB/km @ 1300 nm
Fiber loss: Singlemode	0.5 dB/km @ 1310 nm (Outside Plant Cable) 0.5 dB/km @ 1550 nm (Outside Plant Cable) 1.0 dB/km @ 1310 nm (Inside Plant Cable) 1.0 dB/km @ 1550 nm (Inside Plant Cable)

- Contractor to test the performance of the installed cabling of 500 meters or more with both a Power Meter, as specified above and an OTDR.

5.4 DOCUMENTATION

The test results above to be provided to the District as printed documentation and on CD-Rom.

Contractor to provide the Owner with as-built drawings indicating installed conditions of all interior and outside plant cabling runs at least the following:

- Campus riser diagram and or functional/single line for each system installed.
- Floor plans showing location of each jack.
- Risers and floor plans to explicitly identify each cable run using the cable numbering system defined above.

6 SITE DISTRIBUTION

This section describes issues and design standards related to creating inter-building communications connections. The section primarily applies to the Ocean campus, which features multiple detached buildings. Single building campuses, such as Mission and Chinatown, will only have utility entrances and SJECCD fiber MAN entrances outside of the building footprint.

6.1 REFERENCE STANDARDS

- California Electric Code. Consult with the SJECCD Facilities Planning Project Manager and or the Project Architect as to the edition of the Code that applies to this Project.
- ANSI/TIA-569-C (2012) Telecommunications Pathways and Spaces
- BISCI Customer Owned Outside Plant Design Manual. Omit references to Aerial plant, Direct buried plant or Air-pressurized outside plant.
- ANSI/TIA-758-A, Customer-Owned Outside Plant Telecommunications Infrastructure Standard
- California Public Utilities Commission General Order 128 - Rules For Construction Of Underground Electric Supply and Communication Systems, 1998 or latest edition. (http://www.cpuc.ca.gov/PUBLISHED/Graphics/587.PDF)
- AT&T BIC Engineering Standards – Obtain from AT&T representative for this campus. Applies at entrance to campus ADF/MPOE/MDF facility only.
- PG&E Greenbook (http://www.pge.com/includes/docs/pdfs/mybusiness/customerservice/otherrequests/newconstruction/greenbook/2012_Greenbook_Manual_ti6.pdf) – for issues involving the construction of underground utilities in the vicinity of PG&E gas and electric lines.

6.2 INFRASTRUCTURE DESIGN STANDARDS

- Underground Only. New college inter-building communications distribution shall be accomplished using underground ductbank distribution. Other means shall not be employed.
- Star Wired. The outside plant ductwork shall at minimum provide for a "star wiring" topology from the primary campus service room(s) (ADF) to the building being served exclusively by means of underground service ductbank. It shall not be acceptable to connect a new building's communications service to or through an existing building other than an ADF. Where practical, connect new campus buildings to their serving ADF (or secondary ADF) using physical diverse routes to improve the reliability of service to the building.

6.3 CAMPUS DUCTBANK CONSTRUCTION STANDARDS

- Duct Materials. Underground communications ductbank construction will typically be of PVC Schedule 40 with Schedule 80 or coated rigid steel used at the risers.
- Encasement. Concrete casement of SJECCD ductbank is required to protect it against damage from vehicle traffic. Encasement to utilize 3000 psi minimum hardrock concrete and provide minimum of 3" of cover from the exterior faces of the ducts.

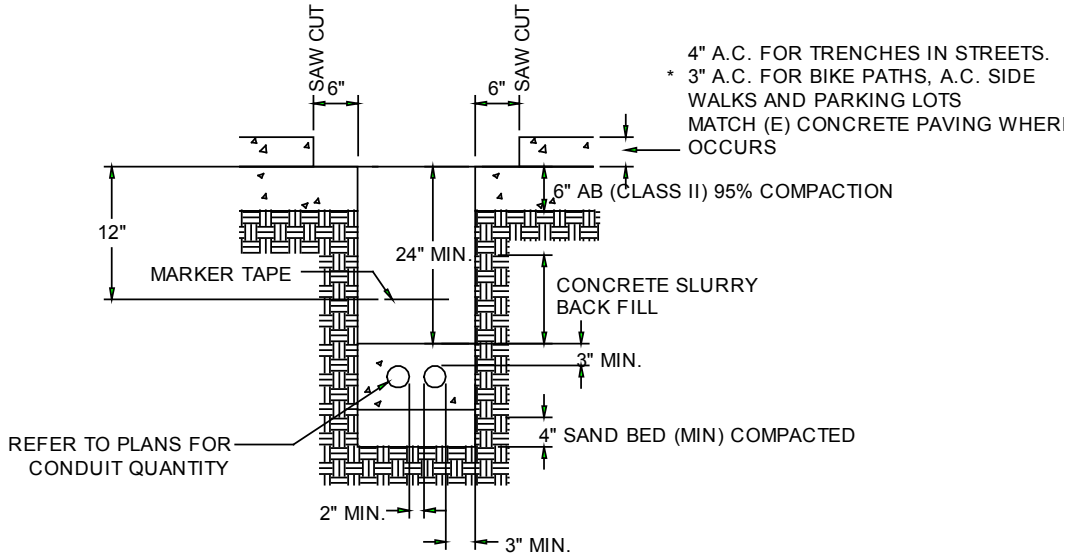


Figure - Concrete Encased Comm Ductbank

Figure 1 depicts a typical detail of the encasement. Figure 1 illustrates a further recommendation of using of slurry backfill in paved areas. Although not strictly a communications issue it is generally cheaper and more effective to use slurry backfill in paved areas, rather than trying to compact the native soil to 95% or better. Native backfill is appropriate to unpaved areas. Where compacted earth backfill is utilized place a warning orange tape in trench above duct as noted in Figure 1.

Along all non metallic ductbank runs, place a 10 gauge copper tracer wire with both ends accessible from within the vaults. This permits location of run following installation.

- Separation of Services. As the ductbank construction is not ferrous, no signal immunity is provided by the ductbank itself. For the signals of interest cross-talk is not normally an issue, except in cases where non-electromagnetically balanced high voltage power distribution is located in a duct adjacent to voice services. Outside plant voice cabling is only loosely twisted, and if the shield is not properly grounded, electrical harmonic noise can be induced in the audible spectrum. As a precaution, where comm and electrical are in adjacent ducts, use the other comm runs, including fiber, and MATV, to isolate the voice services from the power. For concrete encased ducts, such as are required at SJECCD campuses, separate communications lines from power by a minimum of 6” for power lines under 600 VAC, and by a minimum of 12” otherwise.

- Quantity of Ducts. The following minimum duct service quantity standards apply for campus communications use, based on the GSF of the served building. The ductbank standard applies from the main building communications service entrance room (BDF) back to the serving ADF, unless an ITSS representative directs that connection to an intermediate vault or maintenance hole is sufficient for the needs of this project. The intent is that each building is served with spare conduit or gross conduit cross-section in addition to those necessary to provide the initial service in order to provide a means of pulling in new service without having to first pull out the existing fill.

Building Gross Square Footage (GSF)	Minimum Quantity of Communications Ducts Serving Building
0-2,500 GSF	2-2”
2,501-5,000 GSF	1-4”
5,001-10,000 GSF	2-4”
10,001-25,000 GSF	3-4”
More than 25,000 GSF	4-4”

- Sweeps. Size minimum SJECCD outside plant horizontal sweeps in a ratio of approximately 12x’s the nominal trade size diameter of the conduit provided (i.e. a 48” radius for a 4” conduit) and vertical sweeps of at least 10x’s the conduit trade size. Note that AT&T typically requires a 60” minimum diameter for the horizontal sweep of conduits allocated to its entrance.
- Pull Ropes. Provide each duct with a 3/8” nylon pull rope.
- Provision for Future Expansion Areas. Where sites have an identified requirement for future expansion into a given area of the site, communications infrastructure shall be extended to the edge of the hardscape of the current site plan and terminated in a handhole or vault. In the event the utilities are terminated at the edge of a landscape area or similar, terminate the underground duct run by capping it and marking the location with a redwood stake attached to the tracer wire.

6.4 VAULTS

- Purpose. Vaults and manholes are placed in the outside plant primarily to facilitate cable pulling. In addition, they house cable splices (see restrictions below) and permit a single run of multiple ducts to branch into multiple directions.
- Separation from Power. Class 1 separation requirements dictate that communications vaults are separate from those of power.
- Maximum Distance between BDF's and Vault or Vault-to-Vault. Refer to figure C.5.2 of ANSI/EIA/TIA 569-A for the maximum acceptable distance between maintenance holes and/or vaults. Note that increasing the number of bends in the run or reducing the diameter of the bend shortens the maximum distance between vaults. In no instance should any run contain over 180 cumulative degrees of bend.
- Construction. Intended for communications use (not electrical, plumbing, sewer, etc.). Vaults are to be placed in non-traffic bearing landscape areas wherever possible. In such areas, provide Quazite Composolite type composite boxes with Heavy Duty Covers to minimize the cost and handling weight associated with concrete pull boxes. Where placement in traffic areas is unavoidable, specify concrete vaults meeting AT&T standard for size with non-skid, diamond plate steel lids with lifter arms, rated for AASHTO H-20-44 loading Acceptable Manufacturers: Jensen Precast, Utility Vault Company. Figure 2 provides a detail of a typical traffic rated vault. Minimum size of handholes to be 24"x18"X36"D, such boxes should normally be used only at the end of a run serving a Small Building. Typical handhole to be 24"Wx36"Lx36"D to 3'x5'x36" Size vaults and handholes to permit a full box loop of the specified cable fill - see minimum bend radius requirements elsewhere herein below. Unless otherwise noted, minimum bend radius of permanently installed cable is 10x the cable diameter.
- Drainage. Provide a gravel base under the vault and a well of gravel (4 to 6 feet deep under the sump drain) for drainage in all communications handholes. Where precast, solid bottom vaults are employed, provide drain hole at base. Exception: Omit the sump drain where local watertables are at the height of the box more than a few weeks out of the year. In such location, SJECCD will pump the box dry.

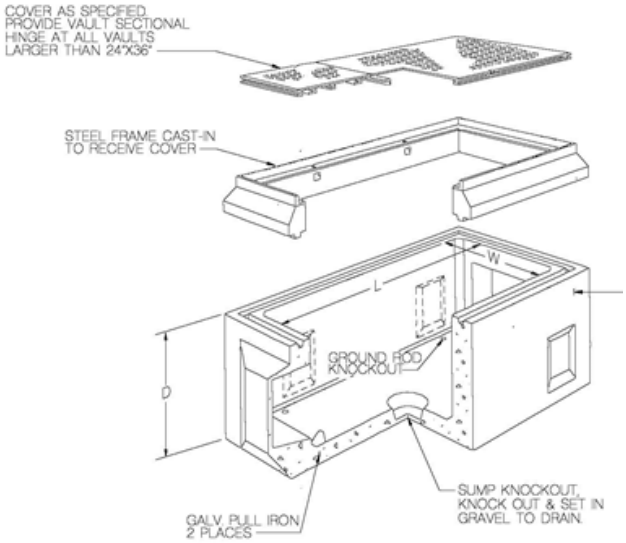


Figure - Typical concrete vault. Diamond plate lids to be provided at locations exposed to traffic, including that of District maintenance trucks.

- Large duct counts. In runs with more than 6 – 4" ducts, provide at least two parallel vaults/handholes for communications for each run to reduce congestion and cable crush. Alternatively or where duct count exceeds 8 total, provide a maintenance hole similar to a AT&T standard PTS-65 assembly. If more than one other non-comm activity is present in the same ducts (i.e. fire alarm, irrigation control, EMS) provide it with its own box.
- Vaults for Splicing. On runs where telephone cabling splices occur, provide separate vault/handhole. In general, outside plant splicing is to be avoided and every reasonable effort taken to terminate unspliced fiber and high pair count copper in the MDF and IDF's where a controlled environment ensures clean and dry splice conditions. Where outside plant telephone or fiber splicing occurs, provide a minimum vault size of 3'x5', with a split (two part) lid.

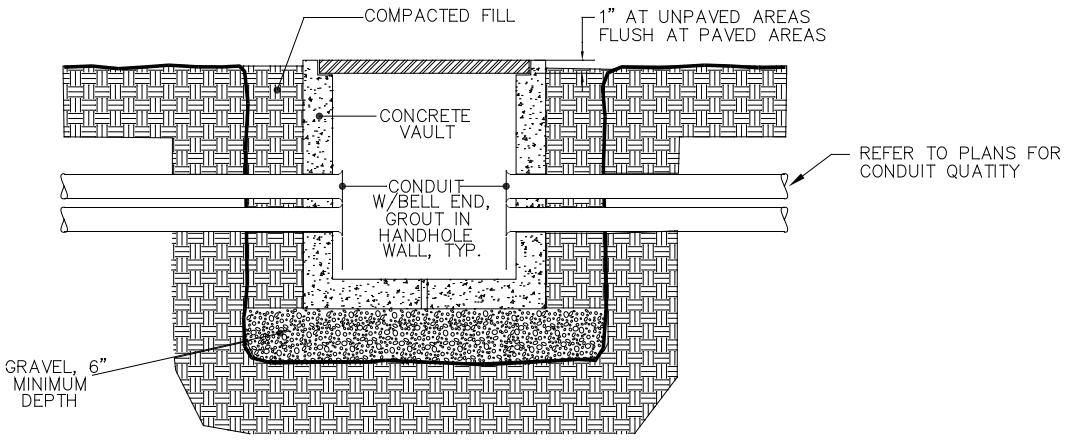


Figure : - Bell End Entries into Underground Vaults and Pullboxes. Entries that sweep upward from the bottom are common in small electrical boxes, but are incompatible with typical communications cabling.

- Duct entrance arrangement. All communications ductbanks must penetrate laterally from the side in accordance with detail depicted in Figure 3. Small Christy boxes with conduits stubbed up vertically from below are appropriate for use as THWN pull boxes, but they are useless for systems where the bend radii of the installed cabling is of interest (i.e. fiber, MATV) or where in box splicing may need to occur (voice or MATV). Refer to the arrangement standards of BISCI Customer Owned Outside Plant Design Manual for additional detail.

6.5 ABOVE GRADE PATHWAYS

- Scope. As campus design standards do not permit inter-building communications conduits except through underground ductbanks, above grade pathways will typically be limited to retrofit conditions where the outside plant ducts need to transition from the ground up the side of the building before penetrating to the building interior.
- Construction. Use EMT, IMC or Rigid conduit where placed exterior to the building and exposed to the public or on rooftops, not UV rated PVC. Require use of compression fittings rather than set screws to ensure conduit integrity when climbed on by students. Support per NEC/CEC.
- Size and Count. Maintain sizes described for underground pathways above.
- Sweeps. Size sweeps per underground ducts above.
- Pullboxes. Exterior pullboxes to be NEMA 3R or better. Where accessible (including rooftops) providing a hasp for padlocking.

6.6 OUTSIDE PLANT FIBER OPTIC CABLING

- Specification. 50 micron OM3 and OM1 Singlemode Indoor/Outdoor Fiber Cabling.
- Strand counts. The following are minimum recommended strand counts, homerun from the serving ADF to the BDF without splicing.

Building Gross Square Footage (GSF)	Single Mode Strands*	50 Micron MultiMode Strands*	Total Strands*
0 - 2,500 GSF	0	6	
2,501- 5,000 GSF	6	6	
5,001- 20,000 GSF	12	12	
20,001- 50,000 GSF	24	24	
More than 50,000 GSF	36	36	

* For buildings located more than 1,600 feet (500 meters) from the serving ADF, replace half of the MM strand count with additional SM strands.

For buildings larger than 150,000 GSF, the SJECCD ITSS project manager will determine the number of strands of service required.

- Placement. Place fiber cabling in innerduct or equivalent means of sub-dividing large ducts to permit the cabling to be pulled out for emergency repair or reinforcement in the future.

Sketch SK-01depicts the outside plant cable segment of the SJECCD standard riser.

6.7 OUTSIDE PLANT VOICE CABLING

- Specification. RUS PE39/PE-89 Filled Core outside plant cable.
- Quantity. Because SJECCD is transitioning to predominantly use Voice-on-IP service in lieu of traditional TDM switching, substantially fewer outside plant copper pairs are required than with a traditional campus environment. The following table summarizes the required pair count, based roughly on a formula of 1 pair per 200 GSF, rounded to the nearest commercial cable size.

Building Gross Square Footage (GSF)	Total Pair Count
0 – 5,000 GSF	25
5,001- 10,000 GSF	50
10,001- 20,000 GSF	100
20,001- 40,000 GSF	200
40,001- 60,000 GSF	300
More than 60,000 GSF	One pair per 200 GSF

Sketch SK-01depicts the outside plant cable segment of the SJECCD standard riser.

6.8 OUTSIDE PLANT MATV/CATV CABLING

- Specification. Outside plant rated RG-11 (drypack or gel) for distances of 1,000 feet or less. Optical splitters and SM fiber for distances greater than 1,000 feet.
- Quantity. One cable homerun from the ADF to each Building BDF.
- Topology. Star wired. Refer to SK-06 for detailed distribution topology.

6.9 FILL PLACEMENT - ISOLATION AND ELECTROMAGNETIC COMPATIBILITY

The following are guidelines to be used when designing placement of different signal types in the same duct or conduit in the outside plant.

- Fiber can be placed with any other service. Install all fiber in its own 1" - 1.25" Innerduct within the overall raceway.
- Speaker level public address audio can be combined with MATV or 24VAC Clock
- Telephone OSP 100 pairs and less can be placed with MATV. For larger pair count, provide telephone with its own raceway.

6.10 UTILITY CONNECTIONS

Bring the following utility connections into the site Communications Room (ADF/MPOE) from the street.

- AT&T. Obtain and conform to the latest AT&T guideline specification in preparing the MPOE entrance to the campus. Citing franchise limitations, AT&T will not place franchised telephone service in pathways requiring AT&T to share manholes, vaults, pullboxes or other accessible pathways with other communications services, including those of SJECCD. Obtain direction from SJECCD as to the minimum circuit count required for use in coordination with AT&T BIC representatives in order to arrive at an appropriate entry conduit size. In new construction, stud a second entrance conduit to a property line approachable by AT&T to enable the campus voice service to provision service from a second diverse route in the future. Current standards require horizontal sweeps of up to 60” minimum, vertical sweeps of 48” minimum; however, such standards are based on pulling in very large cable counts associated with Centrex services. As a (VoIP) PBX customer, SJECCD does not require such high pair counts in its campus services

- CATV. Provide entrance to campus ADF from public right away location agreed to by franchised CATV carrier. If no direction as to minimum conduit size is given, provide 1-4” C. min. Maintain 12” minimum separation from power at entry as required by the CEC.
- District Fiber MAN. In new construction, provide a 3” minimum duct pathway from the primary campus entrance to location indicated by SJECCD ITSS for interface to the District Metropolitan Area Fiber Network.

7 COMMUNICATIONS ROOMS

This section describes design standards for campus communications rooms, including Area Distribution Facilities (ADF), Building Distribution Facilities (BDF) and Intermediate Distribution Facilities. It begins with a general review of the Code and Accessibility issues that influence the size and proportions of communications rooms.

Communications rooms will house both the termination of the intra and inter-building cabling and the data communications hardware.

7.1 RACKS & CODE CLEARANCES

To house the system electronics, equipment racks will be required. Use of equipment racks imposes a specific set of geometrical requirements on the District's Equipment Rooms.

The District has standardized on 19" EIA racks for servers, monitors, UPS and core switching systems. The 19" dimension refers to the width of the equipment the rack will accommodate. Modern rack mount servers are much deeper than those of five years ago and require 36” minimum deep enclosures. Core switching systems, servers, monitors and other wired components require continuous vertical cable management systems outside of the width of the 19” mounting rails. Modern rack mount servers also require square holes (DIN standard) arrayed at EIA standard spacing. For traditional equipment that only requires threaded mounting screw openings, this complicates installation as it requires placing a nut in the opening behind the rail while the equipment is being installed. A portion of the racks will therefore be specified with traditional EIA threaded rails, with the remainder specified with DIN rails.

Full height 19" EIA racks are generally 84" high, and have based on the requirements above have a floor footprint of 30W"x36D". When arranged in a line, the intermediate panels at the sides are removed, therefore a row of 3 racks is 36" deep and 7’-6” feet long. Zone 4 rated enclosures, while not Code required for non-essential services facility, are recommended to ensure that core SJECCD systems are not disabled by seismic events. Full height Middle Atlantic DRK series enclosures meet this requirement, as do selected AFCO, APC Netshelter, APW and Damac enclosures

7.1.1 Electric Code Criteria

The California Electric Code adopts National Electric Code requirements which stipulate a 36" clearance from all parts which may be energized at 150V or less. Since the racks are steel and full height power strips are mounted to the rear face or internal to the rack, inspectors will normally require a 3' foot clearance from the front face of the rack. Since rear access to the equipment rack is also generally a requirement for service, a 30” minimum clearance is also required behind the equipment rack. Since most racks have terminal cabinets and conduits protruding out from the wall behind them, in practical terms this works out to be a 36” rear clearance.

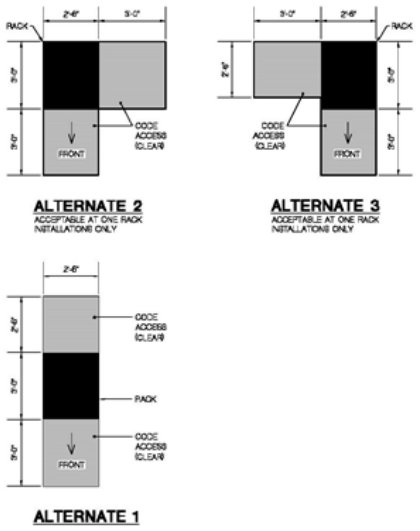


Figure - Rack Clearance Diagram

Figure 4 defines Electrical Code mandate clearances for three alternate rack positions. Alternate 1 is the front and rear clearance described above. This is the most common arrangement and the only arrangement that is practical for most multirack installations. Alternates 2 and 3 meet Electrical Code clearance requirements for one or two rack installations (in a two rack installation, the racks are placed together up against a wall while access is by means of alternate 2 and 3).

Note that greater clearances are required if the surface opposite the rack face is a grounded plane. Furthermore, if other powered equipment located in the room is above 150V (i.e. 277/480 V) a 42" clearance is required.

7.1.2 Accessibility Clearances

Interpretations of the American with Disabilities Act vary with respect to the communications rooms, thus the Designer should verify requirements with the local Code authorities. Federal ADA rulings and the current California Building Code have found that the nature of the work in a telecommunications type space is such that accessibility is not required.

7.2 CAMPUS ADF/MDF

7.2.1 Purpose

Each campus requires at least one room to house the following campus service electronics:

- Campus servers
- Campus VoIP Processing Hardware and 48V UPS
- Campus core switching hubs
- AT&T and Comcast Entry Points, with space to support the racks of an alternative carrier service.
- Campus-to-campus dark fiber entry point.
- Distribution fiber and copper cabling to each detached building on campus
- Distribution cabling to IDF closets located in the same building.

These rooms are commonly called server rooms, NOC's (Network Operations Centers) or MDF (Main Distribution Frames), the last being a telephone industry reference borrowed for the purpose. They are less frequently known as an MPOE – a term that actual refers to the lightening protector provided by AT&T that defines the contractual limit of service they provide under franchise rules of service.

Sketch SK-02 and SK-02.1 depict the minimum requirements of a new SJECCD ADF. The following narrative requirements expand on those shown graphically.

7.2.2 Detailed Program Requirements

1. Function. ADF rooms have the following functional requirements:

   a. The building distribution frame is a room dedicated to Information Technology transmission functions for the entire campus.

   b. Contained within this room is the systems hardware and cabling that interface, switch and distribute the video, voice and data streams that are entering or leaving the campus, or are traveling between the separate Building distribution facilities, and within the building in which it is housed, the Intermediate Distribution Frame (IDF) closets that in turn serve the building=s end users and server rooms.

   c. Equipment housed in the ADF may include hardware related to:

      i. telephony systems,

      ii. campus data network switching systems

      iii. video distribution equipment and

      iv. campus core cable television & satellite systems (CATV/MATV/SMATV)

      v. Campus Emergency Blue Phones

      vi. Public Telephones

      vii. Building Intrusion Detection Panels

      viii. CCTV Headend Digital Video Recorders

      ix. Signals used by other campus systems and carried by the campus communications infrastructure are distributed out of the ADF to building rooms serving those systems, including:

         (1) Distributed Learning Systems

         (2) Energy Management Systems

         (3) Supervisory Control and Data Acquisition Systems (SCADA)

         (4) Security Systems, including Visual Surveillance and Access Control. Card reader electronics, door lock power supplies should not be located in this space.

         (5) Point of Sale Systems

         (6) Irrigation Control System

2. The ADF will also contains cross-connect facilities for terminating cables and for connecting the campus riser segments to each other and to telecommunications equipment.
3. IDF (end user station cabling termination and equipment) can be collocated with an ADF. Additional racks, electrical and cable management are required to support the IDF. The quantity of racks is dependant upon the quantity of jacks that must be supported as defined in the campus IDF standard.
4. One ADF is required for each campus.
5. The Location of the ADF
    a. The ADF must be located so as to permit delivery of objects of a size of up to 7' H x 2-6"W x 3' D using a handtruck or similar means of continuous wheeled delivery.
    b. The location of the ADF must be designed to permit two physically separate points of outside plant entry
    c. The ADF should be placed adjcacent to the carrier entry room (MPOE) if such space is not co-located with the ADF.
    d. The preferred location of the ADF is at grade level.
    e. In a small building, where a single space serves both ADF and IDF function, the combined space should be located centrally within the building to maximize IDF cable reach.
    f. The location of the ADF must be submitted to the SJECCD ITSS for review at not later than 100% schematic design for approval with its location clearly labeled on the floor plan.

6. Environmental Constraints - General
    a. The ADF must not be located in any place that may be subject to water, including flooding, or steam infiltration, humidity from nearby water or steam, heat, and any other corrosive atmospheric or environmental conditions.
    b. The ADF must not be located near electrical power supply transformers, motors, generators, x-ray equipment, radio transmission antennas, induction heating devices, and other potential sources of electromagnetic interference.
    c. The ADF must not share space in or be located near electrical closets, boiler rooms, washrooms, janitorial closets, and storage rooms.
    d. Uses not related to the function of the ADF shall not be located within its perimeter, including but not limited to:
        i. Fire alarm control panels or annunciators
        ii. Department or Building data processing systems, including file or applications servers.

iii. Energy Management, Building Management Systems or other Mechanical Systems not directly related to the ADF (see detailed design criteria below).

iv. Electrical Panels, Lighting Controllers, SCADA termination hardware or other electrical Systems, not directly related to or serving the ADF (see detailed design criteria below).

v. Electronic Security Systems Hardware for Access Control, such as door lock power supplies and controllers.

7. The Size of the ADF

a. The size of the ADF depends on the size and variety of the equipment to be installed and the size of the area that the room will serve both at the building=s commencement and at ultimate occupancy. In addition the ADF may need to support current and future technologies simultaneously during periods of systems transition.

b. The ADF must provide enough space for all planned equipment and cables, including any ADF related environmental control equipment, power distribution/ conditioners, and uninterrupted power supply systems that will be installed there.

c. The ADF must also provide space for access to the equipment for maintenance and administration, and for equipment changes with minimal disruptions.

d. SK-02 and SK-02.1 outlining the minimum physical size of a campus ADF.

8. Detailed Design Requirements - Design values to be incorporated in SJECCD standard ADF facilities include:

a. Architectural:

i. General

(1) A 1 hour minimum construction is required for asset protection, even where Code permits lesser construction means.

ii. Doors and Hardware

(1) Provide 42” doors.

(2) The door(s) shall be provided with the following security measures:

(a) Card Reader on active leaf connected to building security systems accessible only to the IT Department.

(i) Door Position Switch on all leafs connected to building security systems.

iii. Walls

(1) Plywood Backboards

(i) All walls must be lined with Trade Size 3/4-inch AC-grade plywood, 8 feet high.

(ii) Fasten finish side out after the IOR has inspected the stamp on the opposite side.

(iii) The plywood must be securely fastened to the wall-framing members, and painted with two coats of white fire-retardant paint.

(iv) Plywood will be mounted vertically starting at 6 inches above the finished floor.

iv. Walls shared with similar uses.

(1) Where adjacent spaces serve similar low voltage communications uses, carrier MPOE terminal space, expanded metal mesh can be used to provide a secure barrier between spaces while permitting each space to share common air circulation and lighting, with cable trays connecting the spaces above the barrier wall. Sketches SK-02 and SK-02.1 depict this arrangement, with an interior mesh door separating the secure campus area from the carrier termination space.

v. Ceiling

(1) The room shall not have a finished ceiling unless required for fire resistance or environmental reasons.

(2) The minimum clear vertical height in the ADF must be 8 feet, 6 inches. Ceiling protrusions, including beams, shafts, ducts, sprinklers and similar must be placed to assure a minimum clear height of 8 feet 6 inches to provide space over the equipment frames for cables and suspended cable trays and runway.

vi. Floor

(1) Floor must be smooth, level and constructed of sealed concrete or tile to minimize dust and static electricity.

(2) Provide for a dead load of 200 PSF under the equipment racks, 50 PSF elsewhere. All other room surfaces shall be light in color and treated to minimize dust creation.

b. Mechanical

i. Whether this space is separated or combined with the building service entrance, it is, by almost every definition, a specialized area. This room will house sensitive electronic components that will generate heat 24 hours a day, 365 days a year, and must be cooled to maintain operating performance. Design ADF mechanical systems to maintain:

(1) positive air pressure relative to other building areas and cooling even during times when the main building systems are shut down. This may require separate air handlers and/or small stand-alone cooling systems that are thermostatically controlled in this space.

(2) Room temperatures between 64E F and 82E F.

ii. It is preferred that no mechanical systems be located within the ADF other than a thermostat and the supply and return ducts serving the room. Where HVAC equipment must located within the room, it shall be limited to the equipment directly serving this space. Such equipment can not be located on the floor unless the envelope of the ADF is increased from the minimum envelope established above to compensate for the lost area, including the mutual Code required electrical clearance of the ADF and mechanical systems. Additionally, observe the requirement for 8-6" clear vertical spans throughout the ADF. The sole mechanical element to be placed below 8'-6" is ADF thermostat; locate thermostat near door clear of backboard centers.

iii. Cold air should be supplied through distributed diffusers located over the aisle in front of the equipment racks. Hot air should be extracted through return diffusers placed over the aisle behind the equipment racks (hot aisle/cold aisle). Fans internal to the equipment in the racks will move the falling air from the front of the rack to the rear through the equipment.

iv. The air handling system should be connected to the building's backup power generation system where such facilities exist.

v. The design heat load is 8,100 BTUs per hour per electronic cabinet, equipment rack. Passive cabling termination racks do no generate heat and can be neglected.

vi. Provide filtered air or use a split system.

(1) Condensate: Assuming a split system, self evaporate (preferred) or pump out of room.

c. Electrical

i. Lighting

(1) The lighting in the ADF must provide a minimum equivalent of 50 foot-candles when measured 3 feet above the finished floor.

(2) Lights to be placed and oriented to:

(a) Illuminate the front and rear faces of racks and cabinets (not the tops)

(b) Illuminate the backboards.

(3) The light fixtures must be mounted a minimum of 8 feet, 6 inches

above the finished floor.

(4) The light switches must be located near the entrance of the ADF.

ii. Power Distribution

(1) Power for the lighting must not come from the same circuits as power for the telecommunications equipment floor.

(2) Connect ADF lighting and equipment circuits to the Building Emergency Power where provided to the building

(3) Provide dedicated ADF panelboard/load center at ADF=s that are 100 SF or larger. Locate such panelboards clear of racks and terminal blocks and related clearances.

(4) Do not rely on power conduit for power ground - provide dedicated ground conductor.

iii. Rack Power

(1) Each rack must be equipped with a minimum of two dedicated 3-wire 20A, 120V AC outlets as follows. Each shall be:

(a) on a separate branch circuit

(b) 20-ampere rated,

(c) provided with quad NEMA 5-20R receptacles

(d) conductors and conduit sized to permit future upgrade to 30A service if required (typically by wiring with #10 power conductors).

(e) installed at cable tray above the racks

(f) located on non-switched circuits

(g) identified and labeled.

(2) Additionally, for each group of racks (up to 5 racks) provide a 15A convenience circuit mounted at 8'-6" above the center of the rack ensemble

iv. Backboard Power

(1) Separate duplex NEMA 5-15R 120V AC convenience outlets (for tools, test sets, etc.) must also be installed at 18 inches AFF at

6-foot intervals around perimeter walls.

v. Grounding and Bonding

(1) The ADF must be provided with a Telecommunications Main Ground on a 4-inch or larger busbar connected to a main building

ADF - Summary of Communications Facilities		
System/Function	Lineal Feet of backboard 7' tall backboards min.	RU of rack/cabinet
Cabling		
AT&T MPOE	Verify with AT&T - at least 8 lineal feet	One 7' cabinet 30"x 30" for campus data service entrance + battery backup. Provided by AT&T
Campus Voice OSP, lightening protection, cross-connect and OSP feeds to campus BDF's of voice circuit switched building circuits	At least 3 feet per 400 pair of service terminated – not less than 3 feet horizontal	
Fiber entrance and riser cross-connect		At least 2 RU per 36 strands terminated including wire management + 12 strands of intercampus fiber cable

9. Summary of Communications Requirements.

a. The following table depicts a summary of the major communications systems requirements in the ADF.

Equipment		
Core data switching for data and VoIP entrance in rack or cabinet, including UPS		At least 1 full height rack per 100,000 SF served
Campus VoIP Headend		At least 2 racks + floor mounted 48V UPS
CATV/MATV distribution	At least 8 lineal feet. Verify CATV requirements with Comcast. Lay out distribution to campus BDF's to determine remainder of requirements.	n/a - (assumes signal passthrough at ADF - no channel processing)
Intrusion Detection	Per Campus Standards	n/a
CCTV	CCTV Camera power supplies (in rack or on backboard)- Per Campus Standards	DVR, evidence recorders printers and monitors - Per Campus Standards
Technician Workspace	Wall mounted assembly with 8 lineal feet of bookcase for binders, 20” min deep pull out or flip down shelf for technician laptop, adjacent data plate and power	n/a
Future growth	Provide space for at least 50% growth above requirements.	Provide space for at least 20% growth above requirements (not including AT&T).

7.3 BUILDING IDF COMMUNICATIONS CLOSETS

The function of the building entrance closet (BDF) is to transition from outside plant cable into the building, provide a location for building specific processing, and distribute to the building IDF closets.

A BDF is not required at single building campuses, where the ADF provides the functionality of the BDF for the campus building.

The construction and requirements for the BDF are essentially identical with those of an ADF, as outlined above, with the omission of the need to terminate carrier services (AT&T, Comcast, etc.). The following outline focuses on exceptions to the ADF construction standard.

1. BDF
    a. Function
        i. The building distribution facility is a room dedicated to Information Technology transmission functions for the entire building.
        ii. Contained within this room is the systems hardware and cabling that interface, switch and distribute the video, voice and data streams that are entering or leaving the building, or are traveling between the separate Intermediate Distribution Frame (IDF) closets that in turn serve the building=s end users and server rooms.

b. Equipment housed in the BDF may include hardware related to:

i. telephony systems,

ii. campus data network switching systems

iii. video distribution equipment and

iv. amplification and redistribution of cable television & satellite systems (CATV/MATV/SMATV)

v. Campus Emergency Blue Phones

vi. Public Telephones

vii. Building Intrusion Detection Panels

viii. CCTV Headend Digital Video Recorders

ix. Signals used by other campus systems and carried by the campus communications infrastructure are distributed out of the BDF to building rooms serving those systems, including:

(1) Distributed Learning Systems

(2) Energy Management Systems

(3) Supervisory Control and Data Acquisition Systems (SCADA)

(4) Security Systems, including Visual Surveillance and Access Control. Card reader electronics, door lock supplies should not be located in this space.

(5) Point of Sale Systems

(6) Irrigation Control Systems

c. The BDF will also contains cross-connect facilities for terminating cables and for connecting the building horizontal and riser segments to each other and to telecommunications equipment.

d. IDF (end user station cabling termination and equipment) can be collocated with a BDF. Additional racks, electrical and cable management are required to support the IDF. The quantity of racks is dependent upon the quantity of jacks that must be supported as defined in the campus IDF standard

e. One BDF is required for each campus building

f. The Location of the BDF

i. As for ADF

ii. In a small building, where a single space serves both BDF and IDF function, the combined space should be located centrally within the building to maximize IDF cable reach.

iii. In a larger building requiring multiple vertical columns of stacked IDF closets serving different wings of the building, the BDF should be located adjacent to the base of one of the IDF stacks.

iv. The location of the BDF must be submitted to the SJECCD ITSS for review at not later than 100% schematic design for approval with its location clearly labeled on the floor plan.

g. Environmental Constraints – General

i. As for ADF.

h. Size and arrangement of the BDF

i. Generally as for ADF with a minimum of three campus equipment racks – refer to Sketch SK-03.

i. Detailed Design Requirements - The factors that must be considered when designing the BDF, include:

i. Architectural:

(1) As for ADF.

ii. Mechanical

(1) As for ADF, with the following exceptions:

(a) Assume a standard waste heat dissipation of 6,000 BTU/hr per equipment cabinet.

(b) Cool air may be delivered high on the wall in front of the row of racks, aligned with the center of the room, rather than ducted in diffusers. The intent of this exception is to permit the use of ductless split systems.

iii. Electrical

(1) As for ADF.

iv. Acoustic Noise

(1) As for ADF.

j. Summary of Communications Requirements.

i. The following table depicts a summary of the major communications systems requirements in the BDF.

BDF - Summary of Communications Facilities Omit Room at Single Building Campuses – ADF serves as BDF Combine with IDF at one and two story buildings less than 12,000 square feet.		
System/Function	Lineal Feet of backboard 7' tall backboards min.	RU of rack/cabinet
Cabling		
Campus Voice OSP, lightening protection, cross-connect and OSP feeds from ADF of voice circuit switched building circuits	At least 3 feet per 400 pair of service terminated	
Fiber entrance and riser cross-connect		At least 2 RU per 36 strands terminated including wire management
Equipment		
Core data switching for data and VoIP entrance in rack or cabinet, including UPS		At least full height server rack per 100,000 SF served – not less than 1 rack per building
CATV/MATV distribution	At least 4 lineal feet. Lay out distribution from ADF and to IDF's to determine requirements.	n/a
Intrusion Detection	Per Campus Standards	n/a
CCTV	CCTV Camera power supplies (in rack or on backboard)- Per Campus Standards	DVR, evidence recorders printers and monitors - Per Campus Standards
Future growth	Provide space for at least 50% growth above requirements.	Provide space for at least 33% growth above requirements

7.4 BUILDING IDF COMMUNICATIONS CLOSETS

7.4.1 Purpose

Building Communications Closets serve to tie the building's communications resources to those of the campus. Commonly called IDF's, these spaces are provide facilities for terminating in-building horizontal cabling, inter-building site cabling and local building electronics, including:

- Data systems switches and media converters
- MATV amplifiers.

7.4.2 Sizing by Jack Quantity Served

The combination of the plates per square foot and the jacks per plate translates to a standard for sizing communications closets. At the IDF, the station cabling is typically terminated at a rack mounted patch panel. In a typical configuration, each patch panel is surrounded with patch cord managers and is placed close to the electronics that provide the data connection for the area. In a universal cable plant design (all cables are equal, any can be used for any function), telephone services must also be brought out on the equipment rack. A single 7 foot high 2 post equipment rack is expected to support 144 station ports with room for expansion.

A typical IDF rack is 2 feet deep and little over 2 feet wide. A working closet configuration needs to provide Code legal clearance so of 36" in front of the rack and 30" behind the rack, with space to pass from front to back. We assume that the at least two of the walls have 6" of backboard mounted terminal blocks, access control power supplies and similar on them. A variety of approaches can be used to reduce the total impact of the closets, including:

- Placing each rack with the rear in a doorway opening (and with the door opening outward), such that the clearance is created in the corridor, albeit with the door blocking traffic. Another door opens to the interior of the closet, where all of the rack front faces can be accessed.
- Turning the rack perpendicular to the corridor, with one door opening at the front of the rack and another to the rear.

SK-04 depicts standard SJECCD arrangements for new construction. Sketch SK-05 depicts alternate arrangements for use in retrofitting SJECCD IDF closets into existing construction.

7.4.3 Space Allocation

Provide as per jack load indicated in Horizontal Section of this document and the sizing grid identified above. Refer to SK-04 for typical arrangement.

7.4.4 Detailed Design Requirements

1. Environmental Constraints – General
    a. As for ADF.
2. Size and arrangement of the IDF
    a. Per Space Allocation above.
3. Architectural:
    a. As for ADF.
4. Mechanical
    a. As for BDF, with the following exceptions:
        i. Assume a standard waste heat dissipation of 4,000 BTU/hr per equipment cabinet.
        ii. Temperature controlled to maintain less than 85 degrees F. Often this can be accomplished with an insulated room, a door that vents to the outside (with a filter)and a small exhaust fan on a 24 hour thermostat circuit.
5. Electrical
    a. As for ADF.
6. Acoustic Noise
    a. As for ADF.

7.4.5 Security

Provide locking door. Use card reader and door position switches to log entries and exits, and to detect “propped open” and “left unlocked” conditions. An electric lock or strike is preferred but not essential.

IDF - Summary of Communications Facilities		
System/Function	Lineal Feet of backboard 7' tall backboards min.	RU of rack/cabinet
Cabling		
Campus Voice OSP, cross-connect and riser feeds from BDF of voice circuit switched building circuits	At least 3 feet per 900 pair of service terminated.	
Fiber entrance and riser cross-connect		At least 2 RU per 36 strands terminated including wire management
Station Cabling and VoIP UPS		1 rack per 144 jacks
Equipment		
CATV/MATV distribution	At least 4 lineal feet. Lay out distribution from BDF and to drops to determine requirements.	n/a
Intrusion Detection	Per Campus Standards	n/a
CCTV	Exterior Non-POE CCTV Camera power supplies (in rack or on backboard)- Per Campus Standards	n/a
Future growth	Provide space for at least 30% growth above requirements.	Provide space for at least 30% growth above requirements

8 RISER SEGMENT

This section describes design standards related to design of vertical and horizontal cabling and pathway systems connecting building IDF closets to the BDF.

8.1 REFERENCE STANDARDS

- California Electric Code. Consult with the SJECCD Facilities Planning Project Manager as to the edition of the Code that applies to this Project.
- ANSI/EIA/TIA 569A. Commercial Building Standard for Telecommunications Pathways and Spaces, in particular Chapter 5.
- BISCI Telecommunications Distribution Methods Manual, in particular, Chapter 5 – Building Backbone Systems

8.2 DESIGN GOALS

1. The riser segment consists of the riser cable and the supporting infrastructure within a building. This segment typically connects the BDF to the IDF's.

2. The riser segment must be designed one segment at a time even though the riser cables may follow the same path.

3. This section describes the policies and procedures for the following design activities:

    a. The sizing, type, and termination of copper and fiber riser cable.

    b. Designing the structures to support a vertically aligned riser segment. In any multi-level structure, communications rooms should be designed so they are vertically aligned.

    c. Designing the structures to support a horizontally offset riser segment.

    d. When fiber optic cable passes through a vertical riser closet, secure fiber to the wall vertically every 48 inches or according to manufacturer's recommendations.

    e. All fiber optic cables should be installed in an inner-duct and/or EMT from termination point to termination point.

    f. Contractors/Installers shall adhere to all manufacturers requirements in regards to pulling tension and allowable pulling lubricants when installing riser cables.

4. The Size, Type and Termination of Copper Riser Cable

    a. The size of the riser cable is a function of the number of communication outlets supported by the served IDF.

    b. A minimum of one copper cable pairs is required for each outlet connected to analog or traditional digital PBX service + 30%.

    c. Commonly available copper cable sizes are 50(min), 100, 200, 300, 600, 900 and 1200 pairs.

5. The type of riser cable shall meet the following requirements:
    a. Conform to CEC/NEC Article 800-51(B)
    b. The type of riser cable will be UL listed CMR rated.
    c. The riser cable is labeled based on a cable number assigned by ITSS.
    d. Riser cables shall be grounded and bonded in accordance with TIA/EIA 607 requirements, as applicable.
    e. The method of termination of the copper riser cable will conform to the requirements in Sketches SK-01and SK-04.
6. Fiber Riser
    a. The Size, Type, and Termination of Fiber Optic Riser Cable.
        i. The standard strand count of the riser fiber optic cable is 12 single mode and 12 50 micron 2000 MHz/KM multimode for every 200 station cables terminated at the served IDF
    b. Riser fiber optic cables shall be terminated on SC type terminations. All fiber strands shall be terminated and tested in accordance with this standard.
    c. The type of riser cable shall meet the following requirements:
        i. Conform to CEC/NEC Article 770,
        ii. The type of riser cable will be UL listed OFNR rated OM3 MMF and OM1 SMF. Filled-core Outside Plant cable will not be used for interior backbone cable.
        iii. The riser cable is labeled based on a cable number assigned by ITSS.
        iv. The method of termination of the fiber riser cable will conform to the requirements in Sketches SK-01and SK-04.

7. Testing Requirements for Copper and Fiber Optic Riser Cables

    a. Riser copper cables shall be tested upon completion of installation. Reference testing requirements elsewhere herein.

    b. All strands shall be tested from each end and documented.

8. Broadband Video Riser

    a. Riser rated RG-11 to each IDF. Refer to SK-06 for distribution topology.

9. Structures to Support Vertically Aligned IDF's

    a. IDFs that are aligned vertically will utilize sleeves and slots. Size slots and sleeves at each level to accommodate at least 100% growth at 40% fill above the designed initial fill.

    b. In a multi-story building, grip brackets must be specified to support the riser cable's weight as it passes through the TR.

    c. Figure 5 illustrates structures to support vertically and horizontally aligned BDF/IDF's: figure - From ANSI/EIA/TIA 569C (Figure 2)- depicting typical multi-story riser. Vertically aligned IDF closets are preferred over the staggered alignment of those at left.

10. Structures to Support Horizontally Offset BDF/IDF's

    a. BDF/IDF's that are not vertically aligned must be connected with conduits and pull boxes.

    b. Conduit will be used to route the riser cables between the BDF's and the IDF's. Conduit paths are tightly controlled pathways that must be coordinated with other trades during construction or remodeling.

    c. The conduit will be Electrical Metallic Tubing (EMT) 4 inches in diameter. Apply to the ITSS Project Manager for permission to use cable tray or alternative support means of backbone cabling. Place quantity of conduits to accommodate at least 100% growth at 40% fill above the designed initial fill.

    d. The conduit will be bonded to the electrical ground at each end.

    e. The conduit will be installed with a pull string and the ends will be bushed to protect the cable.

    f. Conduits that enter the BDF/IDF must be placed near the corner and as close as possible to the wall where the backboard is mounted to allow for proper cable racking and to minimize the cable route inside the BDF/IDF.

    g. Conduit located in the ceiling must protrude into the BDF/IDF 1 to 2 inches and a minimum 7½ feet above the finished floor. Conduit will not turn down.

11. The ITSS Project Manager will review all designs in regards to the size of the conduits.

12. At existing buildings, determine in conjunction with the Facilities Planning Office Project Manager where it will be necessary to instruct the contractor to X-Ray the slab before proceeding in order to avoid striking existing rebar and/or post-tensioning systems.

9 HORIZONTAL DISTRIBUTION

This section describes design standards related to design of horizontal station cabling serving the users of the campus spaces.

9.1 REFERENCE STANDARDS

- California Electric Code. Consult with the SJECCD Facilities Planning Project Manager as to the edition of the Code that applies to this Project.
- ANSI/EIA/TIA 569A. Commercial Building Standard for Telecommunications Pathways and Spaces, including by Addendums 1 though 7 – omit Table 5.2-2
- BISCI Telecommunications Distribution Methods Manual. Omit Table 4.18
- ANSI/TIA-568-C.0, Generic Telecommunications Cabling for Customer Premises, 2009
- ANSI/TIA-568-C.1, Commercial Building Telecommunications Cabling Standard, 2009
- ANSI/TIA-568-C.2, Balanced Twisted-Pair Telecommunication Cabling and Components Standard, published 2009
- ANSI/TIA-568-C.3, Optical Fiber Cabling Components Standard, published 2008, plus errata issued NEMA VE 1 1-1998 Metallic Cable Tray Systems.
- NEMA VE 2 2001 Cable Tray Installation Guidelines

9.2 GENERAL GUIDELINES

9.2.1 Horizontal Pathways

Reference the standards above for approved means and methods.

In areas with suspended ceilings and 60 or fewer cables, J-hooks suspended from structure at 4' on center are sufficient for support. Specify Caddy brand or similar with broad rounded hooks to distribute the load of the cabling without sharp edges.

For larger cable counts, provide a cable runway system - consider use of the wire basket tray for economy - size runway for not more than 30% fill at time of initial occupancy. Where ceiling void area is used as a means of environmental air distribution (plenum), specify use of CLP listed cabling.

Size horizontal pathways for not more than 25% fill at time of initial installation. While the CEC exempts most communications cabling from raceway fill restrictions (where raceway is being used to protect cabling otherwise suitable for exposed installation), it is important to size raceway using some basic guidelines:

- Plan for growth using the guidelines cited above to establish initial capacities.
- Recognize that communications cabling is not perfectly round and occupies greater cross-sectional area than that of the equivalent THHN; the ultimate fill capacity of any raceway where the cable must be pulled in cannot exceed 40%. Designing for 25% fill now accommodates future SJECCD moves, adds and changes.
- Where cable can be placed be means other than pulling (i.e. surface raceway), the ultimate fill should not exceed 60%.

9.2.2 Computer Labs

At computer labs in existing buildings and at similar locations providing high density data access provide structurally robust multi-chamber surface raceway systems with radiussed corners designed for data cabling. Except at fire-rated existing conditions, provide non-metallic raceway systems with complete transition fittings systems applied at joints, extensions and interface with conduit services. Size for 40% fill minimum. Plan and indicate for electrical services to occupy the lowest compartment, and low voltage services to occupy the upper compartments. All surface raceway systems to be mechanically fastened to the wall (adhesive not acceptable).

1. Manufacturers:
    a. Non-metallic
        i. Wiremold 5400 and 5500 system
        ii. Hubbell Mediatrak Systems
    b. Metallic Systems (at fire rated exit corridors only)
        i. Wiremold V4000
        ii. Hubbell 4000 series

9.3 ITSS STRUCTURED CABLING JACK PLANNING STANDARDS

The visible manifestation of structured cabling once installed are the jacks that are mounted on wall plates, in floor boxes, in the systems furniture and in "built-in" furniture, in equipment rooms, at hidden locations in the ceiling and similar. In most spaces, the wall plate will be the most common presentation, and is the one we commonly use to define the density standard.

Two design decisions combine to create the structured cabling density:

- How many jacks appear on a plate?, and
- How many plates appear in each space?

The outcome of these two choices has several implications for the design of the structured cabling system and its utility in the operation of the building:

- To be useful as a universal transport, the plates need to be ubiquitous through the building. This requires a high density per SF.
- At any one location, the plate needs to handle all of the uses that may be simultaneously required of it. For an office user, this can be any combination of their computer, telephone, fax, fax/modem, laptop, shared workgroup printer and/or networked personal digital assistant. In addition, there can be a requirement for a network postage meter, "panic" alarm, door release, guest phone, networked copier/printer, etc. Because of the diversity and growing expanse of needs, many organizations adopt at least a 3 to 4 jack per plate standard at administrative offices spaces or adopt a high density implementation of individual plates.

Based on the foregoing, we have suggested the following jack per plate standards for SJECCD as a planning tool. The density of the application of building standard plates will often vary by the room's intended usage. Each space having more than one use should be designed to accommodate the most demanding usage.

9.4 SPECIFIC SPACE STANDARDS

Room Usage	Minimum Plate Count	Cat6 Jacks per Plate	Duplex MM Fiber on LC Jacks Per Plate	Notes
Classrooms, 20 – 49 seats				
Fixed Lectern	2	2	0	Mount 1 with A/V inputs at top surface of lectern, 1 in A/V equipment compartment.
Fixed Presentation Podium Equipment Chamber	1	4	0	
Front/Primary Presentation Wall	1	2	0	+18” AFF on side opposite presentation podium. Where space programmed for use with electronic whiteboard –place to match. At least one jack to remain accessible for use after whiteboard installation.
Side Walls	0	0	0	
Rear Walls	1	2	0	+18 AFF
At projector – rear wall or ceiling,	1	1	0	Adjacent to Projector, for diagnostics, lamp monitoring and remote shutoff.
Wireless Access Point	1	1	0	

Room Usage	Minimum Plate Count	Cat6 Jacks per Plate	Duplex MM Fiber on LC Jacks Per Plate	Notes
Science Labs				
Fixed Presentation Table	1	2	1	Mount with A/V inputs in vertical face under cabinet lip to protect the panel.
Front/Primary Presentation Wall	1	2	0	+18" AFF on side opposite presentation podium. Where space programmed for use with electronic whiteboard –place to match. At least one jack to remain accessible for use after whiteboard installation.
Side Walls	2	2	0	
Rear Walls	1	2	0	+18 AFF or 6" above counter, as applies
At projector – rear wall or ceiling,	1	1	0	Adjacent to Projector, for diagnostics, lamp monitoring and remote shutoff.
Student Workstations	1	2	0	Each workstation
Wireless Access Point	1	1	0	

Room Usage	Minimum Plate Count	Cat6 Jacks per Plate	Duplex MM Fiber on LC Jacks Per Plate	Notes
Auditorium/Lecture Hall (50 seats +)				
Fixed Presentation Podium Top	1	2	1	
Fixed Presentation Podium Equipment Chamber	1	4	0	
Front/Primary Presentation Wall	1	2	0	+18” AFF on side opposite presentation podium. Where space programmed for use with electronic whiteboard –place to match. At least one jack to remain accessible for use after whiteboard installation.
Side Walls	1	2	0	+18” AFF
Rear Walls	2	2	0	+18” AFF
At projector – rear wall or ceiling.	1	1		For diagnostics, lamp monitoring and remote shutoff.
A/V equipment Rack	1	4		To web enable control system and provide video-conference feed
Fixed Seating	n/a	n/a	n/a	Provide underfloor duct (Walker ProDuct or equivalent) under each row to enable future ability to wire seats.
Wireless Access Point	2	1	0	

Room Usage	Minimum Plate Count	Cat6 Jacks per Plate	Duplex MM Fiber on LC Jacks Per Plate	Notes
Instructional Computing Labs				
Per Seat	1 per seat	1	0	+20% Cat6 in the form of wall plates for lab printers and addtl devices
Wireless Access Points	1 per room	2	0	
Vocational Labs (non - Computer)				
Student Workstations	1 each bench	2	0	
1 Plate at each perimeter wall	4 each room	2	0	
Wireless Access Points	1 per room	1	0	

Room Usage	Minimum Plate Count	Cat6 Jacks per Plate	Duplex MM Fiber on LC Jacks Per Plate	Notes
Performing Arts Spaces				
Theaters, Recital Halls and Performance Auditorium Platforms	10	4	1	Fiber and half of copper jacks on each plate route to patch panels in the control booth/room for use by the production staff. Remainder route to IDF under exclusive control of SJECCD ITSS.
Theaters, Recital Halls and Performance Auditorium	10	4		Fiber and half of copper jacks on each plate route to patch panels in the control booth/room for use by the production staff. Remainder route to IDF under exclusive control of SJECCD ITSS.
Theaters, Recital Halls and Performance Auditorium Control Booth/Desk and A/V racks	5	4	4	Half of jacks on each plate route to patch panels in the control booth/room for use by the production staff. Remainder route to IDF under exclusive control of SJECCD ITSS.
Theaters, Recital Halls and Performance Auditorium Wireless Infrastructure	1 plate per 300 seats	2		
Music Practice and Rehearsal Rooms, up to 250 SF	2	2		
Music Practice and Rehearsal Rooms, up to 500 SF	4	2		
Music Practice and Rehearsal Rooms, larger than 500 SF	4 per 500 square feet	2		

Room Usage	Minimum Plate Count	Cat6 Jacks per Plate	Duplex MM Fiber on LC Jacks Per Plate	Notes
Faculty Offices and Open Plan				
50 to 70 SF (Assumes occupancy of 1)	1 Plate	3	0	
71 to 140 SF (Assumes occupancy of up to 2)	2 Plates	3	0	+18” AFF - At opposite walls, near window.
141 SF - 200 SF (Assumes occupancy of up to 3)	3 Plates	3	0	+18” AFF - At three non-door walls.
201 - 300 SF (Assumes occupancy of up to 4)	4 Plates	3	0	+18” AFF
301+ SF (occupancy assumes at least 1 per 100 ASF)	At least 1 plate per 100 ASF	3	0	+18” AFF
Conference Rooms, 15 person or smaller for larger rooms, refer to Classroom standards above				
Floor boxes centered below table, 1 box per 6 lineal feet of table.	1 per box	4	0	Floor boxes to place jacks below floor line with a hinged cover – surface mount boxes exposing jacks to foot traffic not acceptable.
Walls	1 plate per 100 ASF	2	0	

Room Usage	Minimum Plate Count	Cat6 Jacks per Plate	Duplex MM Fiber on LC Jacks Per Plate	Notes
Library/Media Center				
Patron Browsing Tables	1 per indicated station or two shared in systems furniture	1	0	
Circulation Desk, Reference Desk and Similar	1 per indicated workstation	4	0	
Materials Security Gates	1 at each end of antennas	1		In floorbox or below raised floor
Wireless Access Points	1 per 400 SF	1	0	
Computer Support Spaces				
Computer Repair	1 Plate per 50 SF	2	1	
Printer Rooms	1 Plate per 70 SF	2	0	
Server Rooms	1 Plate (Patch Panel) per 100 SF	12	6	

Room Usage	Minimum Plate Count	Cat6 Jacks per Plate	Duplex MM Fiber on LC Jacks Per Plate	Notes
General Academic and Circulation Space				
Lobbies	2 plates per lobby + WAP	2	0	
Wireless Access Points	1 per 50 lineal feet of corridor lobby and/ or entry space.	1	0	
Study Alcoves	1 plate per 100 SF	2	0	
Other non-occupied or wet service spaces (Storage, Loading Dock, etc.).	1 per space	2	0	
Food Service and Retail				
Point-of-sale	1 plate per indicated cash register or order printer	1	0	
Commercial food service operations	1 plate in manager's office	3	0	
Vending Machine	1 wall mounted per 6 lineal feet of allocated space	2	0	

Room Usage	Minimum Plate Count	Cat6 Jacks per Plate	Duplex MM Fiber on LC Jacks Per Plate	Notes
Emergency and Control				
Main Electrical and Mechanical Rooms for each Building	2 plates per room	3	0	Includes access from room to IP backbone for Site EMS, Access control, as well as maintenance technician access to Web and machine monitoring.
Satellite Mechanical & Electrical Rooms	1 plate per room	2	0	Satellite mechanical rooms to be served include, but are not limited to rooms for boiler rooms, fan rooms, chillers, cooling towers. At roof top HVAC space, place in weather proof enclosure or locate inside stairwell serving roof.
Irrigation control panel	1 plate or equiv. where not collocated in electrical room.	1	0	May be located outside building in landscape, in which case provide OSP Cat 6 to controller.
Fire Alarm Control Panel	Reference termination in FA standard	2	0	Essential service – BDF/IDF end terms on backboard mounted 110 block, not patch panel. At IDF's cross-connect to riser to BDF.
Intrusion Detection Panel – Co-located with Fire Alarm Panel in BDF	Reference termination in the Security Standard	1	0	
Elevator Machine Room	Confirm that Division 14 will provide the autodialer/ elevator cab phone.	1 per cab served	0	

9.5 WALL MOUNT TELEPHONE TERMINALS

- Dedicated Wall mount Voice specific station cabling recommendations are as follows:
- Classrooms & Lecture Halls: 1 location, on primary entry wall, near door.
- Corridors: Provide for every 200 feet of corridor, or as necessary to maintain one instrument in visual line of site at all times.
- Auditoriums: 1 at control booth, shop, green room, at least one at ticket booth
- Food Service Walkup window: 1, located away from wet and hot services.
- Conference room: On wall near primary entry door
- Staff locker room: 1 location.
- Staff lounge: 1 location.
- Instructor and staff work areas: At least one location near primary entry door
- Staff Kitchens/Coffee nooks: 1 location.
- Shops: 1 location each trade/service.
- Site payphones, if implemented.

9.6 WAO PLATES

District standard faceplate plates are keystone format (example Leviton, Hubbell) 45 degree exit – color to match surrounding electrical plates. At system furniture, provide systems furniture insert plates in colors to match the electrified furniture system.

9.7 CABLING & JACKS

Copper station cabling is to be keystone format (example Leviton, Hubbell) Category 6 jacks. Station Fiber to be specified as OM3 MM cabling terminated on LC connectors.

9.8 WAO MOUNTING HEIGHTS

The faceplate location should adhere to ADA requirements – see elsewhere herein below.

1. Standard faceplate - 18" To Center A.F.F.
2. Office faceplate – 34” To Center A.F.F.
3. Wall phone faceplate - 48" To Center A.F.F.
4. Handicap assessable wall phone - 48" to highest operable part of phone
5. Blue Light Phone - Must meet handicap specifications
6. Elevator Phone - Must meet California Access Compliance Manual and Federal ADA handicap specifications.

Modular furniture and open plan offices should adhere to the following requirements:

1. Outlets and faceplates should be designed and approved by ITS Project Manager in order to ensure compatibility of products.
2. The outlets and faceplates shall be placed and configured to avoid obstruction of modular furniture.
3. Modular furniture should be selected that provides adequate built

Surface mounted outlets utilizing under-carpet flat cable is not allowed.

9.9 TERMINATION COLOR CODE

District standard jacks, patch panels and similar to use 110 type insulation displacement color coded to T568B.

9.10 VOICE SYSTEMS OUTSIDE PLANT INTERCONNECTION

As described above, voice/telephone services will use the same in-building cabling as the data systems, permitting maximum flexibility in designating where telephones and computers are to be placed.

A key element of accomplishing this is to bring the outside plant telephone pairs up on a patch panel within the same rack serving the data systems in each IDF. Doing so allows the patch panel ports associated with the OSP cabling to be labeled according to the extension or telephone line assigned to them at the campus communications room. Thereafter, moving a telephone extension within the building merely requires moving a standard Cat6 type patch cord.

Criteria sketch SK-1details this condition. In the sketch, the outside plant cabling is brought into the outside plant cabling through the lightning protectors then cross-connected to the riser cabling. At the closet, the riser is cross-connected to a rack mounted patch panel. By connecting the cables in a ratio of one outside plant pair for each port served the outside plant is spread appropriately to the individual stations, which only require 1active pair at maximum for voice usage.

9.11 ELECTRICAL PROVISIONS SERVING END USER STATIONS

In general, unique electrical provisions to accommodate computer usage at classrooms, offices and similar terminal equipment locations are not required. We do suggest the use of:

- Dedicated neutrals and dedicated (by not isolated) grounds to balance the impedance relative to the hot circuit. Neither TVSS, dedicated circuits nor isolated grounds are necessary to support modern PC's built in the last 7-10 years. CE listing requirements have considerably strengthened the robustness of modern PC power supplies.
- Allowance of at least 2A quiescent power draw per workstation. Actual loads are even less as new workstations are equipped with switching power supplies rated for 170W maximum.
- Allowance of 6-10A draw per classroom of a networked printer, although initially, the District will not be able to fund these.
- Allowance of 8-12A draw per office area of 5 or more for a workgroup grade printer.

9.12 ADA STANDARDS

The minimum height for all communications systems jacks shall be 15” (18” to CL) above the finished floor for all locations where the location is not exclusively used and/activated by professional SJECCD system installers.

Installed wall, counter-top, emergency and weatherproof telephones, speakerphones and faceplates shall meet the requirements of the California Access Compliance Manual (CACM).

CACM/ADA height requirements for side reach of devices.

- The maximum high side reach allowed is 54 inches (1370 mm).
- If side reach occurs over an obstruction 24 inches (610 mm) wide and 34 inches (865 mm) high, the maximum height allowed is 46 inches (1170 mm).

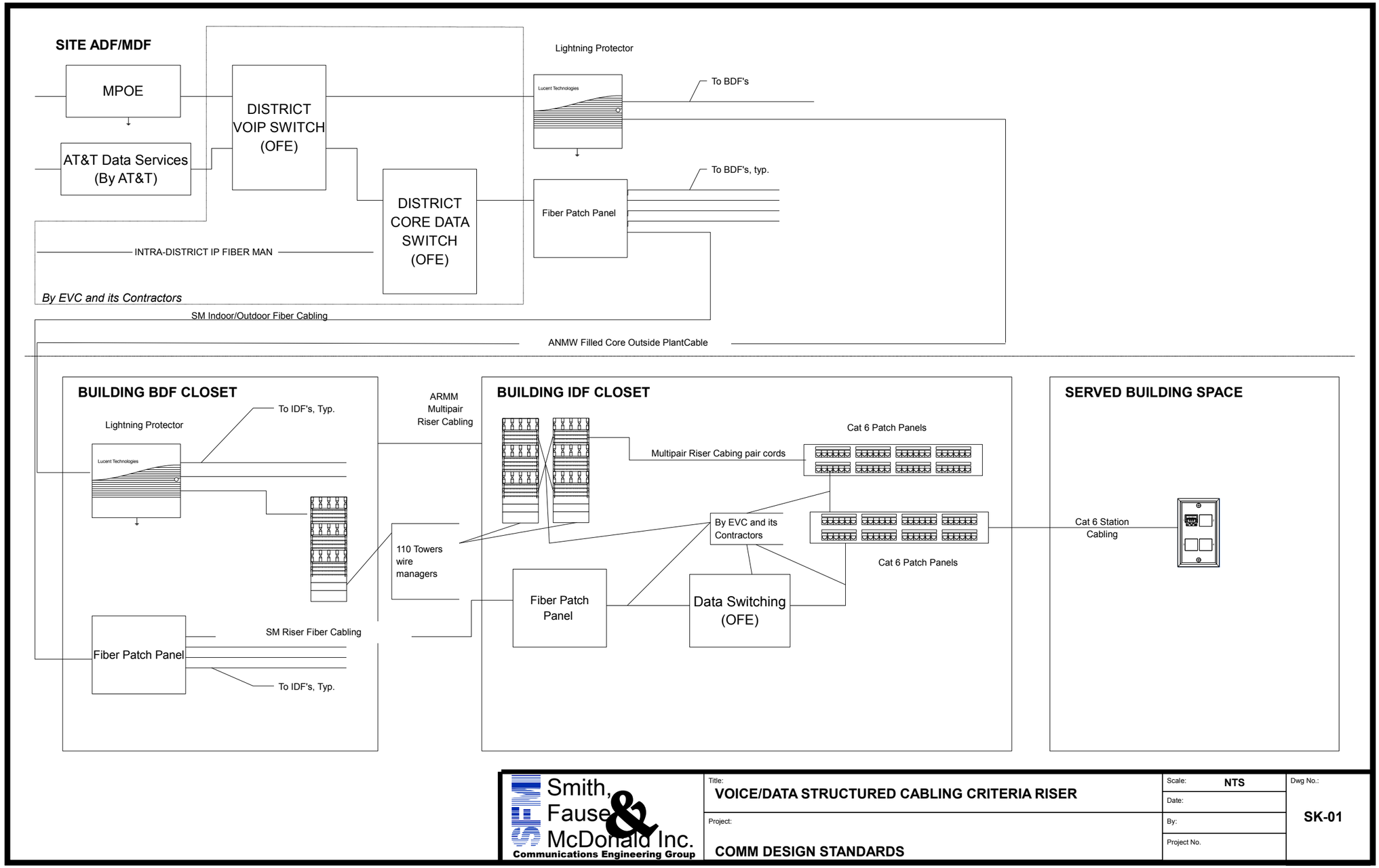
CACM/ADA height requirements for forward reach of devices.

- The maximum high forward allowed is 48 inches (1220 mm).
- If forward reach occurs over an obstruction 20 inches to 25 inches (510 mm to 635 mm), the maximum height must be 44 inches (1120 mm).

10 GLOSSARY

Communications Terms	
Term	**Definition**
ADFSJECCD SJECCD	Area Distribution Frame. A telephone engineers definition of the facility that serves multiple BDF's - see BDF below. Typically a smaller SJECCD campus will have a single ADF serving all campus BDF's. Larger SJECCD campuses will distribute service from multiple BDF's
BDF	In the highrise nomenclature of telephone engineers, a BDF, or Building Distribution Frame is the basement or ground floor facility that interfaces the building to the ADF service(s).
IDF	Intermediate Distribution Frame. In the highrise nomenclature of telephone engineers, an IDF, is the on-floor communications closet serving multiple rooms. The IDF derives its services from the building BDF.
Jack	Jack is used in this standard to define a single data RJ-45 opening in a plate.
NOC	Network Operation Center. Used in this standard to describe the location of the primary college servers and related data communications equipment.
Plate	Plate is used in this standard to refer to the panel in which one or more jacks can be mounted. Plates are mostly commonly intended to mount directly to (NEMA) standard electrical backboxes (i.e. 1 gang, 2 gang, etc.). A one gang plate can typically mount up to 6 jacks; a two gang plate can typically mount up to 12 jacks. A 630A plate is a specialized plate with two protruding studs to holdup a telephone and a cutout for a jack to provide service. Specialized plates are also available to mount jacks in standard cutouts in open plan systems furniture.
WAO	Work Area Outlet. A faceplate location with installed jacks.

END OF SECTION 8



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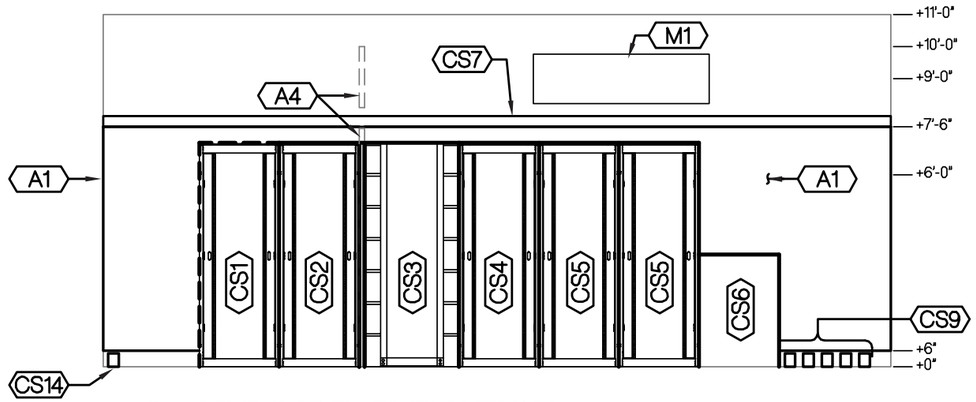
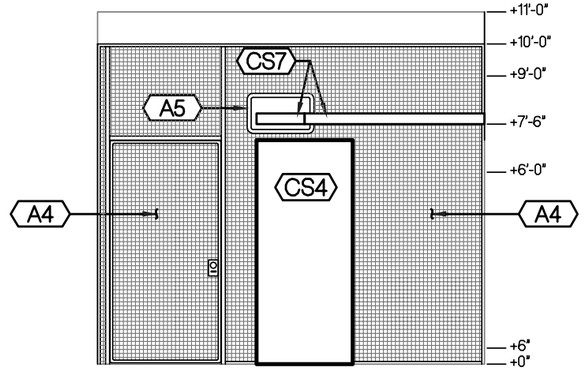


1 ADF/MDF ELEVATION

1/4"= 1'-0"



2 ADF/MDF SECTION

1/4"= 1'-0"

KEYNOTE FIELDS	
CS	COMMUNICATIONS
CS1	30"Wx30"D FOOTPRINT FOR FUTURE CLEC PROVIDER
CS2	30"Wx30"D FOOTPRINT FOR AT&T DIGITAL SEVICES RACK
CS3	CAMPUS FIBER RISER & CORE SWITCHING RACK - 2 POST
CS4	CAMPUS CCTV DVR & CAMPUS SERVERS 4 POST, ZONE 4 SERVER RACK 36"DX30"W
CS5	CAMPUS VOIP TELEPHONE RACKS 4 POST, ZONE 4 SERVER RACK 36"DX30"W
CS6	O.F.E. VOIP SYSTEM UPS - BOLTED TO FLOOR - ALLOW 36"DX30"W
CS7	CABLE TRAY - 18"Wx4"H (NOT RUNWAY OR BASKET)
CS8	CAMPUS NETWORK PLATE - 3 CAT6 MIN, ADJACENT TO SHELF
CS9	SITE ENTRANCE CONDUITS
CS10	AT&T ENTRY - 8 LINEAL FEET MIN.
CS11	COMCAST ENTRY - 4 LINEAL FEET MIN.
CS12	CAMPUS MATV/CATV DISTRIBUTION
CS13	LIGHTNING PROTECTORS AND CAMPUS VOICE RISER FEEDS
CS14	3-4"C. COMCAST/AT&T ENTRANCE CONDUITS.

KEYNOTE FIELDS	
A	ARCHITECTURAL
A1	3/4" FIRE TREATED PLY INSTALLED FROM 6" AFF TO 7'-6" AFF MIN.
A2	42" W DOOR TO INTERIOR CORRIDOR W/ CARD READER
A3	42" W GATE DOOR TO CAMPUS SERVICES W/ CARD READER. IF NOT CONNECTED THRU SERVICE PROVIDER AREA, PROVIDE DOOR TO INTERIOR CORRIDOR
A4	EXPANDED METAL BARRIER
A5	CABLE TRAY PENETRATION IN FENCE - NOMINALLY 20"W X 12"H
A6	8 LINEAL FEET BOOKSHELVES & 20" MIN. D FLIPDOWN SHELF FOR TECHNICIAN LAPTOP
M	MECHANICAL
M1	DUCTLESS SPLIT SYSTEM
E	ELECTRICAL
E1	2-20A CKTS WITH NEMA L5-20 RECEPTS MTD TO CABLE TRAY
E2	CONVENIENCE RECEPTACLES AT +18" AFF
E3	TELECOMM GROUND BUS
E4	BOND TRAY
E5	FIXTURES OVER AISLES - ILLUM. RACK FACES

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Communications Engineering Group

TITLE: CAMPUS ADF/MDF	SCALE: 1/4"=1'-0"	DWG NO.:	
	DATE:	SK-02.1	
PROJECT: COMM DESIGN STANDARDS	BY:		
	PROJECT NO.		

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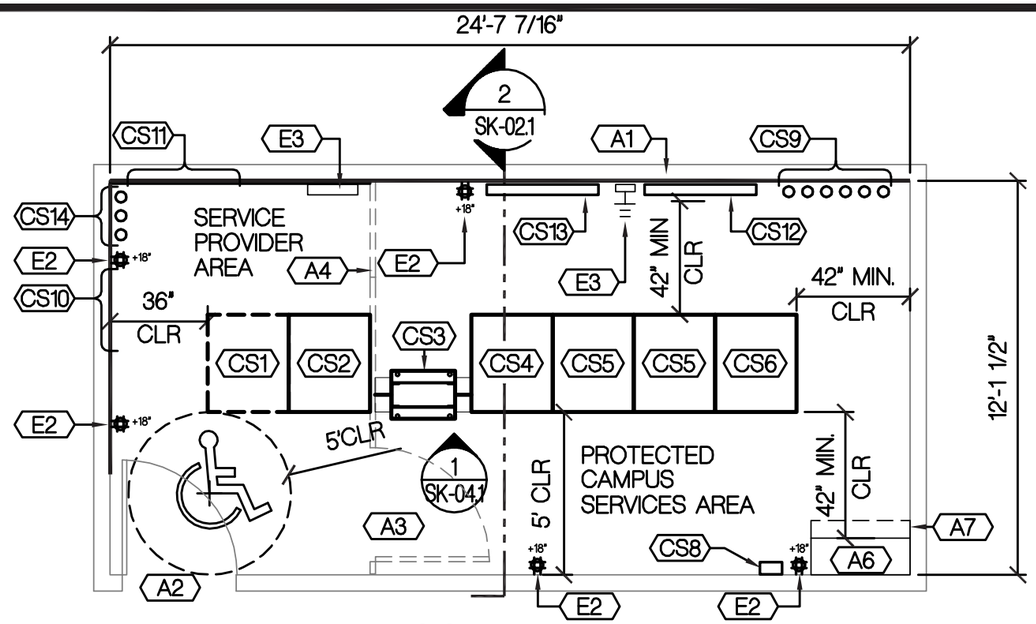
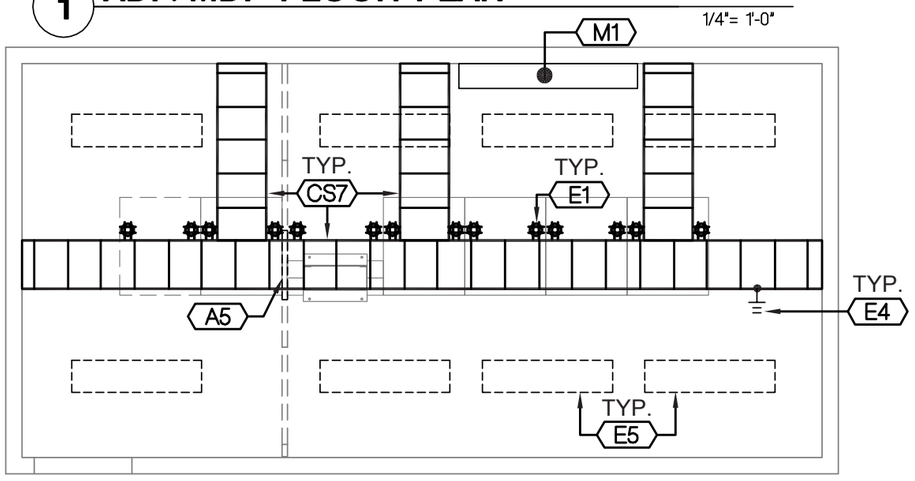


1 ADF/MDF FLOOR PLAN

1/4"= 1'-0"



2 ADF/MDF R.C.P.

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Communications Engineering Group

TITLE: CAMPUS ADF/MDF

PROJECT: COMM DESIGN STANDARDS

SCALE: 1/4"=1'-0"
DATE:
BY:
PROJECT NO.

DWG NO.: SK-02

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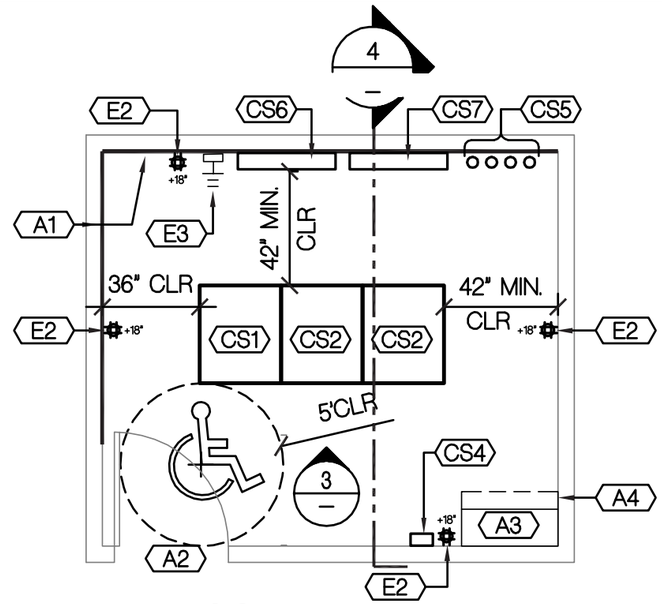

1 BDF FLOOR PLAN

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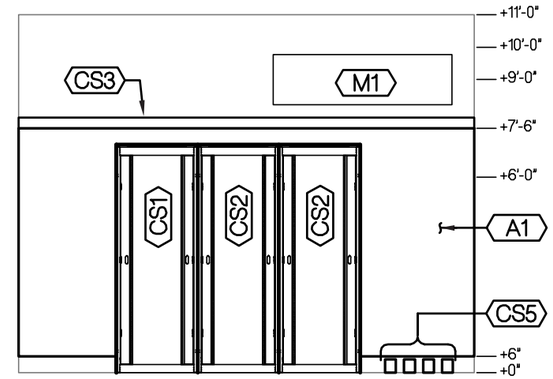
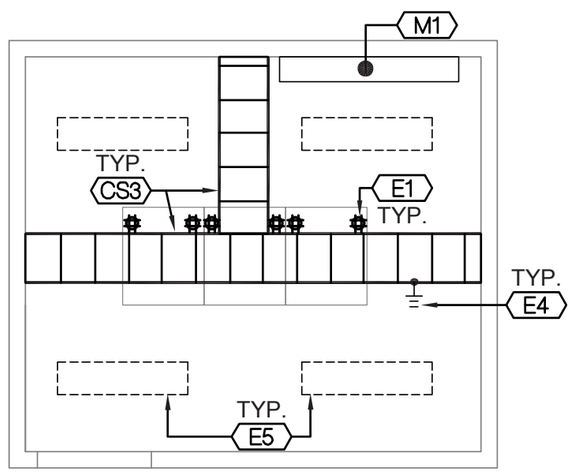


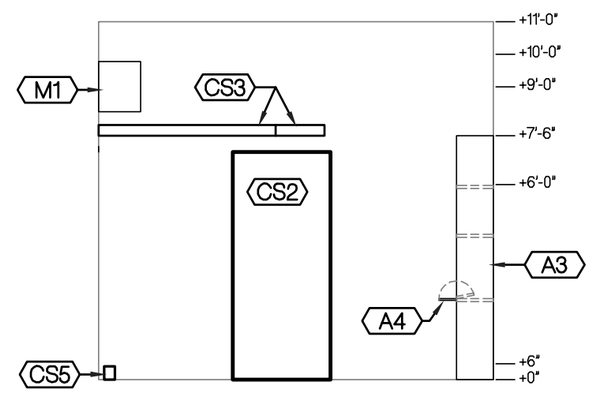
3 BDF ELEVATION

1/4"= 1'-0"



2 BDF R.C.P.

1/4"= 1'-0"



4 BDF SECTION

1/4"= 1'-0"

KEYNOTE FIELDS

A	ARCHITECTURAL
A1	3/4" FIRE TREATED PLY INSTALLED FROM 6" AFF TO 7'-6" AFF MIN.
A2	42" W DOOR TO INTERIOR CORRIDOR W/ CARD READER
A3	4 LINEAL FEET BOOKSHELVES & 20" MIN. D FLIPDOWN SHELF FOR TECHNICIAN LAPTOP
A4	PROJECTION OF FLIP UP/ PULL OUT SHELF
M	MECHANICAL
M1	DUCTLESS SPLIT SYSTEM
E	ELECTRICAL
E1	2-20A CKTS WITH NEMA L5-20 RECEPTS MTD TO CABLE TRAY
E2	CONVENIENCE RECEPTACLES AT +18" AFF
E3	TELECOMM GROUND BUS
E4	BOND TRAY
E5	FIXTURES OVER AISLES - ILLUM. RACK FACES
CS	COMMUNICATIONS
CS1	CAMPUS FIBER ENTRANCE, BLDG SWITCH & IDF DISTRIBUTION RACK - 4 POST, ZONE 4 SERVER RACK 36"DX30"W
CS2	CAMPUS CCTV DVR & BLDG SERVERS 4 POST, ZONE 4 SERVER RACK 36"DX30"W
CS3	CABLE TRAY - 18"Wx4"H (NOT RUNWAY OR BASKET)
CS4	CAMPUS NETWORK PLATE - 3 CAT6 MIN, ADJACENT TO SHELF
CS5	SITE ENTRANCE CONDUITS
CS6	BLDG MATV/CATV DISTRIBUTION
CS7	LIGHTNING PROTECTORS AND CAMPUS VOICE RISER ENTRANCE & IDF CROSS-CONNECT BLOCKS

Smith, Fause & McDonald Inc.
Communications Engineering Group

TITLE: BDF PROTOTYPE ARRANGEMENTS

PROJECT: COMM DESIGN STANDARDS

SCALE: 1/4"=1'-0"
DATE:
BY:
PROJECT NO.

DWG NO.: SK-03

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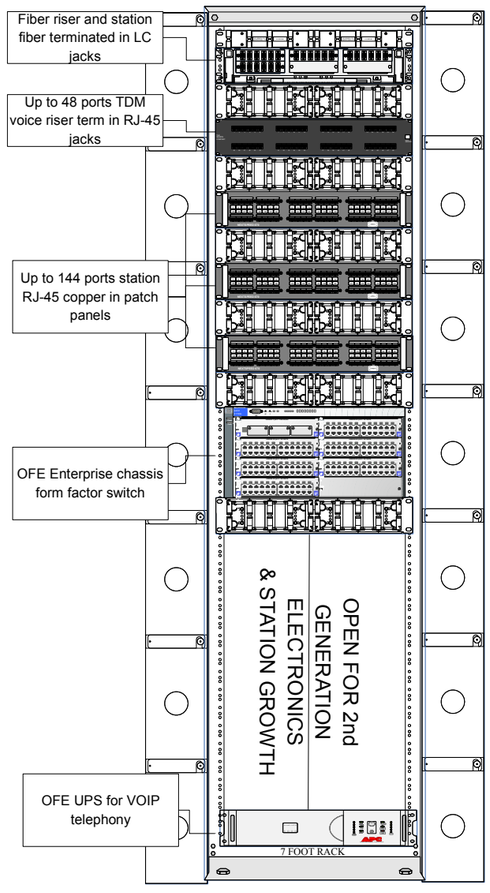
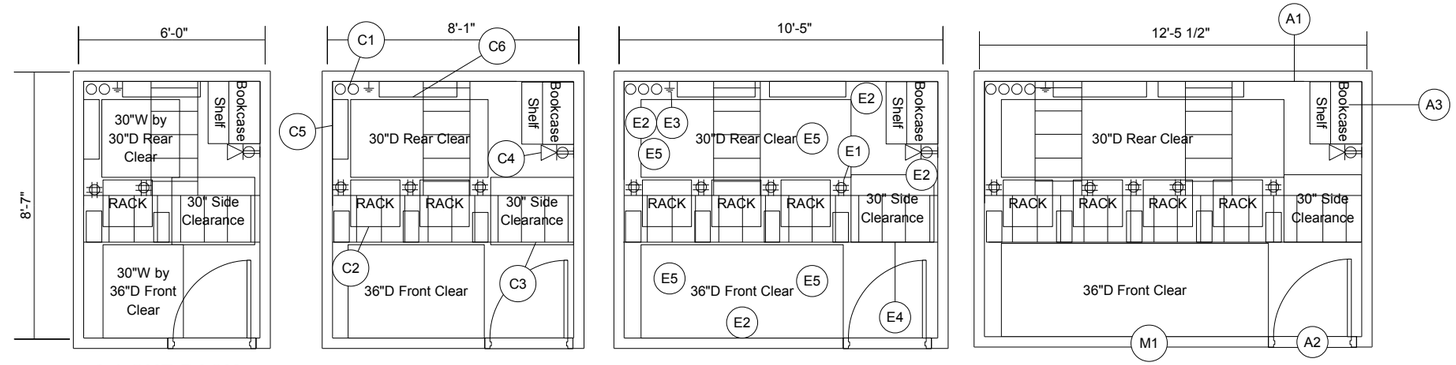


144 station ports per rack

1 FRONT ELEVATION - IDF RACK LOADING

1" = 1'-0"

Size IDF's based on scheduled quantity of jacks and assuming a maximum rack loading density of 144 station jacks terminated in a 2 post IDF rack.



2.1 ONE RACK

2.2 TWO RACKS
AND COMMUNICATIONS KEYNOTES

2.3 THREE RACKS
AND ELECTRICAL KEYNOTES

2.4 FOUR RACKS
AND ARCHITECTURAL AND MECHANICAL KEYNOTES

2 SIDE-BY-SIDE RACK ARRANGEMENTS - FOR USE IN NEW CONSTRUCTION
ALL KEYNOTES APPLY TO ALL ARRANGEMENTS

1/4" = 1'-0"

KEYNOTES

Conditions are typical at each closet size. Conditions are only keynoted once for the work of each trade.

A ARCHITECTURAL

A1 3/4" FIRE TREATED PLY INSTALLED FROM 6" AFF TO 7'-6" AFF MIN.

A2 36" W DOOR TO INTERIOR CORRIDOR W/ CARD READER

A3 4 LINEAL FEET BOOKSHELVES & 20" MIN. D FLIPDOWN SHELF FOR TECHNICIAN LAPTOP

M MECHANICAL

M1 POWERED EXHAUST

E ELECTRICAL

E1 2-20A CKTS PER RACK WITH NEMA L5-20 RECEPTS MTD TO CABLE TRAY

E2 CONVENIENCE RECEPTACLES AT +18" AFF

E3 TELECOMM GROUND BUS

E4 BOND TRAY

E5 FIXTURES OVER AISLES - ILLUM. RACK FACES

C COMMUNICATIONS

C1 C. SLEEVES FOR FIBER & COPPER RISER

C2 PATCH PANEL & SWITCH RACK, 2 POST, ZONE 4 20"WX18"D W/ EQUQUIPMENT & 6"x12 VERT. WIRE MANAGER

C3 CABLE TRAY - 18"Wx4"H (NOT RUNWAY OR BASKET) AT 7'-6" AFF

C4 CAMPUS NETWORK PLATE - 3 CAT6 MIN., ADJACENT TO SHELF

C5 BLDG MATV/CATV DISTRIBUTION

C6 IDF CROSS-CONNECT BLOCKS

Smith, Fause & McDonald Inc. Communications Engineering Group	Title: IDF FLOOR MOUNTED RELAY RACK ARRANGEMENTS STUDY NEW CONSTRUCTION	Scale: AS NOTED	Dwg No.:
		Date:	SK-04
	Project: COMM DESIGN STANDARDS	By:	
		Project No.	

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KEYNOTES

Conditions are typical at each closet size. Conditions are only keynoted once for the work of each trade.

A ARCHITECTURAL

A1 3/4" FIRE TREATED PLY INSTALLED FROM 6" AFF TO 7'-6" AFF MIN.

A2 36" W DOOR TO INTERIOR CORRIDOR W/ CARD READER

A3 4 LINEAL FEET BOOKSHELVES & 20" MIN. D FLIPDOWN SHELF FOR TECHNICIAN LAPTOP

M MECHANICAL

M1 POWERED EXHAUST

E ELECTRICAL

E1 2-20A CKTS PER RACK WITH NEMA L5-20 RECEPTS MTD TO CABLE TRAY

E2 CONVENIENCE RECEPTACLES AT +18" AFF

E3 TELECOMM GROUND BUS

E4 BOND TRAY

E5 FIXTURES OVER AISLES OR SURFACE MTD TO WALLS TO ILLUM. RACK FACES

C COMMUNICATIONS

C1 C. SLEEVES FOR FIBER & COPPER RISER

C2 PATCH PANEL & SWITCH RACK, 2 POST, ZONE 4 20"WX18"D W/ EQUQUIPMENT & 6"x12 VERT. WIRE MANAGER

C3 CABLE TRAY - 18"Wx4"H (NOT RUNWAY OR BASKET) AT 7'-6" AFF

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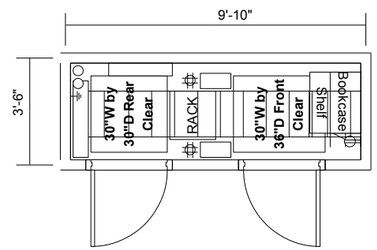
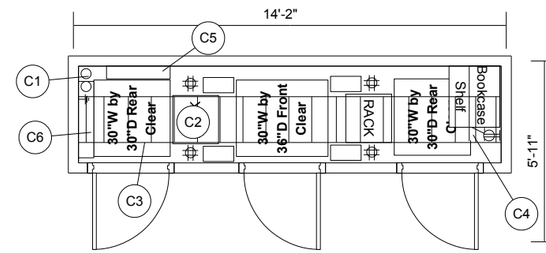
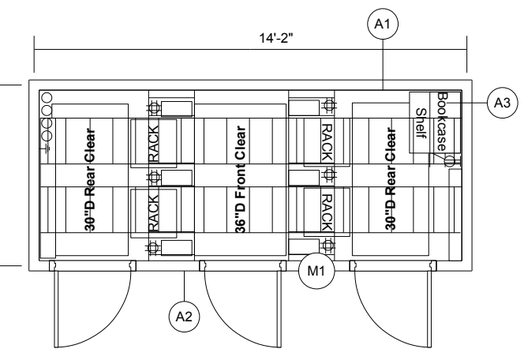
C6 IDF CROSS-CONNECT BLOCKS



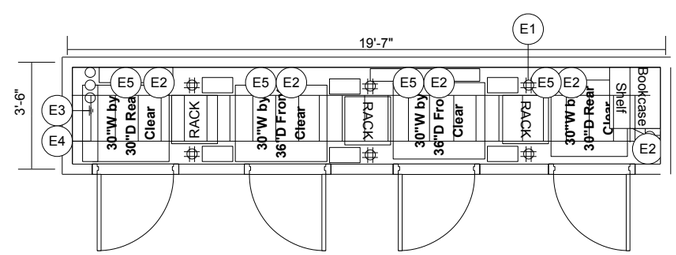
1.1 ONE RACK



1.2 TWO RACKS
AND COMMUNICATIONS KEYNOTES



1.4 FOUR RACKS
AND ARCHITECTURAL & MECHANICAL KEYNOTES



1.3 THREE RACKS
AND ELECTRICAL KEYNOTES

1 SIDEWISE IDF RACK ARRANGEMENTS - FOR USE IN MODERNIZATION/RETROFIT ONLY

ALL KEYNOTES APPLY TO ALL ARRANGEMENTS **1/4" = 1'-0"**

Smith, Fause & McDonald Inc.

Title: IDF FLOOR MOUNTED RELAY RACK ARRANGEMENTS STUDY RENOVATION/MODERNIZATION ONLY	Scale: AS NOTED	Dwg No.:
	Date:	SK-05
Project: COMM DESIGN STANDARDS	By:	
	Project No.	

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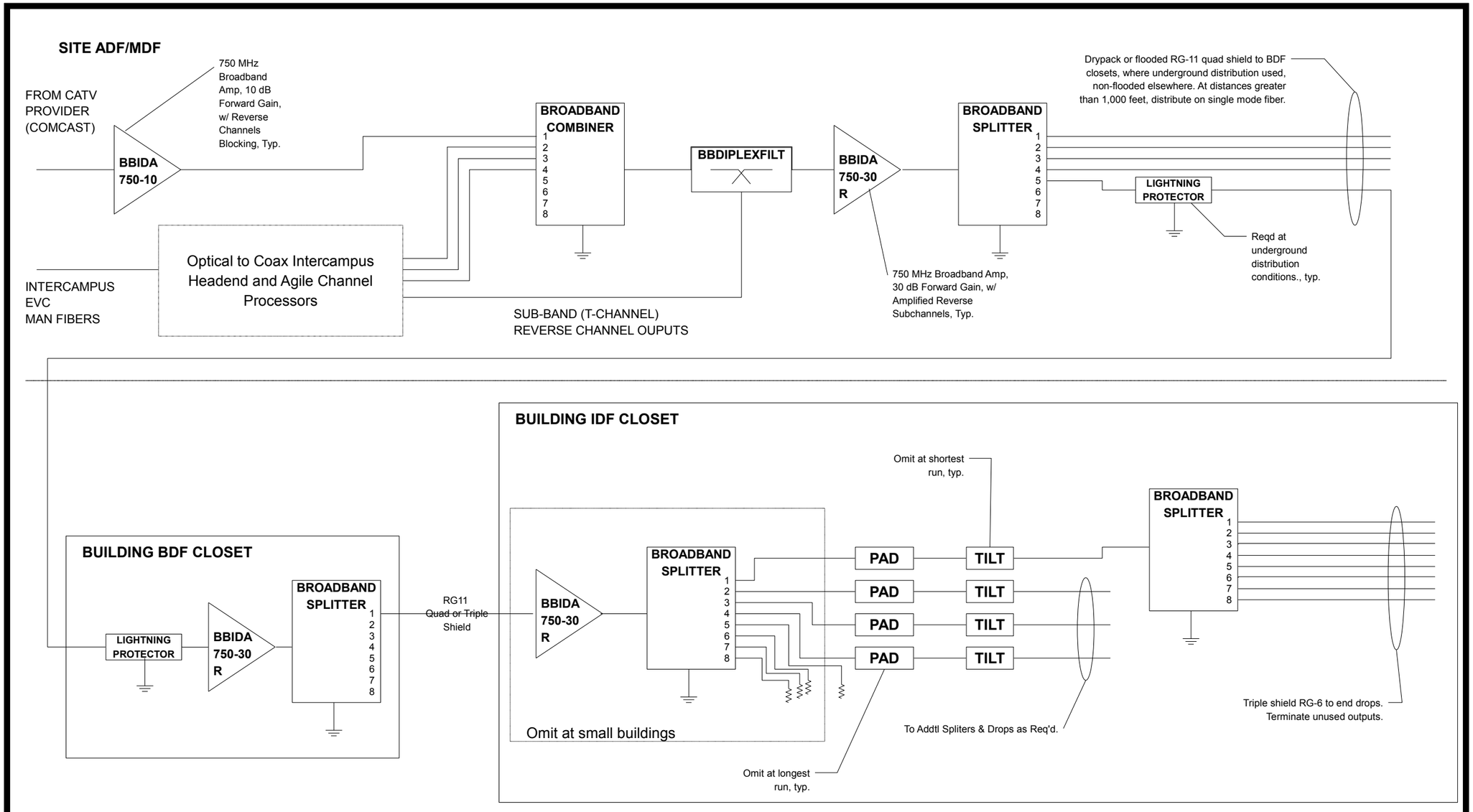

Smith, Fause & McDonald Inc.

Title: CATV/MATV DISTRIBUTION CRITERIA	Scale: NTS	Dwg No.:	
	Date:	SK-06	
Project: COMM DESIGN STANDARDS	By:		
	Project No.		

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END OF SECTION 8

SECURITY STANDARDS

INTRODUCTION

The information provided in this section are reference guidelines for project's architects, engineers and other consultants that address District Standards security concerns and the District fire alarm system for new and renovation projects on each campus. The information contained in this section also describes functional requirements for each of the sub-systems that forms the District-wide communication system that integrates the analog and IP devices using a shared platform so safety or security events are tracked instantaneously.

CONTENTS

PART A

PURPOSE + BACKGROUND

PURPOSE + BACKGROUND PART A

The purpose of this implementation standard is to document the specific goals and objectives of the SMS, to define the major system software and hardware components that comprise the SMS, and to provide general design guidelines for integration of the SMS into new and existing building projects and site improvement projects throughout the District. This implementation standard is intended for use by within the District and is applicable to the District Office, San Jose City College, Evergreen Valley College, and any other current and future District facilities.

The SJECCD 2012 Security Master Plan included recommendations for the adoption, implementation and use of a District-wide Security Management System. Specific elements of the SMS, including the system and sub-system software and hardware manufacturers were selected for adoption as District Standards by the Security Committee after review and evaluation of various options for a wide range of system manufacturers. The review process and recommendations are encapsulated in the Security System Decision Matrix Narrative (10/2013).

The SMS is a unified security management tool that is comprised of four major electronic security sub-systems. The purpose of this implementation standard is to document the specific goals, objectives of the SMS, to define the major system software and hardware components that comprise the SMS, and to provide general design guidelines for integration of the SMS into new and existing building and site improvement projects on Campus.

PART B
GOALS

The principal goal of this document is to provide consistent design and implementation standards for the integration of physical electronic security devices into District facilities. The design standards include system device performance requirements for each of the applicable devices that may be included within a specific project. The implementation standards establish a protocol for device type selection – when and where to install a particular devices.

PART C

STANDARDIZATION - SECURITY MANAGEMENT SYSTEM

STANDARDIZATION - SECURITY MANAGEMENT SYSTEM PART C

The SJECCD 2012 Security Master Plan included recommendations for the adoption, implementation and use of a District-wide Security Management System. The SMS is a unified security management tool that provides District Police with a physical security information and situational awareness management system. The SMS will serve as a foundational tool used by District Police in their continuing efforts to ensure a safe and secure learning environment for students, faculty and staff.

The SMS is comprised of four major electronic security sub-systems.

- Access Control and Alarm Monitoring System (ACAMS)
- Building Intrusion Alarm Systems (BIAS)
- Public Safety Video System (PSVS)
- Emergency Communication System (ECS)

Each of these sub-systems is comprised of command/control hardware and software and field devices. The command/control hardware and software are standardized so as to provide the District a single, unified operational platform for the physical security systems management. Security field devices will be designed and specified on a project specific basis throughout the course of the execution of the District Master Plan. Individual construction projects may include hardware and software components (i.e. data storage and licenses) that are added to increase the capacity of the District system/sub-system. Technical standards for specific field devices for each sub-system are defined in Section 4. The protocol to be followed for the design and deployment of devices is described in Section 5. Not all of the devices specified in Section 4 will necessarily be included in each project. It is the responsibility of the design team to use the security standards and protocols in this document to develop the appropriate deployment strategy and device requirements for their particular project.

STANDARDIZATION - SECURITY MANAGEMENT SYSTEM

1. ACCESS CONTROL AND ALARM MONITORING SYSTEM

The ACAMS is the core of the SMS. It is a software based system that is a product of Honeywell, called ProWatch. ProWatch provides the command and control functionality for the access control doors and associated alarm devices, stores access control credentials and privileges (ID Cards), provides the primary graphical user interface for monitoring and managing electronic security events and alarms, and serves as the central repository for system events that can be used for investigative and administrative purposes. In addition, ProWatch provides the central integration facilities for the other electronic security sub-systems through seamless system software interoperability and management that provides a single human-to-system graphical user interface for the configuration, management and control of these systems.

2. BUILDING INTRUSION ALARM SYSTEM

The BIAS is primarily hardware based. It is comprised of existing building and room alarm panels and associated field devices. These systems are identical to small commercial and residential “burglar alarm systems” in that the panel receives alarm signals from various field devices and, when the system is armed, transmits that alarm information to a central alarm monitoring company. Integration of these panels into the SMS is a significant part of the Security Master Plan. To achieve the required integration, these individual panels will be reconfigured to not only transmit alarm information ProWatch instead of a central station, but to be controllable and configurable via ProWatch. When the conversion is complete, integration of the BIAS into the SMS will provide the District with centralized, integrated alarm functionality of existing buildings and classrooms that are not included in major building renovation projects.

3. PUBLIC SAFETY VIDEO SYSTEM

The PSVS is a software based system that operates as a module within ProWatch. It is also a product of Honeywell and is called MaxPro. The software provides configuration, control, monitoring and recording management of digital video cameras. By being a fully integrated component with the SMS, video monitoring is an event based practice where specific video data is displayed only when associated with a particular programmed alarm event within the system. This feature serves as an effective situational management tool for District Police to utilize on a real-time basis. In addition, all cameras are recorded within the system and video is to be stored for a minimum of 30 days so the PSVS may also serves as a valuable investigative tool.

The system is completely IP based and is substantially reliant on the District's network backbone infrastructure for transmission of video data. The video data requires a substantial amount of drive space for storage. As such new projects that have a video component will need to include provisions for this storage, often in the form of network attached storage (NAS).

4. EMERGENCY COMMUNICATION SYSTEM

The ECS is a vital tool in providing long-term comprehensive service and protection of faculty, staff, and students. It is a software and hardware based system that relies heavily on interfaces with various hardware systems and devices including classroom and office VoIP telephones, "blue light" emergency phones, exterior emergency broadcast speakers, and SMS/email broadcasting. The ECS is a functional interface between the Cisco Call Manger, Talk-A-Phone Connect, and Everbridge. The primary interface between the ECS and the SMS is hardware I/O based, which needs to be considered and planned for accordingly when designing new facilities.

PART D

DEPLOYMENT PROTOCOL

This section details the standard protocol to be followed when designing and deploying the SMS sub-system and devices identified in this document. The protocol should be applied to new building, site improvements, and renovations. Deployment considerations include three levels of protection, designated low, medium and high. Such designation can be applied to a room, internal area, or building.

1. High Security Designation

   a. DEFINITION
   High security areas are those that require electronic security devices to provide system monitoring capabilities on a real-time basis. Devices installed in high security areas should be hardwired to ACAMS and/or BIAS panels or PSCS and/or ECS network switch (as appropriate to the specific device) and should be configured and programmed to provide instantaneous alarm/video notification either 24/7 or on a schedule as defined by and coordinated with the District. Examples of such areas include:

      i. Ground level access to the first floor building perimeter.
      ii. Computer rooms/data centers
      iii. MDF/MPOE
      iv. High value laboratories
      v. Administrative areas where cash is transacted
      vi. Senior Administration Offices
      vii. Physical and electronic records storage areas
      viii. Other locations as defined and designated by the District

b. ACAMS DEPLOYMENT

The deployment of ACAMS devices for high security designated areas includes hardwired access controls for the doors that lead into these areas. Hardwired access control doors should include four devices, at a minimum. These are:

i. Proximity card reader

ii. Door position switch/alarm contact

iii. Electronic lock

iv. Request-to-Exit device

Doors can also include other ancillary devices, as defined within the door hardware requirements, which should be integrated with the ACAMS when applied to high security areas. These may include:

i. Automatic openers

ii. ADA openers

iii. ADA buttons

iv. Exit devices

v. Remote door release buttons

All electronic door hardware devices should be included within the Division 8 specifications for any given project. The security specification should call for close coordination with Division 8. These devices should be electronic version of the locking hardware and devices as defined within the District's door hardware standard. Whenever feasible, the request-to-exit device should be included as an integral feature of the electronic door hardware. Request-to-exit devices shall not preclude exiting from the interior or require the use of a key, any special knowledge or effort. All security requirements shall conform to California Building Code 1003.3.1.

c. BIAS DEPLOYMENT

BIAS devices can be hardwired or wireless and should be connected to either the ACAMS or BIAS panel as appropriate to the project. ACAMS should be used in all new construction and BIAS should be utilized where existing in remodel projects. BIAS devices include:

i. Door position switch/alarm contact
ii. Glass Break Detectors
iii. Motion Detectors
iv. Beam detectors
v. Sonic detectors
vi. Other devices as directed by the District

Door position switch/alarm contact should be used on all doors that lead into high security areas but that do not require access control functionality. Furthermore, regular use of the door should be discouraged to prevent nuisance alarms. Therefore, they should be keyed to a building master or grandmaster, in accordance with the District keying standard.

Glass Break Detectors should be used within high security areas that may be accessible breaking a window, sidelight, or glass panel. The detector should be selected for the particular glass installed. The use of glass break detectors is preferable since they can be armed and operation 24/7 with little risk of false alarm but should be avoided in laboratory environments or other locations where there is a potential of incidental glass breaking. In these areas, motion detectors set on a time schedule of armed through the ACAMS or BIAS panel should be used.

Beam detectors or sonic detectors should be used to monitor possible intrusion into high security areas by means other than through doors and windows. Skylights, fiberglass wall panels, and block walls are some examples.

d. PSCS DEPLOYMENT

Public safety camera system deployment for high security areas chiefly involves the installation of IP based, high definition cameras at strategic locations inside and outside of buildings. Cameras should be included in project designs wherever live and recorded video can effectively supplement ACAMS and BIAS devices. Typical locations include:

i. Main exterior pathways around buildings

ii. Exterior quads/gathering areas

iii. Exterior approaches to main building entrances

iv. Interior lobby/corridor/hallways at main entrances

v. Interior office lobbies

vi. Book Store

vii. All interior counters/windows where duress and holdup buttons are installed (as described in the ECS section), which include, but are not limited to:

(1) Financial transaction counters/registers
(2) Admissions and Records
(3) Financial Aid
(4) Library
(5) Counseling
(6) Dean's/Chancellor's Offices

viii. Other areas as designated by the District

e. ECS DEPLOYMENT

The ECS is multidimensional with components deployed across various platforms, including the ACAMS, BIAS, Wide-area Emergency Broadcast System (WEBS), Cisco VoIP phone system, and Fire/Life Safety system. Many of the field devices that serve as part of the ECS are provided within the Cisco VoIP telephone system and fire/life safety system. Security system designers should coordinate with the designers and engineers of these other systems to ensure the security interface capabilities and functionalities are addressed.

When project designs include ACAMS or BIAS, emergency communication device deployment should include hold-up/panic, lockdown, and duress buttons.

Hold-up/panic buttons should be hardwired to the ACAMS or BIAS panel and should be included in the following locations:

i. Financial transaction counters/registers
ii. Admissions and Records
iii. Financial Aid
iv. Library
v. Counseling
vi. Dean's/Chancellor's Offices
vii. Other locations as designated by the District

Hold-up/panic buttons should, where appropriate and designated by the District be configured as lock-down buttons as well.

Lockdown button should be hardwired to the ACAMS or BIAS panel. Lockdown buttons should be configured to lockdown the room, area, floor or building as designated by the District. In addition, lockdown buttons must be configured as a high priority alarm within the SMS and should be configured to annunciate until acknowledged by a police dispatcher/operator. Lock down buttons that are not primarily designated as hold-up/panic buttons should be included in the following locations:

i. Classrooms
ii. Office reception desks
iii. Select administrative offices
iv. Any other area as designated by the District

Duress buttons may be hardwired or wireless. While hardwired duress buttons should be used when feasible, wireless buttons are acceptable when hardwiring is not possible or is impractical. Duress buttons are devices that notify police dispatchers of a duress situation is a location where money is not transacted or where lockdown is not required as a result of button activation. Duress button should be included in the following locations:

i. Individual administrative offices where designated by the District

ii. Individual faculty offices where designated by the District

iii. Locker rooms

iv. Dressing rooms

v. Any other locations as designated by the District

Emergency call stations and WEBS devices are foundational units that are included in the ECS. These devices are primarily installed in exterior locations since Cisco VoIP telephones that are located in classrooms and offices serve for interior emergency communications. The emergency call stations are independent towers or wall mount mounted units. Each style includes an emergency ring down telephone and a blue identification light that strobes upon activation on the unit. Additionally, the towers and wall mount units can be equipped with an amplifier and wide area broadcast speakers so as to serve as end devices on the WEBS portion of the ECS. Finally, wall mount stand-alone amplifier/speaker units are available to supplement WEBS distribution throughout the campus. Emergency call stations and WEBS devices are distributed according to the Campus ECS/WEBS Master Plan, which identifies approximate locations and types of current and future units based on the complete Campus Master Plan.

2. Medium Security Deployment
   a. DEFINITION

      Areas that require electronic security devices to provide system monitoring capabilities on a less than real-time basis are considered medium security. These areas should be equipped with devices that will provide alarm and event tracking data that are primarily used for investigative purposes and that do not require immediate alarm annunciation and response. Primarily these areas will be operational within the ACAMS and will be secured with wireless electronic locks that include integral proximity access control card readers, door status and request-to-exit switches. Video surveillance may be included for these areas as well, but only as directed by the District. Examples of areas suitable for medium security deployment include:

      i. Smart classroom (except doors that lead to the building exterior)
      ii. Classrooms that only have exterior doors
      iii. Administration Office Suites and/or Doors (except doors that lead to the building exterior)
      iv. Office with only have exterior door(s)
      v. IT/Data Closets
      vi. Electrical Rooms
      vii. Mechanical Rooms
      viii. Other medium security rooms as directed by the District

   b. Areas that require no electronic security protection but will require mechanical locks as defined in the door hardware standard. Examples of such areas include:

      i. Closets
      ii. Conference/meeting rooms that do not have doors leading to the building exterior
      iii. General storage rooms
      iv. Offices
      v. All other rooms and areas not otherwise directed by the District as medium or high security areas

PART E

TECHNICAL STANDARDS

This section includes technical standards data and criteria that should be used, in whole or in part, by security design professionals on a project specific basis. The intent of the material provided is to serve a guideline for establishing performance criteria and maintaining conformance to District security standards. The systems designed on particular projects must maintain conformity and operation with the SMS software as described and installed. As such, major system components are manufacturer specific and substitution will not be permitted. However, field devices are specified on a performance basis. Where make and models are specified, the information is to serve solely to establish performance criteria. In such cases, make and model information will be followed by, "or equal" and should be specified as such in the project specific design documentation.

1. General Security Requirements

   a. CODES AND STANDARDS
      All work shall be in accordance, where applicable, with the latest edition of the following:
      - i. California Building Code – Title 24 (CBC)
      - ii. California Electrical Code (CEC)
      - iii. California Fire Code (CFC)
      - iv. Electronics Industries Association (EIA)
      - v. Institute of Electrical and Electronic Engineers (IEEE)
      - vi. National Electrical Manufactures Association (NEMA)
      - vii. Occupational Safety and Health Act (OSHA)
      - viii. All other State and local codes and ordinances that may prevail

b. DESCRIPTION OF WORK

Work will require the furnishing and installation of items described herein or reasonably inferred as necessary for safe and proper operation; including every article, device or accessory (whether or not specifically called for by item) reasonably necessary to facilitate each system's functionality as indicated by the design and the equipment specified.

Elements of the work include, but are not limited to, materials, labor, supervision, supplies, equipment, transportation, storage, utilities, and all required licenses.

Work includes the design, procurement and installation of SMS devices and equipment and integration of the devices and equipment to the Districts SMS, comprised of the following sub-systems:

ix. ACAMS - Honeywell ProWatch
x. BIAS – Ademco/Vista (primarily existing)
xi. PSVS - Honeywell MaxPro
xii. ECS - Talk-a-Phone (and Cisco as defined in the telecommunications standards)

Specific devices types, locations and interconnection requirements are described and detailed within project specific documents, in accordance with these District Standards.

All equipment detailed in this Standard may not be applicable to each project. Include only the equipment best suited for the particular installation location on a per-project basis.

Security related work may require system configuration and programming of existing District systems. Coordinate all such configuration and programming requirements with the District.

c. QUALIFICATIONS OF CONTRACTOR

All work should be performed by a Contractor of established reputation and experience who has completed similar installations for a period of at least three (3) years and who should be able to refer to similar installations rendering satisfactory service.

The Contractor should maintain all current licenses required to provide the specific work efforts of the specific project.

The Contractor should utilize installation and service technicians whom are competent, factory trained and certified personnel capable of installing and maintaining the system and providing reasonable service.

d. MATERIAL SUBSTITUTIONS

Whenever materials, equipment or processes are specified or described in this Standard by using the proprietary name of an item or the name of a particular manufacturer, fabricator, supplier or distributor, the naming of the item is intended to establish the type, function and standard of quality and performance required by this Contract. It is not the intent of the District to exclude other materials, equipment, or processes or to limit competition in bidding. Therefore, unless the proprietary name referred to in the specifications is followed by words indicating that no substitution is permitted, materials, equipment, or processes of other manufacturers, fabricators, suppliers, or distributors will be considered by the District for substitution.

Consideration will be given to a proposed substitute only when sufficient information is submitted to the District to determine that the proposed substitute material, equipment, or process is in fact equivalent in all respects to the materials, equipment, or processes named in the specifications.

Where the phrase “or equal,” occurs in this Standard, do not assume that the materials, or equipment, will be approved as equal until the item has been specifically so approved for this work by the District.

The Owner, based upon conformance and integration with existing system equipment, has selected primary system components manufactured by Honeywell. No substitutions will be accepted for these components.

e. INSTALLATION

Systems, equipment and devices should be installed by competent tradesmen, skilled in this class of installation.

Systems should be installed in a manner that is consistent with the provisions and intent of the project specific Specifications, the Drawings, and the referenced Codes and Standards, and in accordance with equipment manufacturers' written Specifications and instructions and these Standards.

Installation workmanship should be accomplished in a neat and professional manner, meeting industry standards.

f. ACCEPTANCE TESTING AND COMMISSIONING

On-site Acceptance Testing with witness by the District, providing all personnel and equipment necessary to perform these tests, should be included in each project referencing work included in this standard.

Acceptance Testing should include, but not necessarily be limited to the following:

i. Operational verification and testing of all new and existing devices installed, modified and/or associated with the scope of this Project.
ii. Quality and craftsmanship of the installation.
iii. Verification of all wire and cable installation per the applicable Specification.
iv. Verification of all wire labeling per the applicable Specification.

g. RECORD DRAWINGS

The Contractor should maintain red-line drawings during construction and incorporate into AutoCAD, after acceptance testing, all changes made to the project.

h. OPERATIONS AND MAINTENANCE MANUALS

Operations and Maintenance manuals should be provided for all system devices provided and installed with each project, regardless of the use of identical devices at other locations within the District. O&M manuals should include the following:

i. All data and items specified for the project and/or included in the submittals, in its final, "as-built" form.
ii. Programmer's Manual with complete description of all programming included that is project specific. Manual should include a complete description of the system architecture, commands, diagnostic messages, and other programming procedures that are project specific.
iii. Graphics of all systems equipment configurations, showing all system equipment locations, data point addresses and operator notations, where applicable.
iv. Maintenance instructions for all systems and components, including parts and spare parts list.

i. WARRANTY

Equipment, materials, and workmanship should be guaranteed for a period of a minimum of twelve (12) months from the date of final system acceptance.

2. Access Control and Alarm Monitoring System Requirements

a. MATERIALS AND EQUIPMENT

Unless otherwise noted, all materials and equipment shall be new, of the type, capacity, and quality specified and free from defects. Material shall bear the label of, and be listed by the Underwriters' Laboratories unless of a type for which label or listing service is not provided.

Materials shall be of same brand or manufacturer throughout for each class of material or equipment.

b. ACAMS SERVER

The ACAMS server is existing and utilizes Honeywell ProWatch. It resides on the District Ethernet infrastructure on a dedicated security VLAN. All ACAMS panels and devices specified in and provided for District projects shall be fully compatible with the ACAMS.

The configuration and programming of all panels and devices associated with a specific project shall be included as a requirement within that project. All configuration and programming shall be coordinated with District representatives and shall match the existing naming and classification schema.

c. ACCESS CREDENTIALS

Access credentials (cards and fobs) are a foundational part of the ACAMS. The District maintains, controls and issues multi-technology cards that function with existing 125MHz proximity card readers as well as newer Smart Card readers. Individual project designed and specified under these Standards should not need to provide access credentials within the scope of work.

d. ACAMS PANELS

In all circumstances ACAMS panels should be fully compatible with and made operational within the District's existing Honeywell ProWatch system.

i. ACAMS Panels should have the following minimum characteristics:

(1) ACAMS panels should be Ethernet capable, utilize an imbedded operating system to provide distributed ACAMS functionality

(2) ACAMS panels should be provided with proximity card reader interface capabilities, and input/output functionality.

(3) ACAMS panels should be specified with appropriate panel power supplies, lock power supplies and isolation lock isolation relays. All power supplies should be provided with internal minimum 7amp-hour batteries.

ii. Enclosure Tamper Switches

(1) If not already equipped from the factory, all ACAMS panel, power supply and ancillary board enclosures should be equipped with an enclosure tamper switch.

(2) Tamper switches should be single-pole, single throw (SPST) units to provide supervision of enclosure doors.

(3) Tamper switches shall be tested and proven capable of initiating an alarm signal when the protected door is opened 3/8” on the latch side.

(4) Tamper switch should be installed inside the enclosure.

e. ACAMS/BIAS FIELD DEVICE HARDWARE REQUIREMENTS

i. Card Reader

(1) The reader is available in a variety of form factors. The particular form factor that is most suitable to the installation environment should be specified on a per project basis.

(2) The reader should be capable of reading and processing the contactless Smart Card utilized by the District.

(3) The reader should be read when presented in any orientation or at any angle to the surface of the reader (minimum read range: 3.5”).

(4) The reader should power the card, process the encoded data, and output the data to the access system in less than 175 milliseconds.

(5) A tri-state LED on the front of the reader should indicate to the user that the card was read and an access decision was made. The LED should be red when the door is secure, flash green when access is granted and flash red when access is denied.

(6) The readers should have an audible “beep” tone feature to indicate to the user that the card or tag was read.

(7) Accidental or intentional transmission of radio frequency signals into the reader should not compromise the system.

(8) The reader should function in the access control system’s normal or anti-pass back mode without changes to the reader.

(9) Damage or vandalism to the reader should not damage any other part of the access control system.

(10) Individual card reader finishes and colors should be coordinated with the Project Architect and the District.

(11) Proximity card readers shall be by HID, XceedID, or equal.

ii. Door Position Switches/Alarm Contact

(1) Switches should be single-pole, double throw (SPDT) unit to provide single circuit operation suitable for a line supervision.

(2) Switches should be capable of initiating an alarm signal when the protected door is opened 1” on the latch side.

(3) Recessed switches and magnets should be a minimum of 3/8” diameter and a maximum of 1” diameter.

(4) Surface mount switches should be mounted to door headers and the associated magnet shall be surface mounted to the door.

(5) Surface mount contacts and magnets should have aluminum housings and be equipped with an armored cable jacket.

(6) Overhead door contacts should be floor mounted and the associated magnet should be surface mounted to the overhead door.

(7) Overhead door contacts and magnets should have aluminum housings and be equipped with an armored cable jacket.

iii. Request-to-Exit (REX) Devices

(1) Where feasible, REX devices should be supplied integral with electronic door hardware as defined in the door hardware standards as specified in and coordinated with Division 8.

(2) REX switches should be single-pole, single throw (SPST) dry micro switch

(3) In circumstances where it is not feasible for the REX to be integral with the door hardware, a passive infrared motion sensor should be specified.

(4) Passive infrared REX devices should have an adjustable detection curtain, set to reliably activate prior to an individual exiting but to minimize incidental activation from passersby.

(5) Individual passive infrared finishes and colors should be coordinated with the Project Architect and the District.

(6) In circumstances where neither an integral REX nor passive infrared REX is suitable for installation, a push button REX should be utilized.

(7) REX push button should be mounted to a double gang steel face plate engraved with the words “Push to Release” and the plate shall be installed onto an existing stainless steel pedestal at the applicable door location.

(8) REX push button should include a DPST dry relay switch.

(9) REX push button should include a pneumatically controlled adjustable (2-60 seconds) time delay reset.

iv. Hardwired Electric Locks

(1) Hardwired electric locks should be electrified mortise, cylindrical, strike, rim device, exit device and/or electromagnetic lock as defined by the door hardware standard.

(2) Locks should operate at 24 VDC.

(3) Locks should have integral REX switch wherever practical.

(4) Locks should be provided with appropriate wire transfer or electrified door hinge.

(5) Locks should be fail-secure.

v. Wireless Electric Locks

(6) For medium security applications wireless electric locks should be utilized.

(7) Trim and finish of electric locks should match District hardware standards per the project specific requirements and specifications.

(8) Wireless locks should incorporate proximity card reader, door position switch and REX device.

(9) To maintain consistency with mechanical door hardware standards and existing wireless lock installations, all wireless locks needs to be an Ingersoll Rand, Schlage AD400 series devices.

(10) Wireless locks need to be configured to communicate with the specified Honeywell panel via an Ingersoll Rand, Schlage PIM. The PIM can wirelessly communicate with up to 16 wireless locks and itself is hardwired to the Honey ACAMS panel.

vi. Emergency Door Release (EDR):

(1) EDR should be used in conjunctions with electromagnetic locks where required by local fire code.

(2) EDR should be mounted to a single gang stainless steel face plate engraved with the words" Emergency Release".

(3) EDR should include a 1-9/16" Red mushroom activation button.

(4) EDR should include a pneumatically controlled adjustable (2-60 seconds) time delay reset.

(5) EDR should include a DPST dry relay switch with one pole hardwired to locally interrupt lock power and the other pole hardwired to the ACAMS panel and configured as a hardwired input.

vii. Motion Detectors

(1) Motion detectors should be used to provide internal area alarm detection on a time scheduled basis.

(2) Motion detector should utilize microwave and passive infrared technology to reduce false alarms.

(3) Motion detector should be surface or flush mount in a standard double gang junction box.

viii. Glass Break Detector

(1) Glass break detectors should be used to provide internal area alarm detection of intrusion attempts though exterior/perimeter glass.

(1) Glass break detectors should provide low and high frequency detection to reduce the likelihood of false alarms.

(1) Glass break detectors should be zoned within rooms when complete glass protection requires multiple devices.

ix. Microwave Beam Detectors

(1) Microwave beam detectors should be used to provide internal area alarm detections of intrusion attempts through shy lights, glass roof panels, and/or high ceiling windows that are accessible from the exterior.

(2) Microwave beam detectors are typically long range devices that include an active unit at one end and a passive unit at the other.

(3) Where microwave beam detectors are required, infrastructure and architectural coordination will be required.

x. Local Alarm Horn:

(1) Some perimeter exit doors may be designated as “Emergency Exit Only” and will be equipped with door positions switches/ alarm contacts.

(2) Upon a violation of an emergency exit door, a local horn should be provided to activate a high level sounder. The horn should continue to sound until expiration of the pre-determined software dwell time.

(3) Horn should deliver a minimum +/-90 peak db.

(4) Horn must have a sound that is distinguishable from the fire alarm system.

3. Public Safety Camera System Requirements

   a. MATERIALS AND EQUIPMENT

      Unless otherwise noted, all materials and equipment shall be new, of the type, capacity, and quality specified and free from defects. Material shall bear the label of, and be listed by the Underwriters' Laboratories unless of a type for which label or listing service is not provided.

      Materials shall be of same brand or manufacturer throughout for each class of material or equipment.

   b. PSCS SERVER

      The PSCS server is existing and utilizes Honeywell MaxPro. It resides on the District Ethernet infrastructure on a dedicated security VLAN. All PSCS devices specified in and provided for District projects shall be fully compatible with the PSCS.

      Supplemental server hardware may be required to support the cameras installed as part of the PSCS on a given project. When that is the case, the hardware should be provided to exceed the minimum specified requirements for such hardware as published by Honeywell at the time of design and specification.

      The PSCS requires each camera in the system to be licensed. Add-on camera licenses should be specified within each project design to accommodate the cameras specified within that particular project.

      The configuration and programming of all devices associated with a specific project shall be included as a requirement within that project. All configuration and programming shall be coordinated with District representatives and shall match the existing naming and classification schema.

c. PSCS DATA STORAGE

Video data consumes a considerable amount of digital storage. It also requires a considerable amount of bandwidth, in relation to other network system, to transmit. Therefore, PSCS data storage needs to be provided on a per project basis in the form of Network Attached Storage (NAS). The specified storage should be capable of storing all video data, from all project related cameras for a minimum of 30 days, at the following (per-camera) parameters:

i. Maximum specified camera resolution
ii. Minimum one (1) image per second continuous recording
iii. Maximum fifteen (15) images per second event recording (cash area cameras)

d. CAMERAS

In all circumstances PSCS cameras should be fully compatible with and made operational within the District's existing Honeywell MaxPro system. Specified cameras should meet or exceed the following:

iv. Cameras should utilize TCP/IP Ethernet with a codex compatible with Honeywell MaxPro.
v. Cameras should be powered with Ethernet PoE.
vi. Cameras should use a high resolution, progressive scan, 1/3-inch or greater CMOS imager that provide minimum HD720 (1280x720) pixel resolution.
vii. Camera resolution should be use based with a minimum HD720 resolution and maximum 5mp resolution.
viii. Cameras should be provided with auto-iris, vari-focal lenses with a range applicable to capture the desired field of view.
ix. Interior cameras should be suitable for interior installation environments.
x. Exterior cameras should be suitable for exterior installation environments and should be provided with integral heaters/blowers/seals/etc. necessary to operate in the applicable exterior environment.
xi. Camera should be as discreet as possible and color, finish and form factor should be closely coordinated with the project architect to balance use and function while maintaining the desired aesthetic of the facility.
xii. Cameras should be products of Axis, Panasonic, Sony, Honeywell, Bosch, or equal (camera codex must be compatible with and supported by MaxPro).

4. Emergency Communication System Requirements
   a. MATERIALS AND EQUIPMENT

      Unless otherwise noted, all materials and equipment shall be new, of the type, capacity, and quality specified and free from defects. Material shall bear the label of, and be listed by the Underwriters' Laboratories unless of a type for which label or listing service is not provided.

      Materials shall be of same brand or manufacturer throughout for each class of material or equipment.

   b. ECS/WEBS SERVES

      The ECS/WEBS servers are existing. The emergency communication telephones operate through the District's Cisco VoIP telephone system. The WEBS audio and SMS/SMTP broadcast operate through the District's Talk-A-Phone Contact Plus Mass Notification server. All ECS/WEBS devices specified in and provided for District projects shall be fully compatible with the ECS/WEBS platforms.

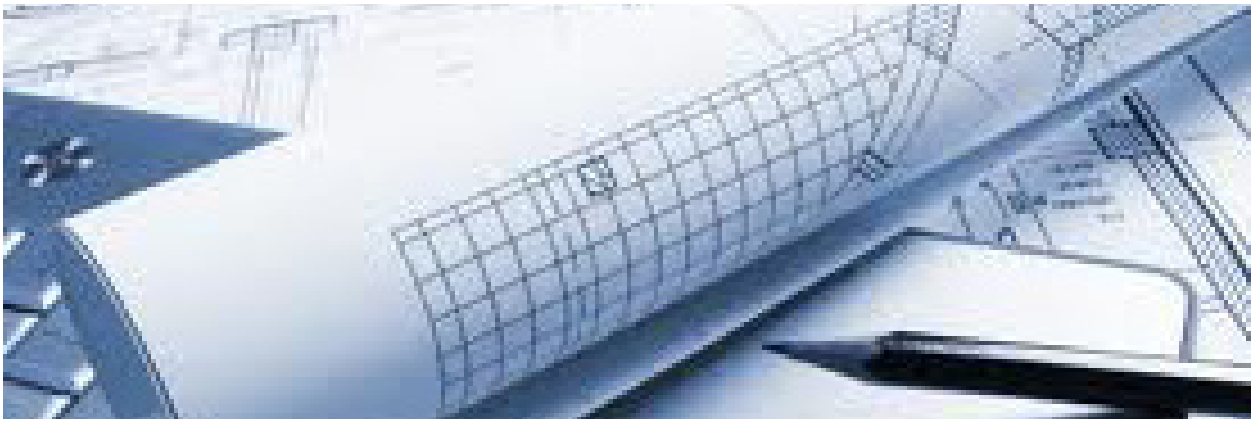
      The WEBS Mass Notification Server requires each WEBS device in the system to be licensed. Add-on licenses should be specified within each project design to accommodate the WEBS devices specified within that particular project.

      The configuration and programming of all devices associated with a specific project shall be included as a requirement within that project. All configuration and programming shall be coordinated with District representatives and shall match the existing naming and classification schema.

c. ECS/WEBS DEVICES

In all cases, new WES devices should be fully compatible and made operation with the existing Talk-A-Phone ECS/WEBS server and Contact Plus software. Specific devices from the Talk-A-Phone WEBS product line should be specified to meet the particular project requirements. On WEBS devices that include the requirement of emergency telephones, Cisco compatible Talk-A-Phone units should be provided. Emergency telephones that do not include WEBS should be products of Talk-A-Phone to maintain consistency throughout. ECS/WEBS units should be have either a blue or stainless steel finish. When the device includes an emergency telephone should include the word “EMERGENCY” in white lettering on two side of the unit.

11 SPECIFICATIONS, STANDARDS, + SYSTEMS



INTRODUCTION

Section 11 of this handbook describes the pragmatic aspects of capital improvements and implementation of the Master Plan. The design of engineered systems will respond to standards set forth in this section with the objective of ensuring compatible infrastructure components working together in easily maintainable configurations. The specifications herein set forth product, system and/or manufacturer criteria specific to San José • Evergreen Community College District (SJECCD).

The section is organized based on the 2010 Master Format® list of numbers and titles classified by work results or construction practices.

DIVISION 2	EXISTING CONDITIONS
DIVISION 5	METALS
DIVISION 6	WOOD, PLASTICS, AND COMPOSITES
DIVISION 7	THERMAL AND MOISTURE PROTECTION
DIVISION 8	OPENINGS
DIVISION 9	FINISHES
DIVISION 10	SPECIALTIES
DIVISION 11	EQUIPMENT
DIVISION 12	FURNISHING
DIVISION 14	CONVEYING EQUIPMENT
DIVISION 21	FIRE SUPPRESSION
DIVISION 22	PLUMBING
DIVISION 23	HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)
DIVISION 25	INTEGRATED AUTOMATION
DIVISION 26	ELECTRICAL
DIVISION 28	ELECTRONIC SAFETY AND SECURITY
DIVISION 32	EXTERIOR IMPROVEMENTS

02 41 13 SELECTIVE SITE DEMOLITION
02 41 13 STRUCTURE DEMOLITION

06 41 00 ARCHITECTURAL WOOD CASEWORK

07 00 00 THERMAL AND MOISTURE PROTECTION
07 42 33 PLASTIC WALL PANELS

08 10 00 DOORS AND FRAMES
08 14 16 WOOD DOORS
08 40 00 ENTRANCES, STOREFRONTS, AND CURTAIN WALLS
08 42 29 AUTOMATIC SLIDING DOOR ENTRANCES
08 50 00 WINDOWS
08 71 00 DOOR HARDWARE

09 20 00 PLASTER AND GYPSUM BOARD
09 24 00 CEMENT PLASTERING
09 30 00 TILING
09 51 00 ACOUSTICAL CEILINGS
09 54 00 SPECIALTY CEILINGS
09 65 00 RESILIENT FLOORING
09 65 13 RESILIENT BASE AND ACCESSORIES
09 65 43 LINOLEUM FLOORING
09 68 00 CARPET
09 77 00 SPECIAL WALL SURFACING
09 91 00 PAINTING
09 96 00 HIGH-PERFORMANCE COATINGS

10 11 00 VISUAL DISPLAY SURFACES
10 21 13 TOILET COMPARTMENTS
10 28 13 TOILET ACCESSORIES
10 44 13 FIRE EXTINGUISHER CABINETS
10 51 23 PLASTIC-LAMINATE-CLAD LOCKERS
10 81 13 BIRD CONTROL DEVICES

11 12 00 PARKING CONTROL EQUIPMENT
11 24 29 FACILITY FALL PROTECTION

12 24 13 ROLLER SHADES
12 30 00 CASEWORK
12 36 00 COUNTERTOPS
12 48 13 ENTRANCE FLOOR MATS AND FRAMES

14 00 00 CONVEYING SYSTEM

21 00 00 FIRE SUPPRESSION

22 00 00 PLUMBING
22 42 00 COMMERCIAL PLUMBING FIXTURES
22 45 00 EMERGENCY FIXTURES
22 47 00 DRINKING FOUNTAINS

23 00 00 HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)
23 08 00 COMMISSIONING OF HVAC
23 11 23 NATURAL GAS DISTRIBUTION
23 21 13 HYDRONIC PIPING
23 37 00 AIR OUTLETS AND INLETS
23 81 23 COMPUTER-ROOM AIR-CONDITIONERS

25 00 00 INTEGRATED AUTOMATION

26 00 00 ELECTRICAL
26 51 00 INTERIOR LIGHTING

28 31 11 DIGITAL ADDRESSABLE FIRE ALARM SYSTEM

32 80 00 IRRIGATION

Div 2

SITE CONSTRUCTION

02 41 13 SELECTIVE SITE DEMOLITION

- Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

02 41 13 STRUCTURE DEMOLITION

- Do a full demolition of everything within limit line, including foundations. Everything is demolished if not serving something else.

Div 5

METALS

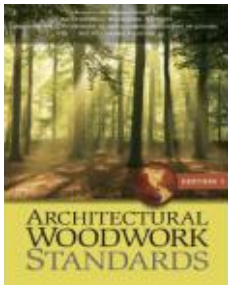
05 50 00 METAL FABRICATIONS

- Provide a metal break shape at 45 degrees for bird deterrence at all reentrant exterior corners where there is no glazing, in addition to regular bird deterrence system under 10 81 13.

Div 6

WOOD, PLASTICS, + COMPOSITES

06 41 00 ARCHITECTURAL WOOD CASEWORK



- Casework shall comply with the Architectural Woodwork Standards (AWS), latest edition, published jointly by the Architectural Woodwork Institute, Architectural Woodwork Manufacturers Association of Canada, and Woodwork Institute.
  - Grade: Custom
- Casework shop drawings, fabrication, and installation shall be certified by the Woodwork Institute.
- Installation of casework, including installation of concealed backing in walls by other trades, shall be inspected and certified by the Woodwork Institute under its Certified Seismic Installation Program.
- Refer to Division 12 for countertops.
- Wood-Veneer-Faced Architectural Cabinets: Materials, workmanship and installation shall be “Custom Grade” in accordance with Architectural Woodwork Standards (AWS).
- Casework shall be factory finished unless noted otherwise.
- Plastic Laminate Clad Architectural Cabinets: Materials, workmanship and installation shall be “Custom Grade” in accordance with Architectural Woodwork Standards (AWS).
- All exposed and semi-exposed surfaces of casework shall be finished in specified high pressure decorative laminate (HPDL).
- All cabinet interiors shall be finished in melamine
- Avoid use of plastic laminate on countertops.
- Substrate: MDF - Sierra Pine Medite II (no added formaldehyde)

CASEWORK HARDWARE	
Hinge Manufacturer: Model: Finish:	
Pulls Manufacturer: Model: Finish:	
Drawer Slides Manufacturer: Model: Finish:	
Shelf Supports Manufacturer: Model: Finish:	
Cabinet Locks Manufacturer: Model: Finish:	 

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Div 7

THERMAL + MOISTURE PROTECTION

III. ROOFING SYSTEM

1.1 LOW-SLOPED ROOF MEMBRANE SYSTEMS – POLYVINYL-CHLORIDE (PVC) ROOFING

A. Roof membrane shall be Sika Sarnafil G410, ASTM D 4434, Type II, Grade I, glass fiber reinforced, felt backed.
   1. Thickness: 60 mils nominal
   2. Exposed Face Color: Energy Star white or tan

B. Roofing system shall be rated Class A in accordance with Underwriter's Laboratory (UL) 790.

C. Roof covering shall be designed for wind loads in accordance with the California Building Code.

D. Thermoplastic single-ply membrane roofs shall have a design slope of a minimum of one-fourth unit vertical in 12 units horizontal (2-percent slope) in accordance with the California Building Code.
   1. Crickets and saddles shall be installed on the ridge side of any penetration greater than 30 inches wide.

E. Roof drainage shall comply with the California Plumbing Code.

F. Membrane shall have a solar reflective index of 95 in accordance with ASTM E1980, solar reflectance of 0.80 minimum in accordance with ASTM A1918, and solar emittance of 0.87 minimum in accordance with ASTM E408 and shall meet the standards of the State of California, Title 24.

G. Membrane shall be fully adhered with manufacturer's standard VOC compliant adhesive.

H. Thermoplastic membrane flashing shall be manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet membrane.

I. Integrated Sheet Metal: Manufacturer's G90 hot dip galvanized steel with manufacturer's thermoplastic membrane laminated on one side.
   1. Color: To be selected by District from manufacturer's full range of colors.

J. Walkway pads shall be Crossgrip by Sika-Sarnafil.
   1. Contrasting color to that of roofing membrane.

K. Termination bars shall be manufacturer's standard, predrilled aluminum or stainless steel termination bars, approximately 1 by 1/8 inch thick; with anchors. Formed steel shall be pre-punched with holes every 1 inch on center to allow various fastener spacing options.

L. Penetration flashing shall be field fabricated boots fabricated tight to penetration.

M. Flashing shall be installed in such a manner so as to prevent moisture entering the wall and roof through joints in copings, through moisture-permeable materials and at intersections with parapet walls and other penetrations through the roof plane
   1. Where flashing is of metal, the metal shall be corrosion resistant with a thickness of not less than No. 24 galvanized sheet (G-90 minimum.)
   a. Finishes shall be field painted or 2-coat fluoropolymer.
   2. Provide Type 304 stainless steel flashing in corrosive exposures.

N. Where wall cladding abuts roof areas provide two-piece reglet in counterflashing systems including wind clips and corner pieces.

O. Roof membrane shall be installed in accordance with manufacturer's recommendations and the recommendations of the National Roofing Contractors Association (NRCA) and the Sheet Metal and Air Conditioning Contractors' National Association (SMACNA.)

P. Insulation: Where required for thermal resistance (R-Value); where roof slope is not provided by the structure; as secondary slope for crickets and saddles.
   1. Rigid insulation, tapered as required, shall be polyisocyanurate insulation with inorganic coated-glass facers, including tapered edge strips; ASTM C 1289, with a core density of 2.0 pcf, per ASTM D 1622.
   2. Pre-primed Cover Board: As top layer of insulation system and substrate for membrane adhesion.
   a. DensDeck Prime: Glass mat gypsum panel with pre-primed surfaces on front and back; ASTM C 1177, with maximum flame-spread and smoke-developed indexes of 0, per ASTM E 84.

Q. Rigid/tapered insulation shall be mechanically attached over nailable decks and fully adhered over non-nailable decks. Pre-primed cover board shall be fully adhered over rigid/tapered insulation; mechanically attached over nailable substrates and fully adhered over non-nailable substrates.

R. Manufacturer's warranty shall be on manufacturer's standard or customized form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system including components that fail in materials or workmanship within twenty (20) years.

S. Provide Trespa or equal solid phenolic wall panels, concealed fastener, open-joint, ventilated rainscreen system.

T. Provide a black, vapor-permeable air and water barrier approved and warrantied by the manufacturer for UV exposure at open joint panel systems.

1.2 LOW-SLOPED ROOF MEMBRANE SYSTEMS BELOW GARDEN ROOFS – POLYVINYL-CHLORIDE (PVC) ROOFING

A. Roof membrane shall be Sika Sarnafil G410, ASTM D 4434, Type II, Grade I, glass fiber reinforced, felt backed.
   1. Thickness: 60 mils nominal
   2. Exposed Face Color: Energy Star white or tan where exposed beyond garden roof, if required.

B. Include electronic leak detection system consisting of grounding screen below roof membrane for future leak detection. This system is required for manufacturer's 'Single Source' warranty.

C. Manufacturer's standard drainage panel shall be installed over roofing membrane.

D. Roofing system shall be rated Class A in accordance with Underwriter's Laboratory (UL) 790.

E. Roof covering shall be designed for wind loads in accordance with the California Building Code.

F. Thermoplastic single-ply membrane roofs shall have a design slope of a minimum of one-fourth unit vertical in 12 units horizontal (2-percent slope) in accordance with the California Building Code.
   1. Crickets and saddles shall be installed on the ridge side of any penetration greater than 30 inches wide.

G. Roof drainage shall comply with the California Plumbing Code.

H. Membrane, where exposed beyond garden roof, shall have a solar reflective index of 95 in accordance with ASTM E1980, solar reflectance of 0.80 minimum in accordance with ASTM A1918, and solar emittance of 0.87 minimum in accordance with ASTM E408 and shall meet the standards of the State of California, Title 24.

I. Membrane shall be fully adhered with manufacturer's standard VOC compliant adhesive.

J. Thermoplastic membrane flashing shall be manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet membrane.

K. Integrated Sheet Metal: Manufacturer's G90 hot dip galvanized steel with manufacturer's thermoplastic membrane laminated on one side.
   1. Color: To be selected by District from manufacturer's full range of colors.

L. Termination bars shall be manufacturer's standard, predrilled aluminum or stainless steel termination bars, approximately 1 by 1/8 inch thick; with anchors. Formed steel shall be pre-punched with holes every 1 inch on center to allow various fastener spacing options.

M. Penetration flashing shall be field fabricated boots fabricated tight to penetration.

N. Flashing shall be installed in such a manner so as to prevent moisture entering the wall and roof through joints in copings, through moisture-permeable materials and at intersections with parapet walls and other penetrations through the roof plane
   1. Where flashing is of metal, the metal shall be corrosion resistant with a thickness of not less than No. 24 Type 304 stainless steel sheet.

O. Where wall cladding abuts roof areas provide two-piece reglet in counterflashing systems including wind clips and corner pieces.

P. Provide PVC protection layer under pedestals where pavers are to be installed at perimeter and other locations around garden roof.

Q. Roof membrane shall be installed in accordance with manufacturer's recommendations and the recommendations of the National Roofing Contractors Association (NRCA) and the Sheet Metal and Air Conditioning Contractors' National Association (SMACNA.)

R. Insulation: Where required for thermal resistance (R-Value); where roof slope is not provided by the structure; as secondary slope for crickets and saddles.
   1. Rigid insulation, tapered as required, shall be polyisocyanurate insulation with inorganic coated-glass facers, including tapered edge strips; ASTM C 1289, with a core density of 2.0 pcf, per ASTM D 1622.
   2. Pre-primed Cover Board: As top layer of insulation system and substrate for membrane adhesion.
      a. DensDeck Prime: Glass mat gypsum panel with pre-primed surfaces on front and back; ASTM C 1177, with maximum flame-spread and smoke-developed indexes of 0, per ASTM E 84.

S. Rigid/tapered insulation shall be mechanically attached over nailable decks and fully adhered over non-nailable decks. Pre-primed cover board shall be fully adhered over rigid/tapered insulation; mechanically attached over nailable substrates and fully adhered over non-nailable substrates.

T. Manufacturer's warranty shall be on manufacturer's standard or customized form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system including components that fail in materials or workmanship within twenty (20) years. Warranty shall include removal and reinstallation of overburden and replacement of damaged overburden.

1.3 STEEP-SLOPED ROOF MEMBRANE SYSTEMS – METAL ROOFING

A. Standing seam metal roof panels shall be SpanSeam by AEP span, vertical-rib, seamed-joint, zinc-coated (galvanized) steel sheet in compliance with ASTM E 1514.
   1. Thickness: 24 gauge nominal thickness.
   2. Color:
   3. Exterior Finish: 2-coat fluoropolymer.
   4. Joint Type: Double folded.
   5. Panel Coverage: 16 inches.

B. Panel clips shall be floating to accommodate thermal movement.

C. Metal roofing shall not allow water penetration when tested according to ASTM E 2140.

D. Metal roof panel assembly shall comply with UL 580 for wind-uplift-resistance class UL 90.

E. Metal roofing shall have a solar reflectance index not less than 29 when calculated according to ASTM E 1980 based on testing identical products by a qualified testing agency and shall meet the standards of the State of California, Title 24.
   1. Metal roof panels shall be listed on the U.S. Department of Energy's ENERGY STAR Roof Products Qualified Product List for steep-slope roof products.

F. Concealed panel sealants shall be butyl. Use butyl tape and gunnable butyl as recommended by the manufacturer.

G. Exposed sealants shall be silicone as manufactured by Dow Corning or Momentive Performance Materials, Inc. complying with ASTM C920.

H. Metal roof panels shall be fastened to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended by manufacturer.
   1. Clips shall be installed to supports with self-tapping fasteners.
   2. Pressure plates shall be installed at locations indicated in manufacturer's written installation instructions.
   3. Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.

I. Underlayment shall be two layers of Grace Ultra high temperature self-adhering underlayment, polyethylene faced in compliance with ASTM D 1970.
   1. Primer shall be manufacturer's recommended primer for improved adhesion to substrates.
   2. Slip sheet shall be manufacturer's recommended slip sheet, of type required for application.

J. Provide components approved by roof panel manufacturer and as required for a complete metal roof panel assembly including trim, copings, fasciae, corner units, ridge closures, clips, flashings, fillers, closure strips, and similar items. Match material and finish of metal roof panels.

K. Insulated roof curbs shall be fabricated from same material as roof panels, minimum 24 gauge thick; with bottom of skirt profiled to match roof panel profiles, and welded top box and integral full-length cricket. Fabricate curb and sub-framing to withstand indicated loads, of size and height indicated. Finish roof curbs to match metal roof panels.

L. Flashing and trim shall be formed from same material as roof panels, prepainted with coil coating, minimum 24 gauge. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Flashing and trim shall be finished to match adjacent metal roof panels.

M. Manufacturer's warranty shall be on manufacturer's standard form in which manufacturer agrees to repair or replace metal roof panel assemblies that fail in materials or workmanship within twenty (20) years.

N. Manufacturer's special warranty on panel finishes shall be on manufacturer's standard form in which manufacturer agrees to repair finish or replace metal roof panels that show evidence of deterioration of factory-applied finishes within twenty (20) years.

1.4 STEEP-SLOPED ROOF MEMBRANE SYSTEMS – ASPHALT SHINGLE ROOFING

A. Glass-fiber-reinforced asphalt shingles shall be as manufactured by Certainteed.
   1. Asphalt shingles shall comply with ASTM D3161, Class F, 110 mph wind resistance and be ASTM D3018 Type 1.
   2. Asphalt shingles shall only be used on roof slopes of 2:12 or greater.

B. Underlayment shall conform to ASTM D226 Type 1, ASTM D4869 Type 1, or ASTM D6757.
   1. For slopes from 2:12 to 4:12 double underlayment application is required.
   2. Underlayment shall be installed shingle fashion, parallel and starting from the eave.

C. Self-adhering flashing shall be Grace Ultra high temperature self-adhering flashing
   1. Self-adhering flashing shall be installed at rakes, eaves, hips, ridges, valleys and behind metal flashings.

D. Exterior fire-test exposure shall be Class A in accordance with ASTM E 108 or UL 790.

E. Profiles and color shall be as selected by architect.

F. Shingle fasteners shall be hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch- diameter, ring shank, sharp-pointed, with a minimum 3/8-inch-diameter flat head and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through structural sheathing.

G. Underlayment fasteners shall be hot-dip galvanized-steel wire nails, ring shank, with low-profile capped heads or disc caps, 1-inch minimum diameter and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through structural sheathing.

H. Hip and ridge shingles shall be manufacturer's standard units to match asphalt shingles.

I. Asphalt shingles shall be installed according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

J. Sheet metal flashings shall be corrosion resistant sheet metal with a thickness of not less than No. 24 galvanized sheet (G-90 minimum.)
   1. Finishes shall be field painted or 2-coat fluoropolymer.

K. Warranty length varies by style. Select shingles with a minimum ten (10) years non-prorated warranty period and algae discoloration warranty period of fifteen (15) years.

1.5 STEEP-SLOPED ROOF MEMBRANE SYSTEMS – CONCRETE/CLAY TILE ROOFING

A. Concrete and clay tile shall be molded or extruded roof tile units of shape and configuration selected by the architect, with integral color, and free of surface imperfections.
   1. Clay tile shall be ASTM C1167.
   2. Concrete tile shall be ASTM C1492.
   3. Clay and concrete tiles shall only be used on roof slopes of 2-1/2:12 or greater.

B. Verify structural capacity of the roof structure for the weight of tile selected.

C. Underlayment shall conform to ASTM D226 Type 2, ASTM D2626, or ASTM D6380 Class M (mineral-surfaced roll roofing.)
   1. For slopes from 2-1/2:12 to 4:12 double underlayment application is required.
   2. Underlayment shall be installed shingle fashion, parallel and starting from the eave.

D. Self-adhering flashing shall be Grace Ultra high temperature self-adhering flashing
   1. Self-adhering flashing shall be installed at rakes, eaves, hips, ridges, valleys and behind metal flashings.

E. Exterior fire-test exposure shall be Class A in accordance with ASTM E 108 or UL 790.

F. Profiles, color and blend shall be as selected by architect.

G. Tile fasteners shall be corrosion resistant and not less than 11 gage, 5/16 inch head, and of sufficient length to penetrate the deck a minimum of 3/4 inch or through the thickness of the deck, whichever is less. Attaching wire for clay or concrete tile shall not be smaller than 0.083 inch. Perimeter fastening areas include three tile courses but not less than 36 inches from either side of hips or ridges and edges of eaves and gable rakes.
   1. Fasten in accordance with California Building Code.

H. Underlayment fasteners shall be hot-dip galvanized-steel wire nails, ring shank, with low-profile capped heads or disc caps, 1-inch minimum diameter and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through structural sheathing.

I. Wood battens and shims shall be construction heart redwood. Battens shall be nominal 1-by-2-inch wood horizontally over 1/2-inch- high, lath strips in 48-inch lengths with ends separated by 1/2 inch, at spacing required by concrete roof tile manufacturer, and securely fasten to roof deck.
   1. Scalloped battens may be used in lieu of battens with shims.

J. Bird stop shall be clay, concrete or metal as selected by the architect from manufacturer's standard bird stops.

K. Ridge end hip and hip starter header course roll rake edge and other units, in color matching roof tiles.

L. Tile shall be installed according to manufacturer's written instructions and recommendations in TRI/WSRCA's "Concrete and Clay Roof Tile Design Criteria Installation Manual for Moderate Climate Regions," and NRCA's "The NRCA Roofing and Waterproofing Manual."

M. Sheet metal flashings shall be corrosion resistant sheet metal with a thickness of not less than No. 24 galvanized sheet (G-90 minimum.)
   1. Finishes shall be field painted or 2-coat fluoropolymer.

N. Warranty shall be on manufacturer's standard form in which manufacturer agrees to repair or replace clay roof tiles that fail in materials within fifty (50) years.

O. Roofing installer's warranty in which roofing Installer agrees to repair or replace components of roofing that fail in materials or workmanship within five (5) years.

1.6 STEEP-SLOPED ROOF MEMBRANE SYSTEMS – POLYVINYL-CHLORIDE (PVC) ROOFING WITH DECORATIVE RIBS SIMULATING STANDING SEAM METAL ROOFING

A. Roof membrane shall be Sika Sarnafil G410, ASTM D 4434, Type II, Grade I, glass fiber reinforced, felt backed.
   1. Thickness: 60 mils nominal
   2. Exposed Face Color: As selected by the architect.

B. Roofing system shall be rated Class A in accordance with Underwriter's Laboratory (UL) 790.

C. Roof covering shall be designed for wind loads in accordance with the California Building Code.

D. The use of decorative ribs is intended for steep-slope aesthetic, however it can be used on slopes down to and including of one-fourth unit vertical in 12 units horizontal (2-percent slope) in accordance with the California Building Code.
   1. Crickets and saddles shall be installed on the ridge side of any penetration greater than 30 inches wide.

E. Roof drainage shall comply with the California Plumbing Code.

F. Architect shall select color that conforms with Title 24 Energy Code requirements for steep sloped roofing as required.

G. Membrane shall be fully adhered with manufacturer's standard VOC compliant adhesive.

H. Thermoplastic membrane flashing shall be manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet membrane.

I. Integrated Sheet Metal: Manufacturer's G90 hot dip galvanized steel with manufacturer's thermoplastic membrane laminated on one side.
   1. Color: To be selected by District from manufacturer's full range of colors.

J. Termination bars shall be manufacturer's standard, predrilled aluminum or stainless steel termination bars, approximately 1 by 1/8 inch thick; with anchors. Formed steel shall be pre-punched with holes every 1 inch on center to allow various fastener spacing options.

K. Penetration flashing shall be field fabricated boots fabricated tight to penetration.

L. Manufacturer's warranty shall be on manufacturer's standard or customized form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system including components that fail in materials or workmanship within twenty (20) years.

M. Flashing shall be installed in such a manner so as to prevent moisture entering the wall and roof through joints in copings, through moisture-permeable materials and at intersections with parapet walls and other penetrations through the roof plane

1. Where flashing is of metal, the metal shall be corrosion resistant with a thickness of not less than No. 24 galvanized sheet (G-90 minimum.)

a. Finishes shall be field painted or 2-coat fluoropolymer.

2. Provide Type 304 stainless steel flashing in corrosive exposures.

N. Where wall cladding abuts roof areas provide two-piece reglet in counterflashing systems including wind clips and corner pieces.

O. Roof membrane shall be installed in accordance with manufacturer's recommendations and the recommendations of the National Roofing Contractors Association (NRCA) and the Sheet Metal and Air Conditioning Contractors' National Association (SMACNA.)

P. Insulation: Where required for thermal resistance (R-Value); where roof slope is not provided by the structure; as secondary slope for crickets and saddles.

1. Rigid insulation, tapered as required, shall be polyisocyanurate insulation with inorganic coated-glass facers, including tapered edge strips; ASTM C 1289, with a core density of 2.0 pcf, per ASTM D 1622.

2. Pre-primed Cover Board: As top layer of insulation system and substrate for membrane adhesion.

a. DensDeck Prime: Glass mat gypsum panel with pre-primed surfaces on front and back; ASTM C 1177, with maximum flame-spread and smoke-developed indexes of 0, per ASTM E 84.

Q. Rigid/tapered insulation shall be mechanically attached over nailable decks and fully adhered over non-nailable decks. Pre-primed cover board shall be fully adhered over rigid/tapered insulation; mechanically attached over nailable substrates and fully adhered over non-nailable substrates.

IV. WATERPROOFING

1.7 BELOW-GRADE WATERPROOFING IN THE WATER TABLE – THERMOPLASTIC SHEET WATERPROOFING WITH ACTIVE POLYMER CORE

A. Waterproofing shall be Cetco Coreflex 60, Elvaloy KEE based thermoplastic membrane reinforced with a 5.0 oz. weft inserted knit polyester fabric integrally bonded to an active polymer core (APC).
   1. Thickness: 60 mils nominal

B. Perform groundwater analysis to determine if corrosion-resistant product of manufacturer (Coreflex 60-XP) is required.

C. Membrane shall be mechanically attached to lagging at property line installations and mechanically attached to building foundation wall at layback installations.

D. Foundation Wall: Lagging where required for property line installation method shall be shotcrete lagging.
   1. Fins, ridges, ponding ridges and other protrusions should be level and smooth with monolithic concrete surface.

E. Horizontal Slab: Waterproofing shall be installed over a 3 inch fiber-reinforced mud/rat slab on prepared soil or as otherwise directed by the geotechnical engineer.

F. Manufacturer's standard protection layer shall be installed over waterproofing in backfill applications.

G. Termination bars shall be manufacturer's standard, predrilled aluminum or stainless steel termination bars, approximately 1 by 1/8 inch thick; with anchors. Formed steel shall be pre-punched with holes every 1 inch on center to allow various fastener spacing options.

H. Waterstops in cast in place concrete shall be installed at all cold joints. Two waterstops shall be installed in cold joints of shotcrete applications and one waterstop at each shotcrete lift joint.

I. Penetration flashing shall be field fabricated boots fabricated tight to penetration.

J. Penetrations in walls within the water table shall utilize Link-Seal EPDM modular seal assembly manufactured by PSI-Thunderline/Link-Seal.

K. Warranty shall be manufacturer's fifteen (15) year HydroShield warranty, without monetary limitation, in which manufacturer agrees to repair leaks.

L. Flashing shall be installed in such a manner so as to prevent moisture entering the wall.

M. Waterproofing membrane shall be installed in accordance with manufacturer's recommendations.

1.8 BELOW-GRADE WATERPROOFING ABOVE THE WATER TABLE – BENTONITE GEOTEXTILE COMPOSITE WATERPROOFING

A. Waterproofing shall be Cetco Voltex DS, interlocked geotextiles encapsulating a minimum of 1.10 lbs. per square foot of granular sodium bentonite with one woven and one non-woven polypropylene geotextile, interlocked using a needle-punching process that produces several interlocks per square inch over the entire surface area of product with an integrated polyethylene liner on one side.

B. Perform groundwater analysis to determine if corrosion-resistant product of manufacturer (Voltex DSCR) is required.

C. Membrane shall be mechanically attached to lagging at property line installations and mechanically attached to building foundation wall at layback installations.

D. Foundation Wall: Lagging where required for property line installation method shall be shotcrete lagging.

1. Fins, ridges, ponding ridges and other protrusions should be level and smooth with monolithic concrete surface.

E. Horizontal Slab: Waterproofing shall be installed over a 3 inch fiber-reinforced mud/rat slab on prepared soil or as otherwise directed by the geotechnical engineer.

F. Manufacturer's standard drainage panel shall be installed over waterproofing. Verify geotechnical drainage and discharge requirements.

G. Termination bars shall be manufacturer's standard, predrilled aluminum or stainless steel termination bars, approximately 1 by 1/8 inch thick; with anchors. Formed steel shall be pre-punched with holes every 1 inch on center to allow various fastener spacing options.

H. Waterstops in cast in place concrete shall be installed at all cold joints. Two waterstops shall be installed in cold joints of shotcrete applications and one waterstop at each shotcrete lift joint.

I. Penetration flashing shall be fabricated tight to penetration.

J. Penetrations in walls shall utilize Link-Seal EPDM modular seal assembly manufactured by PSI-Thunderline/Link-Seal.

K. Warranty shall be manufacturer's five (5) year HydroShield warranty, without monetary limitation, in which manufacturer agrees to repair leaks.

L. Flashing shall be installed in such a manner so as to prevent moisture entering the wall.

M. Waterproofing membrane shall be installed in accordance with manufacturer's recommendations.

1.9 PLANTER AND PLAZA WATERPROOFING – HOT FLUID-APPLIED RUBBERIZED ASPHALT WATERPROOFING

A. Waterproofing shall be Cetco Strataseal HR, Single component; 100 percent solids; hot fluid-applied, fully reinforced rubberized asphalt.
   1. Protection course shall be manufacturer's RAP 400 for topping slab applications and RAP 1000 for other overburden.

B. Design four-way slope of a minimum of one-fourth unit vertical in 12 units horizontal (2-percent slope.)

C. Include manufacturer's recommended root barrier for horizontal and vertical surfaces at planters.

D. Waterproofing shall be fluid-applied to substrates.

E. Manufacturer's standard drainage panel shall be installed over waterproofing.

F. Termination bars shall be manufacturer's standard, predrilled aluminum or stainless steel termination bars, approximately 1 by 1/8 inch thick; with anchors. Formed steel shall be pre-punched with holes every 1 inch on center to allow various fastener spacing options.

G. Waterstops in cast in place concrete shall be installed at all cold joints.

H. Penetration flashing shall be applied tight to penetration.

I. Prime substrates in accordance with manufacturer's recommendations.

J. Water test each installation area in accordance with manufacturer's requirements. After the waterproofing membrane as cooled, water test each installed area by flooding with water to a minimum depth of 2 inches for a period of 48 hours to check the integrity of the membrane installation.

K. Warranty shall be manufacturer's fifteen (15) year warranty in which manufacturer agrees to repair or replace waterproofing and sheet flashings that do not comply with requirements or that fail to remain watertight within specified warranty period. Overburden removal is the responsibility of the District.

L. Flashing shall be installed in such a manner so as to prevent moisture entering the wall.

M. Waterproofing shall be installed in accordance with manufacturer's recommendations.

1.10 PEDESTRIAN TRAFFIC COATINGS ON WOOD DECK

A. Traffic coating shall be Excellent Coatings, Inc., Excel-Coat F/S
   1. Color and patterns as selected by the architect.

B. Pedestrian Traffic Coating shall have a "Class A" one-hour fire rating over a combustible wood substrate. (ICBO #4804)

C. Decks shall have a design slope of a minimum of one-fourth unit vertical in 12 units horizontal (2-percent slope.)

D. Pedestrian traffic coating assembly shall be installed over cementitious underlayment and shall include all components tested for the fire rated assembly.
   1. Expanded Metal Lath: 2.5 expanded metal lath, hot-dipped galvanized.
   2. Underlayment: Excel-Crete Additive.
   3. Primer: Excel-Coat Primer 120 or PC-155
   4. Base Coat: Excel-Coat #1 Base Coat
   5. Fiberglass Mat, 0.75 oz., random chop
   6. Texture Coat: Excel-Coat #200 Texture Coat
   7. Top Coat: Excel-Coat #300 Top Coat

E. Deck drainage shall comply with the California Plumbing Code.

F. Pedestrian traffic coating shall be installed in accordance with manufacturer's published instructions.

G. Integrated Sheet Metal: G90 bonderized hot dip galvanized steel.

H. Penetration flashing shall be applied tight to penetration.

I. Flashing shall be installed in such a manner so as to prevent moisture entering the wall and deck through joints, through moisture-permeable materials and at intersections walls and other penetrations through the deck plane.
   1. Where flashing is of metal, the metal shall be corrosion resistant with a thickness of not less than No. 24 galvanized sheet (G-90 minimum.)
   a. Finishes shall be field painted.

J. Where wall cladding abuts deck areas provide reglet in counterflashing systems.

K. Water test each installed area by flooding with water to a minimum depth of 2 inches for a period of 48 hours to check the integrity of the installation.

L. Warranty shall be on manufacturer's standard or customized form in which manufacturer agrees to repair or replace traffic coating system that fails in materials within ten (5+5) years.

1.11 PEDESTRIAN TRAFFIC COATINGS ON CONCRETE DECK

A. Traffic coating shall be seamless, high-solids-content, cold liquid-applied, elastomeric, waterproofing membrane system with integral wearing surface for concrete substrate; according to ASTM C 957 by Gaco Western LLC.
   1. Color and patterns as selected by the architect.

B. Decks shall have a design slope of a minimum of one-fourth unit vertical in 12 units horizontal (2-percent slope.)

C. Pedestrian traffic coating assembly shall be installed over prepared concrete substrate.
   1. Primer/Sealer: GacoFlex U-5677
   2. Primer: GacoFlex E-5320
   3. Wear and Base Coats: GacoFlex UB-64
   4. Topcoat: GacoFlex UA-60
   5. Reinforcing Strip: GacoFlex 66B
   6. Aggregate: Manufacturer's crushed walnut shells

D. Deck drainage shall comply with the California Plumbing Code.

E. Pedestrian traffic coating shall be installed in accordance with manufacturer's published instructions.

F. Integrated Sheet Metal: G90 bonderized hot dip galvanized steel.

G. Concrete shall have hardened sufficiently to prevent excess fine material from working to the surface prior to finishing. Concrete substrates shall have a slightly sand-textured surface. The end result shall be neither slick nor burnished, nor rough with fins, sharp projections, voids or rock pockets.

H. Penetration flashing shall be applied tight to penetration.

I. Flashing shall be installed in such a manner so as to prevent moisture entering the wall and deck through joints, through moisture-permeable materials and at intersections walls and other penetrations through the deck plane.

1. Where flashing is of metal, the metal shall be corrosion resistant with a thickness of not less than No. 24 galvanized sheet (G-90 minimum.)

a. Finishes shall be field painted.

J. Where wall cladding abuts deck areas provide reglet in counterflashing systems.

K. Water test each installed area by flooding with water to a minimum depth of 2 inches for a period of 48 hours to check the integrity of the installation.

L. Warranty shall be on manufacturer's standard or customized form in which manufacturer agrees to repair or replace traffic coating system that fails in materials within ten (10) years.

V. EXTERIOR WALLS

1.12 CEMENT PLASTERING

A. Exterior Portland cement plaster shall be 3-coat with a nominal thickness of 7/8 inch, with painted finish on metal lath over weather-resistive barrier.
   1. Plaster shall be 2-coat over concrete and masonry substrates with a nominal thickness of 1/2 inch over unit masonry and 3/8 inch over cast-in-place or pre-cast concrete.

B. Plaster shall be pre-blended portland cement plaster (fibered and sanded), factory proportioned, fiber reinforced portland cement plaster for trowel or pump application, field mixed with water.

C. Obtain components for cement plaster assembly from same manufacturer or approved by cement plaster manufacturer. Each component of cement plaster assembly shall be by single manufacturer and shall not vary on the Project.

D. Water for mixing shall be potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.

E. Lath over wood structure shall be galvanized woven-wire lath in compliance with ASTM C 1032; self-furring, with stiffener wire backing.
   1. Fasteners shall be galvanized furring nails by Flannery, Inc.

F. Lath over metal structure shall be galvanized expanded metal lath in compliance with ASTM C 847; self-furring.
   1. Fasteners shall be stainless steel drill screws, ASTM C 1002 or ASTM C 954, as required by thickness of metal being fastened; with pan head that is suitable for application; in lengths required to achieve penetration through joined materials of not fewer than three exposed threads.

G. Weather barrier shall be HydroTex by Fortifiber Building Systems Group; asphalt-saturated kraft paper with a drainable polymeric housewrap layer.
   1. Weather barrier shall exceed the Oregon R703.1 Residential Specialty Code for weather-resistive barriers.

H. Self-adhering flashing for integrating weather resistive barrier to wall penetrations, openings, and flashings shall be Fortiflash 40 mil.
   1. Provide 25 mil at openings including window and door openings.
   2. Provide Moistop sealant for use with Fortifiber flashing products.

I. High-temperature rated self-adhering flashing for integrating weather resistive barrier to wall penetrations, openings, and flashings under sheet metal shall be Fortiflash Butyl.

J. Non-adhering flashing for integration of weather-resistive barrier with window flashing shall be Moistop PF.

K. Lath as plaster base shall be installed in accordance with ASTM C1063.

L. Exterior Portland cement plaster shall be installed in accordance with ASTM C926.

M. Metal accessories shall be G90 hot-dip galvanized 26 gauge and installed in accordance with ASTM C1063.
   1. Vertical Control Joints: One-piece double “J” type; with perforated flanges and removable protective tape on plaster face of control joint.
   2. Horizontal Control Joints: One-piece double “V” type; with perforated flanges and removable protective tape on plaster face of control joint.
   3. Two-Piece Expansion Joints: Fabricated from zinc-coated (galvanized) steel; formed to produce slip-joint and square-edged reveal that is adjustable from 1/4-to-5/8-inch wide.
   4. Drip screeds shall be fabricated without weep holes. Drip screeds shall be minimum 4 inches above earth or 2 inches above paved areas.

N. Install control joints in specific locations approved by District for visual effect as follows:
   1. As required to delineate plasterwork into areas (panels) of the following maximum sizes:
   a. Vertical Surfaces: 144 sq. ft. (13.4 sq. m).
   b. Horizontal and other Nonvertical Surfaces: 100 sq. ft. (9.3 sq. m).
   2. At distances between control joints of not greater than 18 feet (5.5 m) on center.
   3. As required to delineate plasterwork into areas (panels) with length-to-width ratios of not greater than 2-1/2:1.
   4. Where control joints occur in surface of construction directly behind plaster.
   5. Where plasterwork areas change dimensions, to delineate rectangular-shaped areas (panels) and to relieve the stress that occurs at the corner formed by the dimension change.

O. Prefabricated penetration flashing shall be Quickflash Weatherproofing Products.

P. Moist Curing: Fog as frequently as required during the moist cure period to prevent loss of moisture from the stucco, but no less than two times per day. Avoid eroding the stucco surface with excess moisture.

Q. Warranty: Submit a written warranty, executed by the manufacturer, agreeing to repair or replace cement plaster assembly that fail within ten (10) years. Failures include, but are not limited to, water penetration through the finish.
   1. Architect to verify that specified plaster systems come with warranty above.

R. Weather Resistive Barrier Manufacturer Warranty: Manufacturer will pay the cost of materials and labor to correct problems found to be caused solely by the failure of the manufacturer's product to perform to manufacturer's published specification for a period of ten (10) years.

1.13 FORMED METAL WALL SYSTEMS

A. Formed wall panel systems shall be factory-formed aluminum metal panels designed to be field assembled by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation.
   1. Manufacturer: Morin; a Kingspan Group company.
   2. Thickness: 0.040 GA.
   3. Color and profile as selected by the architect.
   4. Exterior Finish: 3-coat fluoropolymer.

B. Manufacturer's system shall allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects.

C. Air/Water Criteria:
   1. Air Infiltration - When tested in accordance with ASTM E 283, air infiltration at 6.24 lb/ft2 must not exceed 0.06 ft3/min. per ft^2 of wall area.
   2. No water infiltration shall occur in any system under a differential static pressure of 12.0 lb/ft2 after 15 minutes of exposure in accordance with ASTM E 331.

D. Structural performance shall comply with the California Building Code.

E. Concealed panel sealants shall be butyl. Use butyl tape and gunnable butyl as recommended by the manufacturer.

F. Exposed sealants shall be silicone as manufactured by Dow Corning or Momentive Performance Materials, Inc. complying with ASTM C920.

G. Panel fasteners shall be self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide sealing washers for fasteners.

H. Weather barrier shall be HydroTex by Fortifiber Building Systems Group; asphalt-saturated kraft paper with a drainable polymeric housewrap layer.
   1. Weather barrier shall exceed the Oregon R703.1 Residential Specialty Code for weather-resistive barriers.

I. Provide components approved by roof panel manufacturer and as required for a complete metal wall panel assembly including trim, corner units, clips, flashings, fillers, closure strips, and similar items. Match material and finish of metal wall panels.

J. Flashing and trim shall be formed from same material as roof panels, prepainted with coil coating, minimum 0.040 GA. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, corners, bases, framed openings and fillers. Flashing and trim shall be finished to match adjacent metal wall panels.

K. Panel installation shall comply with manufacturer's tolerance requirements.

L. Manufacturer's warranty shall be on manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship two (2) years.

M. Manufacturer's special warranty on panel finishes shall be on manufacturer's standard form in which manufacturer agrees to repair finish or replace metal wall panels that show evidence of deterioration of factory-applied finishes within twenty (20) years.

1.14 WATER REPELLANTS

A. Water repellents for concrete, brick and concrete masonry unit (CMU) walls shall be PROSOCO Siloxane WB Concentrate; silane/siloxane-blend, penetrating water repellent; clear, silane and siloxane blend.

B. For anti-graffiti applications specify Blok-Guard & Graffiti Control in lieu of Siloxane WB Concentrate. If anti-graffiti coating is to be applied on first story only, apply to a break in plane or architectural reveal.

C. Provide and test mockup using the Rilem tube test in accordance with the manufacturer's requirements. Test prior to installation of water repellents.

D. Test pH of substrate prior to application of water repellent. Comply with manufacturer's requirments.

E. Water repellent shall be applied in two coats without puddles beyond saturation.

F. Manufacturer's warranty shall be on Manufacturer's standard form in which water repellent manufacturer agrees to furnish water repellents to repair or replace those that do not comply with performance and other requirements specified in this Section within five (5) years.

1.15 JOINT SEALANTS AS WEATHERSEALS

A. Exterior joint sealants as weatherseals shall be silicone, silyl-terminated polyether or traffic-grade urethane and shall be nonsag in accordance with ASTM C920.

B. Silicone sealants shall be Dow 795, Dow 790 or Dow 756SMS. Dow 790 is low-modulus for applications where higher joint movement is anticipated. Dow 756SMS is for applications where masonry is a substrate.
   1. Momentive Silpruf SCS2000 and LM SCS 2700 and NB SCS9000 are considered equal to the Dow products indicated above. Momentive LM SCS 2700 is low-modulus for applications where higher joint movement is anticipated. Momentive NB (no bleed) SCS9000 is for applications where masonry is a substrate.
   2. Silicone sealant shall be Type S, Use NT, Grade NS in accordance with ASTM C920
   3. Specify silicone sealant for applications that will not be painted.

C. Silyl-terminated polyether sealant shall be Sonolastic 150 VLM by BASF, Type S, Use NT, Grade NS in accordance with ASTM C920.
   1. Specify silyl-terminated polyether sealant on exterior surfaces to be painted.

D. Traffic grade sealant shall be two-component Sikaflex-2c NS, Type M, Use T, Grade NS in accordance with ASTM C920.
   1. Specify traffic-grade sealant in horizontal surfaces designed for traffic.

E. Comply with manufacturer's published literature for appropriate sealant for anticipated joint movement.

F. Cylindrical sealant backings shall be ASTM C 1330, Type C (closed-cell material with a surface skin) or Type B (bicellular material with a surface skin), as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
   1. Open cell backer rod is permitted in double layer joitn sealant applications only. Indicate open cell backer rod as the exterior joint sealant, as opposed to the primary weatherseal.

G. Bond breaker tape shall be polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

H. Primer shall be material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

I. Samples of materials that will contact or affect joint sealants shall be submitted for testing. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.

J. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:
   1. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
   2. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

K. Substrates shall be primed, installed and painted in accordance with manufacturer's published literature.

L. Installation shall be in compliance with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

M. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
   1. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
   2. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

N. Warranty shall be on manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within twenty (20) years for silicone sealants and ten (10 years for silyl-terminated polyether and traffic-grade urethane sealants.

07 42 33 PLASTIC WALL PANELS

- Provide Trespa or equal solid phenolic wall panels, concealed fastener, open-joint, ventilated rainscreen system.
- Provide a black, vapor-permeable air and water barrier approved and warrantied by the manufacturer for UV exposure at open joint panel systems.

Div 8

OPENINGS

08 10 00 DOORS AND FRAMES

- Sustainability: Basis of design to conform with the California Green Building Standards Code, "CALGreen", California Code of Regulations Title 24, Part II, published by the California Building Standards Commission, 2010 Edition, or current version.
  - Doors and Hardware, where applicable, shall comply with the following:
    - CBC Section 01350 – Special Environmental Requirements.
    - GREENGuard certification for Children and Schools.
    - ASHRAE 189.1 – 8.4.7.6 Ceilings and Walls
  - Include applicable openings into Energy Modeling requirements.

EXTERIOR Swinging Openings (Doors/Frames) with Builders Hardware				
TYPE	USE	DESCRIPTION	NOTES	CATALOG CUTS
STOREFRONT/ CURTAIN WALL	Exterior + Interior	General	See Below	See Below

- Storefront/Curtainwall:
  - Manufacturer: Selected on Project-by-Project basis
  - Kawneer door and frame systems by Kawneer manufacturing = Basis of Design (BOD)
  - Aluminum or storefront door construction: Kawneer 500 wide stile entrance series or approved equal.
  - Provide bottom rail at least 10" high to meet minimum code clearances (do not provide typical Kawneer 500 standard sizes. See door elevations on architectural drawings & wide stile exit devices for 6-inch wide stiles to accommodate standard mortise locks and rim style exit devices).
  - Match existing door finish. Where new doors are to be installed at existing frames, prepare doors to accept the existing continuous hinges devices.

08 10 00 DOORS AND FRAMES (CONTINUED)

EXTERIOR Swinging Openings (Doors/Frames) with Builders Hardware				
TYPE	USE	DESCRIPTION	NOTES	CATALOG CUTS
HOLLOW METAL DOORS & FRAMES	Exterior	General	See Below	See Below

- Hollow Metal Doors and Frames
  - Hollow metal doors and frames shall comply with ANSI/SDI A250.8, latest edition.
    a. Exterior: Extra-Heavy-Duty, Level 3
    b. Interior: Heavy-Duty, Level 3
  - Hollow metal frames shall be of fully welded construction.
  - Except where glazed aluminum entrances are used, all exterior doors and frames shall be hollow metal; door cores shall be polystyrene or polyurethane insulating type.
  - Except where specialty door and frame assemblies (e.g. sound control type) are used, interior frames for wood doors shall be hollow metal.
- Solid core wood doors:
  - Wood doors are not acceptable at exterior door locations (do not utilize wood doors or frames at exterior or un-conditioned spaces).

INTERIOR Swinging Openings (Doors/Frames) with Builders Hardware				
TYPE	USE	DESCRIPTION	NOTES	CATALOG CUTS
DOORS & FRAMES (wood doors in next section)	Interior	General	See Below. See next section for wood doors	See Below

- Interior Swinging Openings (Doors/Frames) with Builders Hardware:
  - Aluminum door frames/sidelights:
    - Manufacturer: Selected on Project-by-Project basis
    - Western Integrated Materials, Inc. manufacturing = Basis of Design (BOD)
    - See www.Western-Integrated.com or www.AluminumDoorFrames.com.
    - Frameworks Type 2, knock down frame system

08 10 00 DOORS AND FRAMES (CONTINUED)

INTERIOR Swinging Openings (Doors/Frames) with Builders Hardware				
TYPE	USE	DESCRIPTION	NOTES	CATALOG CUTS
DOORS & FRAMES (wood doors in next section)	Interior	General	See Below. See next section for wood doors	See Below

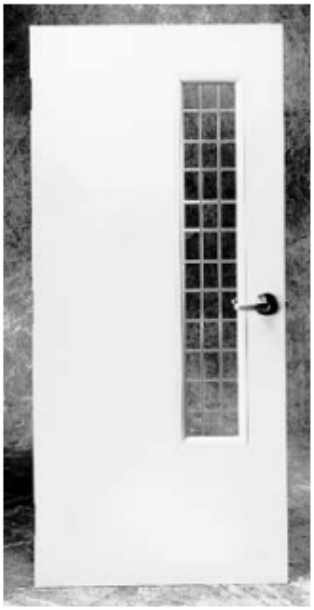
- Hollow metal frames:
  - Manufacturer: Selected on Project-by-Project basis
  - Steelcraft hollow metal frame systems by Ingersoll-Rand manufacturing = Basis of Design (BOD)
  - See the following pages for cut sheets and specification/detail information.
  - Minimum 16-Gauge cold rolled steel, knock down
- Hollow metal doors:
  - Manufacturer: Selected on Project-by-Project basis
  - Steelcraft "L" series hollow metal flush door systems with lite-window kits as required by Ingersoll-Rand manufacturing = Basis of Design (BOD)
  - See the following pages for cut sheets and specification/detail information.
  - Hollow metal door to have 6-inch wide stiles to accommodate standard mortise locks and rim style exit devices.
  - Minimum 1-3/4" thick 18-gauge cold rolled steel
- Exterior and Interior Swinging Openings (Doors/Frames) with Builders Hardware Added hollow metal door & frame construction:
  - Hardware cutouts shall have steel plate reinforcements with tapped holes fillet welded to frame on all four sides of the plate. Fillet welds shall be minimum 1 inch long. Reinforcement shall include 3/16 inch butt reinforcement; 12 gauge lock strike; 14 gauge for surface applied items. Frames to have 10 gauge reinforcements for where closers and hinges are attached (unless greater gauge as required by hollow metal or hinge manufacturer).

- Flush Wood Doors
  - Except where specialty door and frame assemblies are used, interior doors shall be flush wood type complying with WDMA I.S. 1-A, latest edition.
    - Construction: Typical doors shall be PC-5 or SCLC-5, fire rated doors shall be FPC-PP-5, FSCLC-PP-5, or FD-xxPP-5.
    - Aesthetic Grade: Premium
    - Performance Duty Level: Extra Heavy Duty

08 10 00 DOORS AND FRAMES (CONTINUED)

L-SERIES FLUSH DOORS

STEELCRAFT



ABOUT THE PRODUCT:

The L20, L18 and L16 Series Flush Doors are designed to meet the architectural requirements for full flush doors. The L14 Series Flush Doors are designed to meet the architectural requirements for maximum duty full flush doors. Refer to Section 11 (Architectural) for specifications and the selection and usage guide of the appropriate door constructions.

This premium door construction combines the strength and dimensional stability of steel with the structural integrity of the laminate core. The continuous bonding of core to steel face sheets provides an attractive, flat door, free of face welding marks. Tests have proven that the L Series Door has high resistance to impact damage, low thermal conductivity and high STC ratings.

To meet application, specification and performance requirements, the L Series Door offers a wide range of specifiable options including sizes, glass light designs and hardware (mechanical, pneumatic, electrical) preparations.

L-Series Doors are 1-3/4" (45mm) thick.

INSTALLATION:

1. Installation shall conform to the published Steelcraft installation instructions, ANSI A250.11-2001 (formerly SDI 105) *Recommended Erection Instructions for Steel Frames and HMMA 840s.*

2. Fire Rated Assemblies must be in accordance with NFPA Pamphlet 80. The *Authority Having* Jurisdiction is the final authority on issues related to the installation and use of installed Fire Rated Doors.

FEATURES AND BENEFITS:

Steelcraft's L Series Doors offer the following standard unique features, which enhance long term performance and durability:

1. **Core Systems** that enhance the structural integrity of the door:
   - **Honeycomb (standard) –** 1" (25mm) cell kraft honeycomb configuration that increases structural integrity while reducing overall weight
   - **Polystyrene (optional) –** enhanced thermal performance
   - **Polyurethane (optional) –** extreme thermal performance

2. **Full Height, Epoxy Filled Mechanical Interlock Edges** provide structural support and stability the full height of the door edges. Available edge options:
   - **Visible Edge Seam** (standard) – full height, epoxy filled mechanical Interlocked edges
   - **Filled Seam –** optional edge seam epoxy filled and finished smooth. Includes tack welds above and below edge cutouts for hinges, locks, etc.
   - **Welded Edge Seam –** optional edge seam welded with 1" (25mm) long weld, 6" (51mm) on center, epoxy filled between welds and finished smooth; available on L18, L16 and L14 doors.

3. **Universal Hinge Preparations** (patented) allow for easy field conversion from standard weight .134" (3.3mm) hinges to heavy weight .180" (4.7mm) hinges.

4. **14 Gage [0.067" (1.7mm)] Inverted Top and Bottom Channels** provide stability and protection for the top and bottom edges from abuse.

5. **Beveled Hinge and Lock Edges** allow for tighter installation tolerances, ensure easier operation and eliminate binding and sticking.

6. **Recessed Dezigner™ Glass Trim** provides a clean, neat and flush finish with the door surface.

7. **Factory Applied Baked-On Rust Inhibiting Primer** paint in accordance with ANSI A250.10-1998.

SPECIFICATION COMPLIANCE:

1. Door construction for Steelcraft L Series Full Flush Doors meets the requirements of ANSI A250.8-2003 (SDI 100).

2. Hardware preparations and reinforcements are in accordance with ANSI A250.6-2003. Locations are in accordance with ANSI/DHI A115 unless otherwise stated.

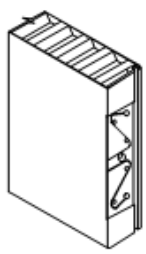
FIRE RATINGS:

L Series Doors meet the broadest fire rating requirements. They are listed for installations requiring compliance to both neutral pressure testing (ASTM E152 and UL-10B) and positive pressure standards (UBC 7-2 and UL-10C).

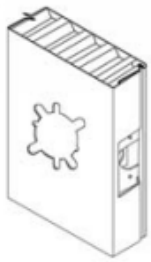
08 10 00 DOORS AND FRAMES (CONTINUED)

STEELCRAFT

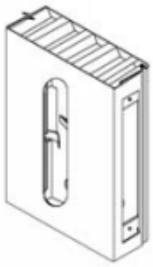
FLUSH DOORS **L-SERIES**



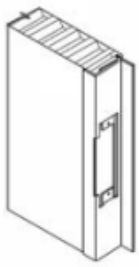
Universal Mortise Hinge Prep
7 Gage Universal hinge reinforcement



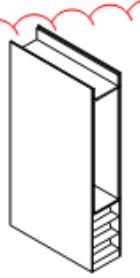
61L Lock



86 Lock

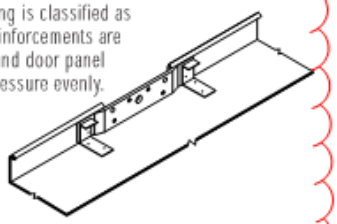


Inactive Leaf ASA Strike Prep with Astragal attached



14 Gage Closer Reinforcement

HIGH FREQUENCY HINGE PREPARATION:
Additional strength can be added to the normal reinforcement when an opening is classified as high frequency. The added reinforcements are welded to the reinforcement and door panel distributing the torque and pressure evenly.



DOOR APPLICATION AND USAGE

Series	Steel Thickness	Opening	Usage Frequency	
~~L20~~	~~20 Ga (0.8mm)~~	~~Interior - Cold Rolled Steel~~	~~Standard Duty~~	~~Light Commercial applications with minimal use and abuse~~
~~L20~~	~~20 Ga (0.8mm)~~	~~Exterior - Galvannealled Steel~~		
~~L18~~	~~18 Ga (1.0mm)~~	~~Interior - Cold Rolled Steel~~	~~Heavy Duty~~	~~Heavy Commercial & Institutional applications with high use~~
~~L18~~	~~18 Ga (1.0mm)~~	~~Exterior - Galvannealled Steel~~		
L16	16 Ga (1.3mm)	Interior - Cold Rolled Steel	Extra Heavy Duty	Extra HeavyCommercial applications with potential of very high use
L16	16 Ga (1.3mm)	Exterior - Galvannealled Steel		
~~L14~~	~~14 Ga (1.7mm)~~	~~Interior - Cold Rolled Steel~~	~~Maximum Duty~~	~~Extra HeavyCommercial applications with extremely high use~~
~~L14~~	~~14 Ga (1.7mm)~~	~~Exterior - Galvannealled Steel~~		

08 10 00 DOORS AND FRAMES (CONTINUED)

STEELCRAFT

FLUSH DOORS **L-SERIES**

DOOR EDGE CONSTRUCTION:

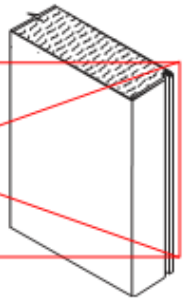
Optional Edge Seams available in the L Series doors:

- L - Standard feature includes visible edge seams with full height interlocked edges.
- LF – the mechanical edge seam is filled and finished prior to applying the factory primer.
- LW – the mechanical edge seam is welded and finished prior to applying the factory primer.

Standard Visible Seamless

L Series Visible Seam Features

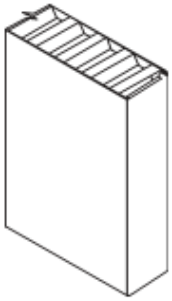
- Full height mechanical interlock
- Interlock filled with epoxy adhesive
- Visible edge seam



Optional Seamless Edge

LF Series Seam Filled Features

- Full height mechanical interlock
- Interlock filled with epoxy adhesive
- Edge seam is epoxy filled and finished
- No visible edge seam



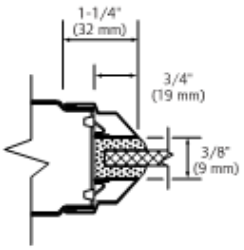
LW Series Seam Welded Features

- Full height mechanical interlock
- Edge seam is welded 1" (25mm) long, 6" (152mm) on center.
- No visible edge seam

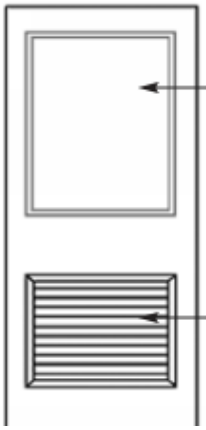
GLASS LIGHT OPTIONS – REFER TO THE LIGHTS AND LOUVERS SECTION FOR FURTHER DETAILS AND OPTIONS

Standard Dezigner® Trim for 1/4" Thick Glass

- optional 1/2" Thick Glass



Typical Optional Overlapping Steel Trim for Glass Over 1/4" to 5/8" or 3/4" to 1" Thick



Note: Glazing type and thickness vary per job requirements.

Note: Louver size and type vary per requirements.

08 10 00 DOORS AND FRAMES (CONTINUED)

Steel Frames

Steelcraft manufactures a wide variety of frames in all jamb depths for virtually any wall condition and entry requirement.

FLUSH FRAMES
Flush (**F-**, **FE-**, **FN-** and **FS-Series**) frames are designed to be installed as part of the wall framing sequence for exterior and interior walls.

DRYWALL FRAMES
Drywall (**DW-** and **K-Series**) frames are designed to be installed in rough openings after the wall is up. They can be installed in minutes and can be relocated without damage to the frame.

MULTIPLE USE FRAMES
Multiple Use (**MU-Series**) frames have a jamb profile similar to drywall frames but are designed to be installed as part of the wall framing sequence.

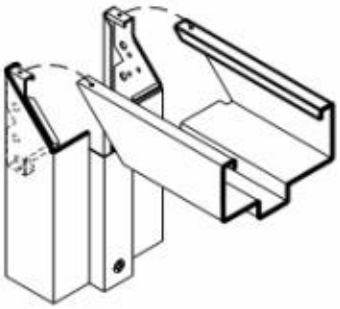
RELATIVE COST
A 16 gage (1.3mm) 1-3/4" (45mm), flush frame 3'0" (914mm) x 7'0" (2134mm), 5-3/4" (146mm) jamb depth, prime painted, CRS knocked down construction (KD) was used as a base of 100.

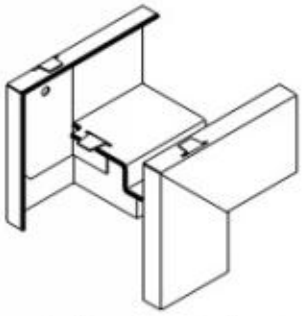
F16-4	CRS	16 gage, 1-3/4 KD	100
F16-4	CRS 7'2"	16 gage, 1-3/4 KD	102
F16-4	Galvannealed	16 gage, 1-3/4 KD	114
F16-4	Arc-welded	16 gage, 1-3/4	163
F16-4	Label	16 gage, 1-3/4 KD	116
F16-4	PS-074**	16 gage, 1-3/4 KD	124
FS16-4	Stainless Steel	16 gage, 1-3/4 KD	1452
FN16-4	CRS	16 gage, 1-3/4 KD	100
F18-6	CRS	18 gage, 1-3/8 KD	90
F14-4	CRS	14 gage, 1-3/4 KD	123
F12-4	CRS	12 gage, 1-3/4 KD	161
DW16-4	Drywall	16 gage, 1-3/4 KD	102
MU16-4	Multi-use	16 gage, 1-3/4 KD	102
GRMN-TECH	Field-stained		124

*Weatherstrip installed

Corner Connection

DRYWALL FRAME
Drywall frame corners lock together as the frame is installed. The tab design prohibits the head from raising and keeps the head and jamb members in the same plane.





FLUSH FRAME
Flush frame corners are designed to lock together by bending over four integral tabs. The frame can also be welded and ground smooth.

08 10 00 DOORS AND FRAMES (CONTINUED)

Flush Frames

F18 (1mm) • F16 (1.3mm) •F14 (1.7mm) • F12 (2.5mm) • FS16 (1.3mm) • FN18 (1mm)
FN16 (1.3mm) • FN14 (1.7mm) • FE16 (1.3mm) • FE14 (1.7mm) • MU18 (1mm) • MU16 (1.3mm)

Steelcraft F-, FE-, FN-, FS- and MU-Series Frames are designed for common walls such as wood stud, steel stud and masonry. MU18 and 16 gage only frames are available in 18 &16 gage, cold-rolled steel (CRS) or A60 hot dipped galvannealed steel. FS Frames are 16 gage type #304 or #316 stainless steel.

RECOMMENDED USAGE

F18 (1mm), FN18 (1mm) or MU18 (1mm) for 1-3/8"(35mm) or 1-3/4"(45mm) thick hollow core wood doors only.

F16 (1.3mm), FN16 (1.3mm), F14(1.7mm), FN14 (1.7mm), F12 (2.5mm) or MU16 (1.3mm) for 1-3/4"(45mm) thick doors. FE16 (1.3mm) or FE14(1.7mm) for 1-3/4"(45mm) thick double egress doors.

Galvannealed steel is recommended where atmospheric conditions require extra protection.

All frames, except 12 gage (2.5mm), are supplied with rubber bumpers installed, (3) per strike jamb and (2) per double head for pair of doors. F12 (1.5mm) frames are supplied with loose pressure sensitive bumpers for field application by others.

STAINLESS STEEL FS-SERIES

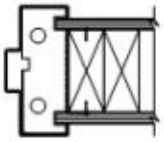
Type #304 stainless steel is recommended for areas where corrosive materials are present in the atmosphere.

Type #316 (optional) stainless steel is recommended for swimming pool areas where high concentrations of chlorine are used.

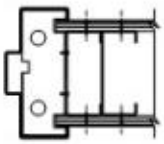
Typical Wall Conditions

F-SERIES (FE-SERIES SIMILAR)

Wrap Around Block Wall

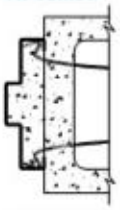


Wood Wall Stud



Closed Steel Stud Wall

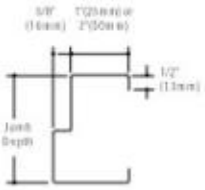
FN-SERIES



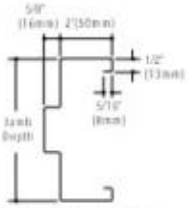
Butted Masonry

Profiles and Jamb Depths

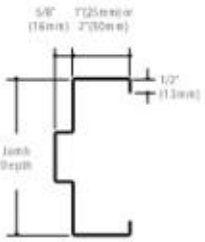
Standard profiles are shown. Custom profiles are available.



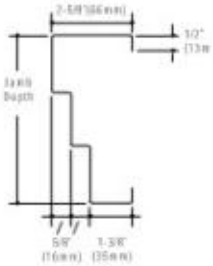
Single Rabbet – F-Series



Double Rabbet – MU-Series



Double Rabbet – F- and FS-Series



Double Egress – FE-Series

Specifications

Door thickness:	1-3/4" (45mm)	1-3/8" (35mm)
Standard heights:	6'8" (2032mm)	7'10" (2184mm)
	7'0" (2134mm)	8'0" (2438mm)
	7'2" (2184mm)	10'0" (3048mm)
Standard widths:	increments of 2"(50mm) from 1'6"(457mm) to 8'0"(2438mm)	

08 10 00 DOORS AND FRAMES (CONTINUED)

Western Integrated Materials, Inc.

ALUMINUM FRAMES

- *20 Minute Fire Rating*
- *Custom Finishes*
- *Custom Fabrication*
- *Fast Delivery*

WESTERN INTEGRATED MATERIALS maintains a huge aluminum inventory in the widest range of wall thickness in clear, bronze and black anodized for extremely quick delivery on most items. Custom anodized and baked enamel finishes are also available to match the most discriminating designs....on time and under budget.

WESTERN INTEGRATED MATERIALS has manufactured the highest quality aluminum door frames and window frames for interior commercial construction since 1975. Aluminum frames are the architect's choice when aesthetics and flexibility of design are the utmost requirements. Our success over the last 30 years is directly attributed to our dedication to continuously improve our products and services. WE STRIVE TO EXCEED YOUR EXPECTATIONS.

Our knowledgeable staff is ever eage to provide friendly service...whether assisting with quotes or sales orders...or matching a specific color with our factory applied baked enam ...or providing advice on a particular side lite, transom or clerestory elevation detail. The same frames furnished for Water Gardens, Sun Micro, Motown, Saban Entertainment, Intuit, Providian, Taligent, Makita, Kubota, UPN, Litton, Disney, Quantum, Brentwood Executive Plaza, Novell and Sony Pictures, can be yours too by calling WESTERN INTEGRATE MATERIALS.

08 14 16 WOOD DOORS

INTERIOR Swinging Openings (Doors/Frames) with Builders Hardware				
TYPE	USE	DESCRIPTION	NOTES	CATALOG CUTS
WOOD DOORS	Interior	General	See Below	See Below

- Solid core wood doors (veneer or PLAM facing):
  - Manufacturer: Selected on Project-by-Project basis
  - Eggers Industries manufacturing = Basis of Design (BOD)
  - See www.eggersindustries.com and the following pages for cut sheets and detail information.
  - Wood door construction:
    - a. Wood doors shall be fabricated in accordance with WDMA I.S. 1A.
    - b. Unless otherwise noted on drawings, doors are 1-3/4 inch thick.
    - c. Doors to match existing building standards for veneer, cut & paint if doors are to be painted (or as directed by architectural drawing and/or specifications outside these specifications).
    - d. No intumescent is allowed on the frame. Rated doors shall include all requirements as part of the door construction per 'category a' guidelines as published by ITS/Warnock-Hersey. Only smoke gasketing applied around the perimeter of the frame to meet the 'S' smoke rating is permissible in instances where smoke control is required. Provide mineral core at rated wood doors.
  - - At abusive opening locations, specify Eggers manufacturing eiDOOR system

08 14 16 WOOD DOORS (CONTINUED)

5-PLY FLUSH DOORS

Eggers' 5-ply flush doors are the very embodiment of form marrying function - extraordinary beauty and exceptional durability. We are able to produce a variety of custom architectural designs to suit all styles and needs.

eiDOOR™
Eggers · InPro · High Impact Protection

Eggers' doors are manufactured with InPro's IPC Rigid Vinyl Sheet™ face material, and constructed to withstand the most demanding environments, including healthcare, educational, hospitality and other high-traffic facilities.

Eggers Industries

5-Ply SCL

Specially Designed Acoustic Doors
(except STC 29-32)

20-Minute Full-Lite Doors

- 20-minute door utilizes clear glass that is fire- and safety-rated.
- 20-minute fire rating with visible lite up to 2,868 sq. in. (87-9/16" maximum height x 36" maximum width).
- 1-1/2" minimum between lock and lite cutout.
- 3" minimum between multiple lite cutouts.
- Glass can be factory glazed or field glazed with glass type specified.
- True-divided lites available - maximum cutout of 35-7/8" wide by 89-5/8" high (various layouts available/maximum dimension of a single pane of glass is 54").
- Solid wood grillwork available to achieve aesthetics of a French door.
- 5" minimum stiles and rails.
- 5-ply construction, SCL or stave core.
- Stiles bonded to core and sanded as a single unit.
- Standard edge strip is minimum 1" veneered SCL, solid lumber outerply edge available upon request
- Glass to be safety- and fire-rated.
- Beadless lite construction available

45-Minute Full-Lite Doors

- 45-minute fire rating with visible lite up to 1,714 sq. in. using Firelite Plus (86-1/2" maximum height x 36" maximum width).
- 3" minimum between lock and lite cutout.
- 6" minimum between multiple lite cutouts.
- Solid wood grillwork available to achieve aesthetics of a French door.
- 6" minimum top rails and side stiles. 10" minimum bottom rail.
- Reinforced face construction.
- Stiles bonded to mineral core and sanded as a single unit.

Book Match

- Veneer joints match, creating a symmetrical pattern. Yields maximum continuity of grain.
- Prominent characteristics will ascend or descend across the match.
- Because tight side and loose side faces alternate in adjacent leaves, they reflect light and accept stain differently and this may yield a noticeable color variation, termed "Barber Pole." Barber Pole is not considered a defect.
- This effect may be minimized through the use of proper finishing techniques.

Center Match

- Each panel face is assembled of an even number of veneer leaves of uniform width before edge trimming.
- There is a veneer joint in the center of the panel producing horizontal symmetry.

Balance Match

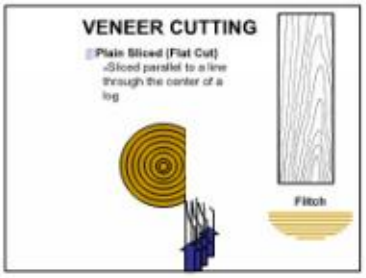
- Each panel face is assembled from veneer leaves of uniform width before edge trimming.
- Panels may contain an even or odd number of leaves and distribution may change from panel to panel within a sequence set.

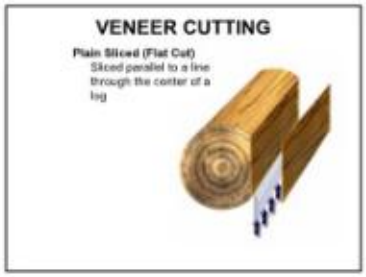
08 14 16 WOOD DOORS (CONTINUED)

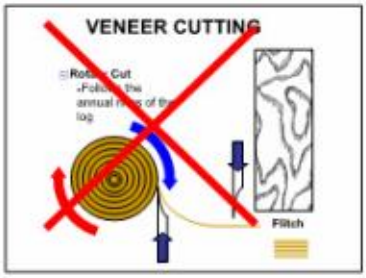
5-PLY FLUSH DOORS

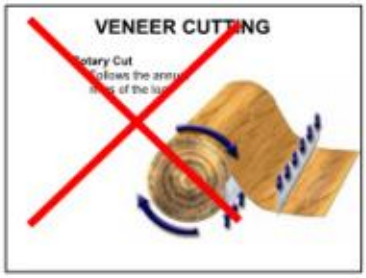
Eggers' 5-ply flush doors are the very embodiment of form marrying function - extraordinary beauty and exceptional durability. We are able to produce a variety of custom architectural designs to suit all styles and needs.

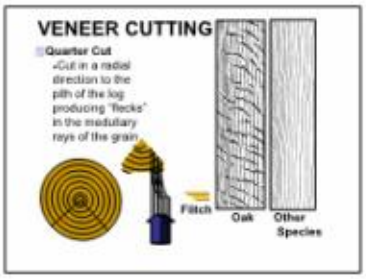
Eggers Industries

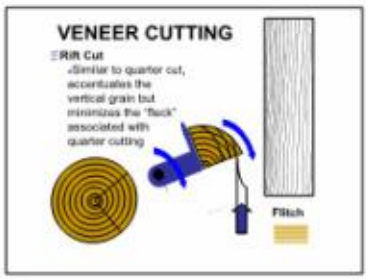












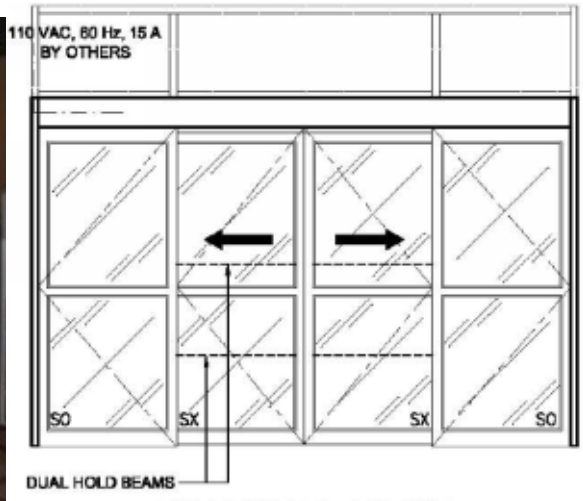
08 40 00 ENTRANCES, STOREFRONTS, AND CURTAIN WALLS

A. Storefronts and curtain walls shall be field tested according to AAMA 501.2 and shall not evidence water penetration.
B. Mock-Up Testing
   1. Curtain walls over 2 storeys in height and/or 40 feet in width shall have a full size mock-up tested according to ASTM E 783 and ASTM E 1105, prior to approval of shop drawings.
   2. In addition, structural-silicone-glazed curtain wall mock-ups shall be tested according to ASTM C 1401.
C. Glazed assemblies shall bear NFRC permanent and temporary labels or label certificates in accordance with NFRC 700 or 705; default temporary labels are unacceptable for SJECCD Projects.

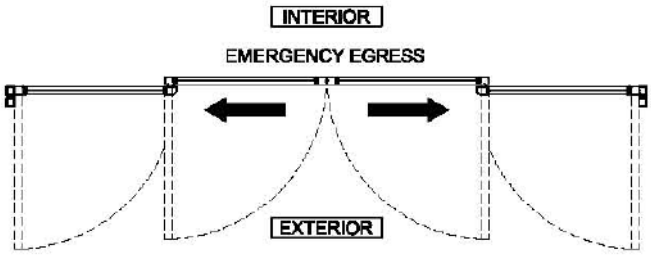
08 42 29 AUTOMATIC SLIDING DOOR ENTRANCES

EXTERIOR SLIDING OPENINGS				
TYPE	USE	DESCRIPTION	NOTES	CATALOG CUTS
AUTOMATIC SLIDING DOOR ENTRANCES	Exterior	General	See Below	See Below

- Basis-of-Design: Model SLM, Single-Parting Door Package O-SX by Gildor Inc., Chino, CA; 800-211-5838, www.gildor.com. Provide door assembly with hardware as standard with manufacturer, including the following features:



EXTERIOR ELEVATION



PLAN VIEW

- Profiles as required (provide compete system components required to complete the work in accordance with intended operation).
- Mounting: Floor mounted.
- Size of Sliding Panels: As indicated on the Drawings.

08 42 29 AUTOMATIC SLIDING DOOR ENTRANCES (CONTINUED)

- Aluminum Finish: Match curtain wall finish.
- Exit Device: Flush, concealed vertical rod panic device; recessed in center rail.
- Automatic lock that automatically locks the sliding function of the door when in closed position. Auto-lock failsafe feature that engages the lock in case of power failure.
- Include standard Gildor device #RS12 monitoring system at each door location: microprocessor controlled, electro mechanical operator with an exposed on-site self-diagnostics (at the door) via the BEDIS two wire readout control and monitoring pod.
- Include standard Gildor, Inc. microprocessor controlled, electro mechanical operator with an exposed, on site, self-diagnostics via the BED IS, two wire readout control and monitoring pod.

Substitutions: Subject to compliance with requirements of the Contract Documents, the following named products may be substituted on this project:

- Stanley Access Technologies; concealed vertical rod and concealed exit/panic bar, sliding automatic entrance doors. www.stanleyworks.com.
- ASSA ABLOY Automatics; concealed vertical rod and concealed exit/panic bar, sliding automatic entrance doors. www.besam-usa.com.

Emergency Breakaway Feature: Provide release hardware that allows panel to swing out in direction of egress to full 90 degrees from any position in sliding mode. Maximum force to open panel shall be 50 lbf according to ANSI/BHMA A156.10. Interrupt powered operation of panel operator while in breakaway mode.

- Emergency breakaway feature shall include at least one adjustable detent device mounted in the top of each breakaway panel to control panel breakaway force.
- Limit Arms: Limit arms shall be provided to control swing of sliding non-sliding panels on break-out; swing shall not exceed 90 degrees.
- Keying: Refer to Section 08 71 00.
- Control Switch: Provide manufacturer's standard header mounted rocker switches and door position switch to allow for full control of the automatic entrance door. Controls shall include, but are not limited to:
- Power Switch: Sliding automatic entrances shall be equipped with a two position On/Off rocker switch to control power to the door.

  Sliding Weather Stripping: Manufacturer's standard replaceable components complying with AAMA 701; made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

  Weather Sweeps: Manufacturer's standard adjustable nylon brush sweep mounted to underside of door bottom.

08 50 00 WINDOWS

A. Windows shall be tested and labeled as complying with AAMA/WDMA/CSA 101/I.S.2/A440, edition referenced in California Building Code.
   1. Performance Class: AW
   2. Minimum Performance Grade: PG90

B. Glazed assemblies shall bear NFRC permanent and temporary labels or label certificates in accordance with NFRC 700 or 705; default temporary labels are unacceptable for SJECCD Projects.

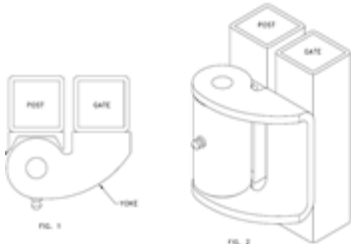
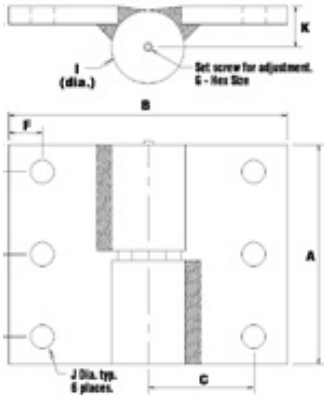
A. Windows shall be tested and labeled as complying with AAMA/WDMA/CSA 101/I.S.2/A440, edition referenced in California Building Code.
   1. Performance Class: AW
   2. Minimum Performance Grade: PG90

08 71 00 DOOR HARDWARE

The District has, by Board Resolution dated February 11, 2014, in accordance with CA Public Contract Code Section 3400, established products of the Allegion group of manufacturers as a Standard; door hardware specifications shall be developed by or in consultation with manufacturer's door hardware consultants.

1.	Door Lock Hardware	Schlage
2.	Door Closers	LCN
3.	Door panic bars/exit devices/keyed removable mullions	Von Duprin
4.	Powered Control Locks & Automatic Operators	Schlage

08 71 00 DOOR HARDWARE

08 71 00 HANGING HARDWARE *(see chart/table as well as SJECCD District Standards master specification language below)*				
TYPE	USE	DESCRIPTION	NOTES	CATALOG CUTS
Heavy Duty Gate Hinges	Exterior	Gorilla-Device, offset hinges by Guardian Gate manufacturing, or equal	See Below	
Medium, Standard Duty Gate Hinges	Exterior	#CBW-HD series hinge by Crown Industrial, or equal	See Below	
Heavy Duty Hinges	Exterior & Interior	#5BB1-HD series hinge by Ives manufacturing, or equal	See Below	See Below
Medium, Standard Duty Gate Hinges	Exterior & Interior	#5BB1-HD series hinge by Ives manufacturing, or equal	See Below	See Below
Electrified Power Transfers for all exit device locations	Electrified Hardware	Von Duprin EPT-10 Power transfer for access control and/or automatic operators	Owner's standard, no substitutions permitted	

08 71 00 DOOR HARDWARE (CONTINUED)

A. Gate Hanging Devices
   1. Offset Gorilla-type hinge, High Capacity surface x surface-type, standard BHMA Butt-type hinge and/or BHMA Continuous-type hinge). See PART 2.1.A of this specification section (as well as other references and specifications) for direction to combine requirements of Contract Documents.
   2. Heavy duty offset hinge, flat mount hinges:
      a. Where nomenclature or For each gate/opening provide device # "Gorilla-Device, Offset Hinges" are specified in hardware group/sets, provide Gorilla-Device, Offset Hinges by Guardian Gate manufacturing (Tucson, AZ; 800-213-9525), or equal.
      b. Provide at least three offset hinges per gate leaf.
         i. Provide two #Gorilla-Device offset hinges for doors up to 60 inches high and one additional #Gorilla-Device offset hinge for each 30 inches of height or fraction thereof.
         ii. Furnish three #Gorilla-Device offset hinges for doors over 36 inches wide no matter the gate height.
         iii. Provide additional number of offset hinge devices to meet offset hinge manufacturer device warranty as well as gate warranty.
      c. Provide widths sufficient to clear trim projection when door swings 180°. Confirm hinge sizing with frame details. All doors shall swing 180 degrees if opening will allow. Provide wide throw hinges where required.
      d. Provide non-removable pins at exterior doors and where required by Owner for security reasons.
      e. For each gate/opening provide device # "Gorilla-Device, Offset Hinges" are specified in hardware group/sets, provide Gorilla-Device, Offset Hinges by Guardian Gate manufacturing (Tucson, AZ; 800-213-9525), or equal. Gorilla-Device offset gate hinges shall be mounted with the yoke welded to the gate and the channel welded to the post. The hinges shall be installed with the hinge pins in a straight line. Weld only on the vertical portions of the yoke and plate. Do not weld the top and bottom of the hinges. Provide devices ground smooth and painted to match gate/fence system – see Division 09 for paint and primer requirements.
         i. For all other manufacturers: gate hinges are to be mounted and welded in accordance with manufacturer's recommendations.
         ii. Coordinate with other welding requirements in Contract Documents.

08 71 00 DOOR HARDWARE (CONTINUED)

f. Products by the following manufacturers will be considered for approval providing all specified criteria have been met in full. Furnish all items and components of hardware required to complete the work in accordance with specifications, Contract Documents and intended operation.
   i. Crown Industrial http://www.crown-industrial.com/
   ii. Ameristar.
   iii. Monumental Iron Works.
   iv. Or Equal.

3. Heavy duty full surface mounted hinge:
   a. Where nomenclature or device #"CBW-HD Series" hinge-type devices are specified in hardware group/sets, provide CBW-HD Series, full surface hinges by Crown Industrial (So. San Francisco, CA; (650) 952-5150; http://www.crown-industrial.com/, or equal.
   b. Provide at least two hinges per gate leaf.
      i. Provide two # CBW-HD Series hinges for doors up to 72 inches high and one additional # CBW-HD Series hinge for each 30 inches of height or fraction thereof.
      ii. Furnish three # CBW-HD Series hinges for doors over 36 inches wide no matter the gate height.
      iii. Provide additional number of offset hinge devices to meet hinge manufacturer device warranty as well as gate warranty.
   c. Provide widths sufficient to clear trim projection when door swings 180°. Confirm hinge sizing with frame details. All doors shall swing 180 degrees if opening will allow. Provide wide throw hinges where required.
   d. Provide non-removable pins at exterior doors and where required by Owner for security reasons.
   e. Gate hinges are to be mounted and welded in accordance with manufacturer's recommendations.
      i. Coordinate with other welding requirements in Contract Documents.
      ii. Provide devices ground smooth and painted to match gate/fence system – see Division 09 for paint and primer requirements.

08 71 00 DOOR HARDWARE (CONTINUED)

f. Products by the following manufacturers will be considered for approval providing all specified criteria have been met in full. Furnish all items and components of hardware required to complete the work in accordance with specifications, Contract Documents and intended operation.
   i. 1) Guardian Gate www.guardiangatehardware.com
   ii. 2) Ameristar.
   iii. 3) Monumental Iron Works.

B. Butt Hinges & Self-Closing Hinges
   1. Butt Hinges to be manufactured in accordance with ANSI/BHMA A156.1.
   2. Provide 5” heavy duty hinges at all entrance door locations (including but not limited to Aluminum Door systems).
   3. Acceptable Manufacturers:
      i. Ives Manufacturing
      ii. Hager Manufacturing.
      iii. McKinney Products Co.
      iv. Stanley Works.
      v. Bommer Manufacturing.

C. Continuous Hinges (Not to be used for SJECCD projects)

D. Floor Closers and Intermediate Pivots (Not to be used for SJECCD projects)

E. Pivots (Not to be used for SJECCD projects)

08 71 00 DOOR HARDWARE (CONTINUED)

Full Mortise Hinges - 5 Knuckle

Size (Inches)	Size (mm)	Gauge
4.5 x 4	114 x 102	0.180

5BB1HW

5 Knuckle, Ball Bearing, Heavy Weight

4 BALL BEARING • HIGH FREQUENCY • HEAVY WEIGHT

For use on Heavy Weight Doors or High Frequency Usage

5BB1HW Steel with steel pin
5BB1HW Brass with stainless steel pin
5BB1HW Stainless steel with stainless steel pin (630 finish only)
NRP = Non-Removable Pin

- Dimensions & tolerances conform to ANSI - A156.7
- 5BB1HW Steel description conforms to ANSI - A8111
- 5BB1HW Brass description conforms to ANSI - A2111
- 5BB1HW Stainless description conforms to ANSI - A5111
- 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
4.5 x 5	114 x 127	0.190
5 x 5	127 x 127	0.190

5BB1

5 Knuckle, Ball Bearing

2 BALL BEARING • MEDIUM FREQUENCY • STANDARD WEIGHT

For use on Standard Weight Doors with Medium Frequency Usage

5BB1 Steel with steel pin
5BB1 Brass with stainless steel pin
5BB1 Stainless steel with stainless steel pin (630 finish only)
NRP = Non-Removable Pin

- Dimensions & tolerances conform to ANSI - A156.7
- 5BB1 Steel description conforms to ANSI - A8112
- 5BB1 Brass conforms to ANSI - A2112
- 5BB1 Stainless description conforms to ANSI - A5112
- Packed with wood and machine screws

Size (Inches)	Size (mm)	Gauge
4 x 4	102 x 102	0.130
4.5 x 4	114 x 102	0.134
4.5 x 4.5	114 x 114	0.134
4.5 x 5	114 x 127	0.146
5 x 4.5	127 x 114	0.146

08 71 00 DOOR HARDWARE (CONTINUED)

SECURING DEVICES: KEY SYSTEMS INCLUDING CYLINDERS, CORES AND KEYS

(see chart/table as well as SJECCD District Standards master specification language below)

TYPE	USE	DESCRIPTION	NOTES	CATALOG CUTS
KEY SYSTEMS (CYLINDERS, CORES AND KEYS)	Exterior + Interior	Schlage Lock Co. Primus Level 3 keying system	Owner's standard, no substitutions permitted	See Below

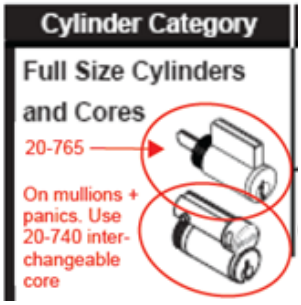
Keying:

Existing/Brand: **YES / NO** (please circle) @ Schlage Primus Level 3

- [X] Patented ☐ Standard ☐ Type _____
- ☐ New key system
- ☐ Interchangeable core see notes to the right
- [X] Visual key control

Cylinders for special doors ☐ Roll-up ☐ Access Panels ☐ Type __

High Security ☐ All Doors ☐ Some Doors



- Provide keyed, construction cores and keys during the construction period:
  - Provide brass construction cores and brass keys.
  - Construction control and operating keys and core shall not be part of the University's permanent keying system or furnished in the same keyway (or key section) as the SJECCD permanent keying system. Permanent cores and keys (prepared according to the accepted keying schedule) will be furnished to the Owner.
  - Manufacturers & Type:

    For all locking or dogging devices, provide complete set up for SJECCD to furnish and install their own Schlage Lock Co. Primus Level 3 keying system.

Primus I/C Cylinders (Rim or Mortise)	20-757 or 20-763 x appropriate cam x blocking rings (rim or mortise type & quantity as required by locking device)
Primus Permanent Core	By SJECCD

08 71 00 DOOR HARDWARE (CONTINUED)

SECURING DEVICES / LATCHING SYSTEMS HARDWARE *(see chart/table as well as SJECCD District Standards master specification language below)*				
TYPE	USE	DESCRIPTION	NOTES	CATALOG CUTS
LOCKSETS, LATCHSETS, AND DEADBOLTS	Exterior & Interior	ND Series by Schlage manufacturing	Owner's standard, no substitutions permitted	See Below

A. Double Keyed Locking Systems:
   a. Provide all latching devices that are lockable (including but not limited to door locks and panic/exit devices) that complying with SB 211 - DSA bulletin 11-05: All new construction projects to include locks that allow the doors to be locked from the inside.
   b. The requirement applies to classrooms and any other room with an occupancy of 5 or more persons, but does not include doors that are locked from the outside at all times or pupil restrooms

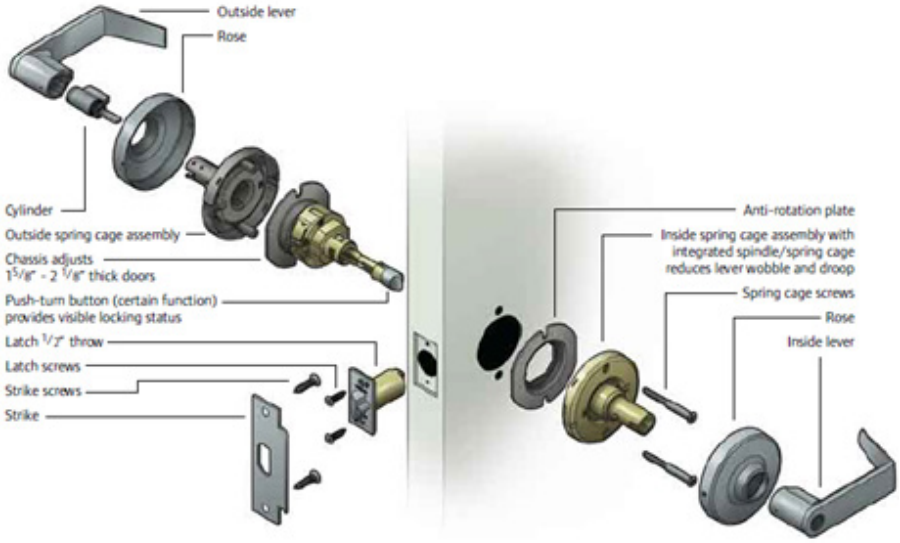
08 71 00 DOOR HARDWARE (CONTINUED)

B. Cylindrical Locksets and Latchsets

a. Acceptable Manufacturers:

i. Schlage Lock Co. ND Series.

ii. Owner's standard, no substitutions permitted.



b. Levers

i. Provide levers to return to door within 1/2".

ii. Lever styles: Traditional Square Style; Rhodes Lever

iii. Schlage Vandlgard feature is an alternate feature that may be utilized per on SJECCD projects (example: exterior side lever trim with vandal resistant feature. Locked exterior lever freely rotates withstanding abuse and vandalism while remaining securely locked). Verify with SJECCD on each new project before specifying Vandlgard feature.

c. Detailed requirements for each cylindrical lock type of device:

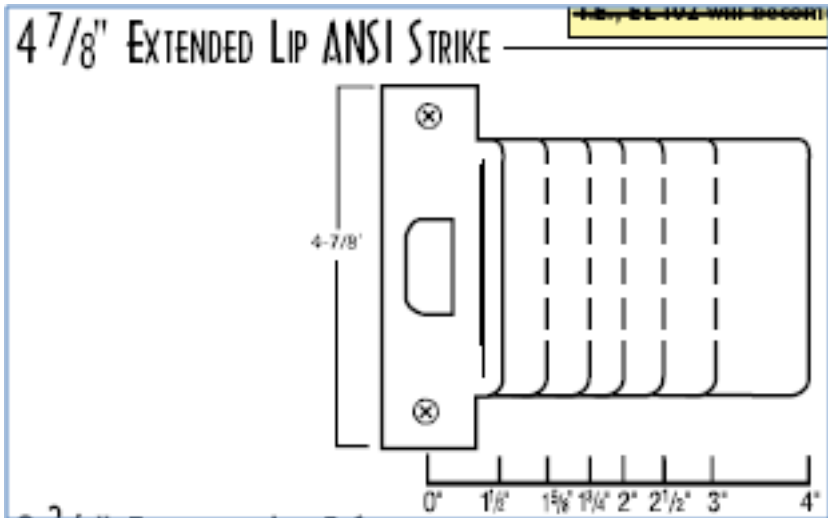
i. Cylindrical Locksets shall be a BHMA Certified Product, meeting requirements per ANSI A156.2, 1996.

ii. Backsets: 2-3/4 inches.

iii. Where indicated in Architectural drawings, door schedule or details provide lead lined devices.

08 71 00 DOOR HARDWARE (CONTINUED)

iv. Strikes:
- Provide ANSI 4-7/8" standard strike.
- Provide Curved Lip-type strike at all locations if possible to prevent catching clothing or other objects on strike. Where required provide detail and provide flat strike where required.
- Where required provide extended lip strike so that the lock or latchset latch will not come in contact with frame or added trim on or adjacent to the frame (example picture below: Don Jo device #MEST-104, but provide submitted manufacturer equal extended lip strike).



- Existing strikes:
  - Verify in field existing strikes. Provide & install new ANSI 4-7/8" or standard 2-3⁄4" strikes to match existing frame preparation/template unless "Unit-type" locks and latchsets where previously installed (see below).
  - Where "Unit-type" locks and latchsets where previously installed, as part of contract, provide labor and material to retrofit "Unit-type" locks and latchsets strikes to become either ANSI 4-7/8" for mortise devices or standard 2-3⁄4" strikes for cylindrical devices.

08 71 00 DOOR HARDWARE (CONTINUED)

C. Mortise Locksets, Latchsets, and Deadbolts

a. Mortise locks are to only be used on a project by project basis (verify with SJECCD before specifying these devices).

b. Levers

i. Provide levers to return to door within 1/2".

ii. Lever styles: Traditional Square Style; 06A, Rhodes type

iii. Schlage Vandlgard feature is an alternate feature that may be utilized per on SJECCD projects (example: exterior side lever trim with vandal resistant feature. Locked exterior lever freely rotates withstanding abuse and vandalism while remaining securely locked). Verify with SJECCD on each new project before specifying Vandlgard feature.

d. Thumbturns

i. Provide only ADA approved thumbturn devices (example: Schlage L583-363 devices). No center pivoting, thumbturns allowed.

e. Detailed requirements for each mortise lock type of device:

i. Locksets shall meet the requirements of ANSI/BHMA A156.13-1994, Operational Grade 1.

ii. Backsets: 2-3/4 inches. Provide minimum 1″ (25mm) throw stainless steel deadbolt Provide minimum ¾" (19mm) throw for latch bolt.

iii. Locksets shall have ability to change handing in field without opening mortise case/body with no more tools than a screwdriver.

08 71 00 DOOR HARDWARE (CONTINUED)

iv. Strikes:
- Provide ANSI 4-7/8" standard strike.
- Provide Curved Lip-type strike at all locations if possible to prevent catching clothing or other objects on strike. Where required provide detail and provide flat strike where required.
- Where required provide extended lip strike so that the lock or latchset latch will not come in contact with frame or added trim on or adjacent to the frame (example: Don Jo device #MEST-104, but provide submitted manufacturer equal extended lip strike).
- Existing strikes:
  - Verify in field existing strikes. Provide & install new ANSI 4-7/8" or standard 2-3⁄4" strikes to match existing frame preparation/template unless "Unit-type" locks and latchsets where previously installed (see below).
  - Where "Unit-type" locks and latchsets where previously installed, as part of contract, provide labor and material to retrofit "Unit-type" locks and latchsets strikes to become either ANSI 4-7/8" for mortise devices or standard 2-3⁄4" strikes for cylindrical devices.

08 71 00 DOOR HARDWARE (CONTINUED)

EXIT DEVICES AND REMOVABLE MULLIONS SECURING DEVICE HARDWARE *(see chart/table as well as SJECCD District Standards master specification language below)*				
TYPE	USE	DESCRIPTION	NOTES	CATALOG CUTS
KEYED REMOVABLE MULLIONS	Exterior + Interior Rim Devices Only	Von Duprin KR4954/KR9954 Series Design Standard	Keyed Cylinder required to remove. Owner's standard, no substitutions permitted	
EXIT DEVICES	Exterior + Interior	Von Duprin 33 & 99 Series Rim Devices Only	Cylinder Dogging required Owner's standard, no substitutions permitted	
ELECTRIFIED LATCH RETRACTION EXIT DEVICES	Exterior + Interior Rim	Von Duprin QEL 99 Series	Cylinder Dogging required Owner's standard, no substitutions permitted	

08 71 00 DOOR HARDWARE (CONTINUED)

A. Double Keyed Locking Systems:
   1. Provide all latching devices that are lockable (including but not limited to door locks and panic/exit devices) that complying with SB 211 - DSA bulletin 11-05: All new construction projects to include locks that allow the doors to be locked from the inside.
   2. The requirement applies to classrooms and any other room with an occupancy of 5 or more persons, but does not include doors that are locked from the outside at all times or pupil restrooms

B. Detailed requirements for each exit device type of device:
   1. Exit Devices are to meet or exceed ANSI A156.3, Grade 1; UL Listed
   2. Exit devices are to be Rim-type (Concealed Vertical Rod type devices are to only be used on a project by project basis - verify with SJECCD before specifying these devices).
   3. At all locations where concealed vertical rods are used 9949, concealed vertical cable system in the exit/panic devices to be utilized no substitution.

08 71 00 DOOR HARDWARE (CONTINUED)

a. All exit devices shall be UL listed for panic. Exit devices for labeled doors shall be UL listed as "Fire Exit Hardware".
b. Provide cylinders for exit devices with locking trim and cylinder dogging. Provide cylinder dogging feature for non-rated exit devices.
c. Where removable mullions are not specified in hardware groups, provide keyed removable mullions at all locations in order for door to properly latch and secure rooms and buildings with rim or mortise type exit/panic bar devices. Provide stabilizers for removable mullions at all locations.
d. Trim:
    i. Where lever trim is specified, provide lever design to match lockset levers. Provide exit device lever trim with vandal resistant feature (heavy duty lever trim designed to with stand abuse and vandalism): -Von Duprin 996 R&V
    ii. "Night Latch" (NL) hardware shall not be used for any accessible doors or gates unless the following conditions are met per DSA Interpretation 10-08 DSA / AC (External) revised 4/28/09. Such conditions must be clearly demonstrated and indicated in the specifications:
    iii. Such hardware has a 'dogging' feature.
    iv. It is dogged during the time the facility is open.
    v. Such 'dogging' operation is performed only by employees as their job function (non-public use).
    vi. Provide Von Duprin Vandal Pulls as campus standards whenever possible (see below for Vandal Pull example by Von Duprin). NOTE: fire rated doors typically need the 996 lever trim.

08 71 00 DOOR HARDWARE (CONTINUED)

Vandal Resistant Trim

Features:

- Stainless Steel construction, 11 gage (0.120" thick).
- Thru-bolts and rugged mounting screws for maximum fastening strength.
- 1/4-20 screws and stainless steel finishing washers supplied with VR900 models; 10-24 screws supplied with VR910 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.
- Sleek, attractive design.
- Furnished with mounting screws for door thicknesses of 1-3/4" to 2-1/4".
- Finish: US32D.
- Grip coated in black plastisol for softer touch and resilience to temperature extremes. Grip designed for comfortable operation.
- Meets ANSI/BHMA 156.13, Trim Security Test and California State Accessibility Standards Title 24.

e. Von Duprin QEL series specified electrified latch retraction in the exit/ panic devices.
   i. Power supply series to include optional control card for coordination with current or future Auto Operator door hardware.
   ii. On-board installation/troubleshooting diagnostics built into power supply and device.
   iii. Automatic calibration – adjusts automatically to installation variations.

08 71 00 DOOR HARDWARE (CONTINUED)

BATTERY ACCESS CONTROL SECURING DEVICE HARDWARE *(see chart/table as well as SJECCD District Standards master specification language below)*				
TYPE	USE	DESCRIPTION	NOTES	CATALOG CUTS
BATTERY ACCESS CONTROL LOCKS (Readily retrofit existing hardware)	Exterior + Interior	AD Series by Schlage manufacturing	Owner's standard, no substitutions permitted	

A. Double Keyed Locking Systems:
   1. Provide all latching devices that are lockable (including but not limited to door locks and panic/exit devices) that complying with SB 211 - DSA bulletin 11-05: All new construction projects to include locks that allow the doors to be locked from the inside.
   2. The requirement applies to classrooms and any other room with an occupancy of 5 or more persons, but does not include doors that are locked from the outside at all times or pupil restrooms

08 71 00 DOOR HARDWARE (CONTINUED)

B. Schlage Lock Co. AD Series off-line AD200 battery powered keypads and on-line AD400 battery powered wireless and wired access control, electrified locksets. AD200 and AD400 locks are to only be used on a project by project basis (verify with SJECCD before specifying these devices).
   1. Provide key override locksets devices.
   2. Provide multiple functions for AD Series keypads (keypad to have ability to be changed to/from passage to/from secured status with toggle access credentials).
   3. Provide real time clock enabling to scheduled events and holiday schedules.
   4. Provide Low-battery alert.
   5. Where lever trim is specified, provide lever design to match lockset levers. The inside lever always allows free egress
   6. RX-AD-400 description of operation: A valid “read” at the exterior side of the RX-AD-400 series lockset energizes the device to unlock exterior side lever for manual entry into units. Door re-latches and re-secures when closed. Free egress by interior lever at all times
   7. Classroom versions for all keypads (lockset can be changed to passage or secured status with valid Toggle Access Credentials).
   8. Provide key override for all keypad locksets.
   9. Fingertip (programmable at door by users) or Windows PC-programmable
   10. Over 10,000 event audit trail.
   11. Low-battery alert
   12. Trim:
      a. Where lever trim is specified, provide lever design to match lockset levers.
      b. The inside lever always allows free egress
      c. Computer and Honeywell software system (being utilized – 2005, but needs upgrading) coordination by others.

08 71 00 DOOR HARDWARE (CONTINUED)

BATTERY ACCESS CONTROL SECURING DEVICE HARDWARE *(see chart/table as well as SJECCD District Standards master specification language below)*				
TYPE	USE	DESCRIPTION	NOTES	CATALOG CUTS
ELECTRIC STRIKES	Exterior + Interior	Acceptable Manufacturer: HES Manufacturing, Inc., Von Duprin	See below	

- Specifications shall meet: ANSI/BHMA 156.31, Grade 1; UL 1034, burglary-resistant listed; ANSI A250.13-2003 listed; UL 10C, 3 hour fire-rated (fail secure only); NFPA-252 fire door conformant; ASTM-E152 fire door conformant. Provide dual interlocking plunger design and heavy-duty, all stainless steel construction, tested to exceed 3,000 lbs. of static strength, 350 ft. lbs. of dynamic strength, and factory tested to exceed 1,000,000 cycles of operation.
- Provide electric strikes designed for use with the type locks shown at each opening where specified.
- Provide transformers and rectifiers for each strike as required. Verify voltage with electrical contractor.
- For all electric strike locations, provide HES “SmartPac III” In-Line Power Control (or equal product to meet specified requirements): 2005 SmartPac III device is an in-line power control that is able to receive input voltages from 12 to 32V AC or DC. The built-in bridge rectifier provides 12 or 24VDC output. Under continuous duty operation, the output VDC is reduced by 25 percent to extend the life of the electric strike. The SmartPac II includes an in-line fuse, MOV to protect against possible inrush and reverse surges, and a 2-8 second adjustable timer. Standard Features include: selectable 12 or 24 volt DC output options; Built-in bridge rectifier; Built-in surge protection / voltage regulation; Activation timer (keeping strike energized for set period of time, adjustable from 2-8 seconds); Continuous duty timer (reducing initial voltage by 25 percent after set period of time adjustable from 2-8 seconds, which provides cooler operation of strike).

08 71 00 DOOR HARDWARE (CONTINUED)

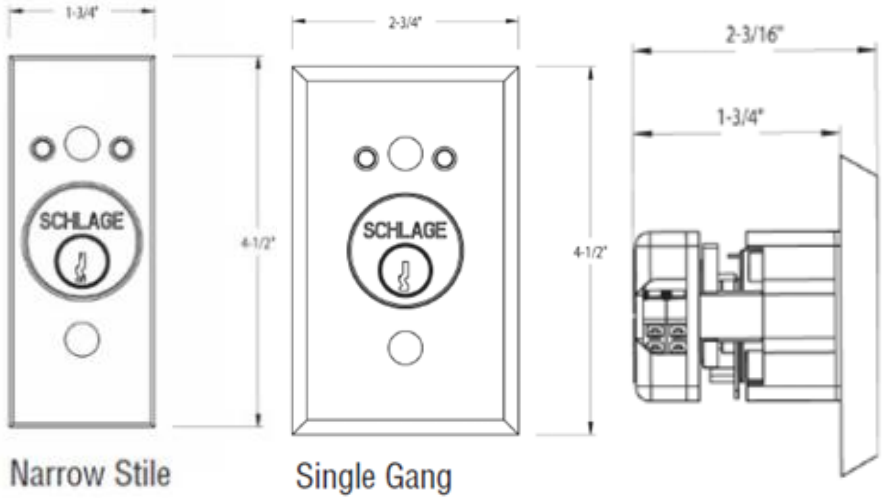
OPENING & CLOSING DEVICES *(see chart/table as well as SJECCD District Standards master specification language below)*				
TYPE	USE	DESCRIPTION	NOTES	CATALOG CUTS
SURFACE MOUNTED CLOSER (NON-ELECTRIFIED CLOSER DEVICES)	Exterior + Interior	Acceptable Manufacturer: LCN 4041XP/4040XP	Owner's standard, no substitutions permitted	See Below
SURFACE LOW ENERGY AUTOMATIC OPERATORS	Exterior + Interior	See Below SJECCD, please advise	Slider Doors are to be considered the District preference over low energy swing door operators at main entry doors	See Below

A. Surface Mounted Closer (non-electrified closer devices)
   1. Closers are to be ANSI A156.4, Grade 1; UL Listed; meets UL 10C and SFM Standard 12-7-4 for positive pressure fire test.
   2. Closers shall have multi-size spring power adjustment to permit setting of spring from 1 through 6 with additional spring power available. Provide ADA compliant setting nomenclature during submittals as recommended by closer manufacturer.
   3. Submit correct closer type as to be able to install closers on non–public side of doors (examples include but are not limited to 1) interior side of storage/ electrical type rooms; 2) not in corridors/public areas 3) stair side of stairway doors; and at exterior locations, install closers inside of building (in conditioned spaces)
   4. Installation Plates, Brackets and miscellaneous adapters:
      a. Provide drop plates, brackets, or adapters for arms as required to suit details and install as directed by manufacturer's templates.
      b. Furnish drop plates at narrow top rail doors and parallel-arm closers at reverse bevel doors and at doors with 170 to 180 degrees swing.
      c. Provide blade or applied stops as required where frame does not permit installation of the standard soffit plate.
      d. Provide angle brackets as required where frame does not permit installation of the standard soffit plate.

08 71 00 DOOR HARDWARE (CONTINUED)

B. Concealed Door Closers: (Not to be used for SJECCD projects)
C. Surface Mounted Low Energy Automatic Operators
    a. Horton 4000LE
1. Products by the following manufacturers will be considered for approval providing operator can open 400 pound or heavier door (whether or not doors on this project are 400+ pounds) all specified criteria have been met in full. Furnish all items and components of hardware required to complete the work in accordance with specifications, Contract Documents and intended operation:
    a. LCN Sr. Swing with Reduced Force feature
    b. Provide required relays & devices as part of the overall system in accordance system requirements. Units shall have relay contact for interfacing products. Door operator shall have input line rating of 120VAC.unit shall have an internal circuit breaker switch to interrupt input power for servicing. Unit shall be U.L. Listed for automatic closing door. Unit shall be in compliance with the requirements of the Americans with Disabilities Act (ADA) and ANSI standards a117.1 and A156.19.
    c. Provide complete with drop plates, brackets, or adapters for arms as required to suit conditions.
    d. Provide adjustment for opening, closing, and checking speeds, as well as length of time door remains open. Provide units that can be utilized as a hold open devices (door placed in opened position when device three-way switch is engaged to “hold open” position.
    e. Provide Automatic Operators with external “On/Off/Hold-Open three-way switch” as part of overall/complete system (coordination per 087113). Optional installations include
        i. Provide Automatic Operators with external On/Off two-way switch to be installed at ADA height of between 38 and 44 inches Above Finish Floor (AFF): #653-14 DPDT maintained single direction x SF-626 by Locknetics manufacturing.

08 71 00 DOOR HARDWARE (CONTINUED)



Specifications: 5 AMP @ 250VAC, dual voltage, SPDT contacts

ii. Where pairs of doors have two separate Automatic Operators provide one external On/Off/Hold-Open three-way switch to operate both doors/operators.

a. Fire, Life & Safety (FLS) systems coordination/description of operation: during fire alarm activation or loss of building power auto operator devices at fire rated doors to automatically close doors (coordinate integration with fire alarm system and local power system). Wiring by Divisions 26 and 28.

2. At High Energy Operator systems, provide above door sensors only to open and close doors.
3. At Low Energy Operator systems, per code above door sensors are not allowed. Provide Hard-wired Push-plates & Touch-Activated automatic door controls.
   a. Provide Automatic Operators devices with external Actuators. Card readers also to be utilized at exterior doors where indicated in drawings and as scheduled. Push-and-Go type features are not acceptable.
   b. Acceptable Manufacturers: Wikk Industries, Inc., Greendale, WI, 877-421-9490, or equal.
   c. Products:
      i. Bar Actuator: Wikk Touch-Activated “INGRESS’R” device as scheduled, or equal.

08 71 00 DOOR HARDWARE (CONTINUED)

- Furnish and install touch-activated automatic door controls with Micro-Switches: double pull, double throw, dry-contact, momentary-action micro-switch.
- Furnish and install touch -activated automatic door controls in stainless steel (Type 304) finishes with international symbol of accessibility and lettering “push to open” engraved and applied in permanent blue enamel.
- Mounting: flush-type compatible with touch-activated automatic door controls. Provide complete installation brackets or adapters for automatic operator actuators to suit application.
- At each location where single square or round push plate devices are provided (rather than above “INGRESS’R) provide two push plates; the centerline of one push plate shall be 7 inches minimum and 8 inches maximum above the floor or ground surface and the centerline of the second push plate shall be 30 inches minimum and 44 inches maximum above the floor or ground surface. Each push plate shall display the international symbol of accessibility.
- Provide weather resistant devices with no gaps for water or ice to penetrate.

08 71 00 DOOR HARDWARE (CONTINUED)

MISCELLANEOUS SWING OPENING DEVICES *(see chart/table as well as SJECCD District Standards master specification language below)*				
TYPE	USE	DESCRIPTION	NOTES	CATALOG CUTS
MISCELLANEOUS SWING OPENING DEVICES	Interior & Exterior	See below	See below	

1.1 STOPS AND HOLDERS

A. Overhead Door Holder/Stops
   1. Acceptable Manufacturers:
      a. Glynn Johnson.
      b. Rixson Manufacturing.
      c. ABH Manufacturing.

B. Floor and Wall Door Stops/Holders and Bumpers
   1. Acceptable Manufacturers.
      a. Ives Manufacturing.
      b. Triangle Brass Manufacturing Company, Inc. (Trimco).
      c. Rockwood.
      d. Hager Manufacturing.
      e. McKinney Products
   2. Detailed requirements for each stop type of device:
      a. Stops, Bumpers and/or Holders shall meet the requirements of BHMA A156.16 (Grade 1).
      b. Coordinate with specifications in Division 05, 06 and/or 09 for required wall backing.

B. Magnetic Door Holders
   1. Acceptable Manufacturers:
      a. Glynn Johnson.
      b. ABH Manufacturing.
   2. Coordinate with Divisions 25-28 for electrical work.
   3. Coordinate with specifications in Division 05, 06 and/or 09 for required wall backing.
   4. Description of Operation: When door is placed in opened position, Magnetic Holder will automatically engage hold open mechanism (magnet). Door releases hold open and fully closes door by manual pulling of door or by the following, self-closing functions: 1) Close on fire alarm activation (Verify voltage and coordinate integration with fire alarm system; or 2) Close due to loss of power (coordinate integration with local power system). Wiring by division 26.

08 71 00 DOOR HARDWARE (CONTINUED)

1.2 ACCESSORIES

A. Plates (Kick/mop plate)

1. Acceptable Manufacturers:
    a. Ives Manufacturing.
    b. Triangle Brass Manufacturing Company, Inc. (Trimco).
    c. Rockwood.
    d. Hager Manufacturing.

5. 2. Size at single doors:
    a. Push side of door two inch less than door width (Hardware set/group nomenclature: 2” LDW).
    b. Pull side and one inch less than door width (Hardware set/group nomenclature: 1” LDW).

3. At pairs of doors without mullions, provide width one inch less than door width on both sides.
4. Height of 10 inches, unless otherwise indicated.

08 71 00 DOOR HARDWARE (CONTINUED)

B. Push/pull plates
   1. Acceptable Manufacturers:
      a. Ives Manufacturing.
      b. Triangle Brass Manufacturing Company, Inc. (Trimco).
      c. Rockwood.
      d. Hager Manufacturing.
      e. McKinney Products
   2. Push Plate Size: 4 inch x 16 inch.
   3. Typical Pull:
      a. Provide ¼ - 20 screws.
      b. Architect to decide on size of pulls as required per project.

TRIMCO#	1191-1	1191-2	1191-3	1191-4
OA	8-3/4"	10-3/4"	11"	13"
M	3/4" Round	3/4" Round	1" Round	1" Round
P	2-3/4"	2-3/4"	3-1/4"	3-1/4"
CTC	8"	10"	10"	12"
CL	2"	2"	2-1/4"	2-1/4"
BHMA	J402	J402	J402	J402

Br, Bz, Pl, SS

Grip
fOCAL option is available. **ADA**

TRIMCO#	1191-4J	1191-5	1191-5J
OA	13-1/4"	18"	19-1/4"
M	1-1/4" Round	1" Round	1-1/4" **Round**
P	3-1/4"	3-1/4"	3-1/4"
CTC	12"	18"	18"
CL	2-1/4"	2-1/4"	2-1/4"
BHMA	J402	J402	J402

Br, Bz, Pl, SS

Grip Offset
fOCAL option is available. **ADA**

08 71 00 DOOR HARDWARE (CONTINUED)

C. Latch Guards
   1. Acceptable Manufacturers:
      a. Ives Manufacturing.
      b. Triangle Brass Manufacturing Company, Inc. (Trimco).
      c. Rockwood.
      d. Hager Manufacturing.
   2. At outswinging doors that are specified with mortise or cylindrical locks, provide Lock Guard device #LG10 x Ives manufacturing with brushed aluminum finish (do not provide Latch-guard devices that require painting).

LG10 **Lock Guard**

- Ideally suited for use with rose or escutcheon 2-3/4" wide or less.
- For use with Type 86 Mortise and Type 161 Cylindrical Locks (ANSI 156.13 Series 1000 and ANSI 156.2 Series 4000).
- No exposed fasteners on face of unit.
- Unique design provides maximum security, virtually eliminating the opening between door and frame at the latch point.
- Available in 13 Gauge Stainless Steel or 12 Gauge Steel.

Dimensions

2-1/2" Wide x 9-1/2" High

Stud center to center: 8-1/2"

Finishes

Ives Number	USP	US32D
BHMA	600	630

08 71 00 DOOR HARDWARE (CONTINUED)

D. Smoke Seals, Intumescent Seals, Sound Seals and/or Weatherstripping.
   1. Acceptable Manufacturers:
      a. Pemko Manufacturing, Inc.
      b. National Guard.
      c. Zero International.
   2. No intumescent is allowed on the frame. Where UBC requirements for positive pressure must be met, doors shall include all requirements as part of the door construction per 'Category A' guidelines as published by ITS/Warnock-Hersey. Only smoke gasketing applied around the perimeter of the frame to meet the 'S' smoke rating is permissible in instances where smoke control is required.

E. Door Silencers
   1. Acceptable Manufacturers:
      a. Ives Manufacturing.
      b. Triangle Brass Manufacturing Company, Inc. (Trimco).
      c. Rockwood.
      d. Hager Manufacturing.

F. Astragals, Door Bottoms & Thresholds
   1. Acceptable Manufacturers:
      a. Pemko Manufacturing, Inc.
      b. National Guard.
      c. Zero International.
   2. All thresholds shall comply with CBC (not to exceed ½" in height). Refer to drawings for details

G. Drip Guard:
   1. Provide at exterior doors exposed to rain.
   2. Size: Full Frame Width (FFW).
   3. Provide devices painted to match adjacent frame in accordance with Division 09 for paint and primer requirements.

08 71 00 DOOR HARDWARE (CONTINUED)

1.3 POWER SUPPLIES, ELECTRIFIED HARDWARE & WIRES

A. Door Position Switches

1. Acceptable Manufacturers:
   a. General Electric (previously Sentrol Manufacturers)
   b. Securitron
   c. Or Equal
2. Detailed requirements for each type of device:
   a. Coordinate door and frame preparations with door and frame suppliers.
   b. Switches shall be installed in frame head approximately 4" from latching door edge (see security drawings for additional coordination).

B. Electronic Keyswitch Devices

1. Acceptable Manufacturers
   a. Locknetics/Schlage
   b. Owner's standard, no substitutions permitted.

Single Gang Elec. Keyswitch (Turn On/Off Various Devices_____)	#653-14 DPDT maintained single direction x SF-626 by Locknetics manufacturing

C. Power Supplies, Wires & Relays

1. Where hardware groups/sets have different information (number of hinge wires and power supply information) refer to the following specifications for clarification and submit according to complete and intended electrified system per Contract Documents (see Architectural details and specifications as well as security drawings and specifications)
   a. Coordinate use of power supplies with door and frame locations. Provide power supplies, relays and battery backup units as part of the overall system in accordance with the manufacturer's warranty and system requirements. UL listed for applicable use; housed in an approved enclosure; and provide both Class 1 and Class 2 outputs
   b. Output shall be filtered and regulated. Relay, timer, and logic modules shall be provided as required for interface to indicated security components; and shall be assembled, connected, and fully contained within the power supply enclosure.
   c. Provide required connections to fire alarm/life safety system and for remote site activation of all electrified components and functions.
   d. For all electric strike locations, provide HES "SmartPac II" In-Line Power Control (or equal product to meet specified requirements).
2. Von Duprin panic devices require:
   a. Von Duprin EPT-10 at hinge side of all doors.

08 71 00 DOOR HARDWARE (CONTINUED)

1.4 FINISHES

A. Unless otherwise specified, finishes shall be as follows:

1. BHMA 626 – satin chromium plated brass or bronze.
2. BHMA 628 – satin or dull aluminum, clear anodized (uncoated).
3. BHMA 630 – satin stainless steel.
4. BHMA 652 – satin or dull chromium plated steel.
5. BHMA 689 – sprayed aluminum paint finish.

Finishes:

- ☐ 605 Polished Brass, Clear Coated
- ☐ 606 Satin Brass, Clear Coated
- ☐ 611 Polished Bronze, Clear Coated
- ☐ 612 Satin Bronze, Clear Coated
- ☐ 613 Satin Bronze, Oxidized, and Oil Rubbed
- ☐ 625 Polished Chrome, Plated on Non-ferrous
- ☒ 626 Satin Chrome, Plated on Non-ferrous
- ☐ 629 Polished Stainless Steel
- ☒ 630 Satin Stainless Steel

May need to have campus sign off on alternate finishes at either existing locations or special applications.

Div 9

FINISHES

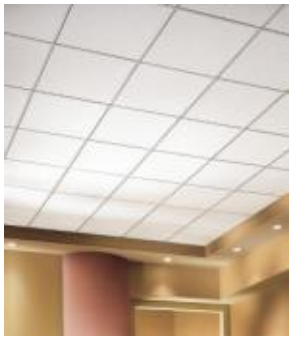
09 24 00 CEMENT PLASTERING

A. Use traditional Portland cement plaster, 3-coat with metal lath at stud walls and 2-coat at concrete and masonry substrates.

09 30 00 TILING

- Wall tile: Ceramic, 1”x1”, 2”x2”, 3”x6”, 6”x6”
- Manufacturer: Daltile, Crossville, or equal
- Floor tile: Porcelain, 12”x12”, 1”x1” Hexagon, Squares
- Base: Porcelain to match floor tile, coved, 12” x 6”H, 3”x6”
- Threshold: Solid surface or Stone
- Warranty: Manufacturer of setting systems shall warrant installed systems to be and to remain free from defects in material or workmanship during the specified warranty period.
    - Warranty period for interior applications: Lifetime of installation.
    - Warranty period for exterior applications: Not less than ten (10) years from date of Certified Completion.
- Interior Floors: Mortar bed tiling, manufacturers’ warranted systems similar to TCNA Handbook Methods F112 for slabs-on-grade and F111 for upper floors.
- Interior Walls: Thin set tiling, manufacturers’ warranted systems similar to TCNA Handbook Methods W202I for solid substrates and W243 or W244F for stud walls, as follows:
    - At walls to which plumbing fixtures are mounted and portions of adjoining walls within 2’-0” of a plumbing fixture to 4’-0” above the finished floor, install fiber-cement backer board, ASTM C 1288.
    - At all other tiled walls, install moisture- and mold-resistant gypsum board, ASTM C 1396 moisture-resistant type with a minimum mold resistance score of 10 under to ASTM D 3273, rated according to ASTM D 3274.
- Exterior Walks/Decks/Balconies: Mortar bed tiling, manufacturers’ warranted systems similar to TCNA Handbook Methods F101 for slabs-on-grade and F1103 for upper floors/ roofs.
- Exterior Walls: Thin set tiling at solid wall substrates and mortar bed tiling at stud walls, manufacturers’ warranted systems similar to TCNA Handbook Methods W202E and W221.
- Grout: Use ANSI A118.3 epoxy grout at interiors and ANSI A118.7 polymer-modified grout at exterior.

09 51 00 ACOUSTICAL CEILINGS



- Acoustical Tile
  Manufacturer: Armstrong Ceilings, US Gypsum
  Style : 9/16" Optima Square Tegular - EVC
  Fine Fissured - SJCC
  Color: White
  Size: 24 x 48 (24 x 24 as approved by College)
- Suspension System
  Manufacturer: Armstrong
  Grid: 9/16" Suprafine, heavy-duty suspended grid
  Color: White or factory painted Satin Silver
- Glue-up Ceiling Tiles
  Size: 12 x 12

09 54 00 SPECIALTY CEILINGS

- As approved by College on a per project basis.

09 65 00 RESILIENT FLOORING

- Vinyl Tile / Sheet Vinyl
- Linoleum / Sheet Linoleum
  Manufacturer: Armstrong, Gerflor, or equal
- Rubber Tile / Sheet Rubber
- Resilient flooring is required under fixed floor cases and cabinets

09 65 13 RESILIENT BASE AND ACCESSORIES

- Rubber base:
  - 4" High, 120' coiled material, 1/8" thick
  - Coved with toe at resilient flooring
  - Straight (toeless) at carpet
- Reducer strip:
  - Minimal profile at transitions from carpet to vinyl or other flooring
- Stair accessories:
  - Integral tread and riser
  - Stringer to match tread and riser

09 65 43 LINOLEUM FLOORING

- Basis-of-Design Product: Linoleum Tile ASTM F2195, Type I, Forbo Marmoleum, Tile 13 x 13 inches, with "Topshield" finish. ASTM E-648, Class 1, ASTM F2034.

09 68 00 CARPET (CONTINUED)

- Manufacturer: Tandus, Shaw Contract, Lees
- Style: As approved
- Color: As approved
- Sizes: 24" X 24" Tile
- Backing: Thermoplastic polyoletic recycled composite with fiberglass reinforcing content, environmentally friendly backing system
- Installation: Per Manufacturer's suggestions
- Appearance Retention Rating: Severe traffic, 3.5 minimum per ASTM D 7330.
- Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm.
- Dry Breaking Strength: Not less than 100 lbf per ASTM D 2646.
- Tuft Bind: Not less than 6.2 lbf for cut pile and 10 lbf for loop pile per ASTM D 1335.
- Delamination: Not less than 4 lbf/in. per ASTM D 3936.
- Colorfastness to Crocking: Not less than 4, wet and dry, per AATCC 165.
- Colorfastness to Light: Not less than 4 after 60 AFU (AATCC fading units) per AATCC 16, Option E.
- Electrostatic Propensity: Less than 3.5 kV per AATCC 134.
- Emissions: Provide carpet that complies with testing and product requirements of CRI's "Green Label Plus" program.
- Basis-of-Design Product: Character Lines Modular GT099, The Groove II Modular GT103, 24- by 24-inch tile.

Colors and shades selected should be of medium intensity (not so light as to easily show soiling, or so dark as to show dust and lint). Multi-colored heathers and non-directional patterns are desirable for their soil-hiding capability. Solid color carpet should not be used.

09 72 17 FIBERGLASS REINFORCED PANELS

- Manufacturer: Marlite, Citadel, or equal
- Color: S100G White

09 72 19 FABRIC FINISHED TACKABLE WALL PANELS

- Manufacturer: Maharam or equal
- Style: Tek-wall Measure Backed 399436
- Color: As approved

09 77 00 SPECIAL WALL SURFACING

- Provide dry-erase type wallcovering at all classrooms.

09 91 00 PAINTING

- Materials shall be top-of-the-line products by firms with over 5 years manufacturing experience with a full product line. Prime coats and finish coats for any 1-paint system shall be the products of the same manufacturer.
- Paint products shall be low or zero VOC, low odor type, where available for the type of paint required.
- Backprime all wood installed against steel, concrete, plaster, or tile, and all wood with surfaces exposed in exterior locations.
- A single color matching walls and ceilings shall be used on all surfaces. Visible surfaces behind vents, grilles, etc., shall be painted flat black. Insides of all drawers, shelves inside cabinets, and other wood surfaces where scheduled or noted shall be given one coat of clear gloss lacquer, or clear polyurethane-base varnish.
- Manufacturer: Kelly Moore, Dunn Edwards, ICI, Sherwin Williams, Frazee
- Color: As approved by College
- Finish: Walls - eggshell (not flat), semi-gloss at wet areas
  Ceilings - flat, semi-gloss at wet areas

09 96 00 HIGH-PERFORMANCE COATINGS

- Graffiti-resistant coatings:
  - Provide at a minimum 9’-0” height at all exterior walls in public areas. Preferable to align with reveal, construction joint or other architectural feature to conceal edge.
  - Silicone-based at concrete / CMU surfaces
  - 2-part aliphatic polyurethane clear coats at painted surfaces
- Provide marine coatings at exterior handrails and railings

09 97 35 DRY-ERASE COATINGS

- Manufacturer: Designtex or equal
- Style: writeup1
- Color: Clear coat (on top of painted wall surface)

Div 10

SPECIALTIES

10 11 00 VISUAL DISPLAY SURFACES

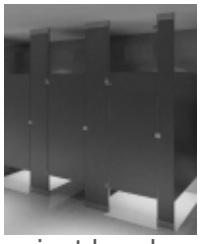
- Markerboards
  - Provide markerboards in all offices.
  - Porcelain-on-steel writing surface
  - Claridge LCS-II “low gloss” with satin anodized aluminum

- Tackboards
  - Natural cork
  - Claridge Tackboards with satin anodized aluminum frame

- Accessories
  - Maprail
  - Hooks
  - Tray

10 21 13 TOILET COMPARTMENTS

- Material: Solid Plastic
  - Floor to Ceiling Pilaster and Urinal Screens
  - Stainless steel continuous hinge
  - Stainless steel continuous wall brackets
  - Coat Hook
  - Bumper at both top and bottom door



- 10-year manufacturer’s warranty for all panels, doors, and stiles against breakage, corrosion, delamination, and defects in factory workmanship

10 28 13 TOILET ACCESSORIES

- Refer to *Section 7: Space Standards, Part K - Toilet Rooms.*
- Numbers refer to keynotes on drawings in *Section 7: Space Standards, Part K - Toilet Rooms.*
- OFCI: Toilet accessories to be provided by the District/College, Contractor Installed.

	DESCRIPTION	
Waste receptacle		
6	Freestanding waste receptacle Manufacturer: OFOI Model: OFOI Mount: Freestanding Finish: Stainless steel	
Hand dryer - as approved by College		
7	Hand dryer - recess-mounted, rapid dry electric Manufacturer: Excel Dryer Model: Xlerator with recess kit Mount: Recessed Finish: Stainless steel	
Toilet seat cover dispenser		
8	Toilet seat cover dispenser Manufacturer: Tork Model: OFCI Mount: Surface Finish: To be determined on a project-by-project basis	

10 28 13 TOILET ACCESSORIES (CONTINUED)

	DESCRIPTION	
Paper towel dispenser		
9	Paper tower dispenser Manufacturer: OFCI Model: OFCI Mount: Surface Finish: To be determined on a project-by-project basis	
Toilet tissue dispenser		
10	Roll toilet tissue dispenser Manufacturer: OFCI Model: OFCI Mount: Surface, recessed, or partition Finish: To be determined on a project-by-project basis	
Soap dispenser		
11	Soap dispenser Manufacturer: OFCI Model: OFCI Mount: Surface, over sink mechanically fastened Finish: To be determined on a project-by-project basis	

10 28 13 TOILET ACCESSORIES (CONTINUED)

	DESCRIPTION	
Mirror		
12	Mirror Manufacturer: Bobrick Model: B-290 (welded frame mirror) with B298 36" shelf Mount: Surface Finish: Stainless steel Size: 18"x36"	
Napkin/tampon vendor		
13	Napkin/tampon vendor Manufacturer: Bobrick Model: B-370634 Trimline Series Mount: Semi-recessed Finish: Stainless steel	
Sanitary napkin disposal		
14a	Sanitary napkin disposal Manufacturer: Bobrick Model: B-270 Mount: Surface Finish: Stainless steel *At standard partition stalls	
14b	Sanitary napkin disposal Manufacturer: Bobrick Model: B-353 Mount: Recessed Finish: Stainless steel * If necessary	
Grab bar		
15a 15b	Horizontal grab bar Manufacturer: Bobrick Model: B-6806 series Mount: Surface Finish: Stainless steel * Provide lengths as required * Avoid use of wraparound grab bars for ease of construction	

10 28 13 TOILET ACCESSORIES (CONTINUED)

	DESCRIPTION	
Diaper changing station		
16a	Diaper changing station Manufacturer: Bobrick Model: KB110-SSRE Mount: Recessed Finish: Stainless steel	
16b	Diaper changing station Manufacturer: Bobrick Model: KB110-SSWM Mount: Surface Finish: Stainless steel *If necessary	
Hooks		
17	Coat hook with bumper Manufacturer: Bobrick Model: B-212 Mount: Surface Finish: Stainless steel * 2 coat hooks per stall standard	
Underlavatory guards		
	Underlavatory guard, molded vinyl covering Manufacturer: IPS Corporation Model: Soft Guard Plus Mount: N/A Finish: White * Avoid use if using specified lavatory - see *Section 16: Fire Protection + Plumbing: Division 22*	
Utility shelf/holder		
	Utility shelf with mop/broom holder and rag hooks Manufacturer: Bobrick Model: B-239 Mount: Surface Finish: Stainless steel	

10 44 13 FIRE EXTINGUISHER CABINETS

- Fire extinguishers are to be mounted in semi- or fully-recessed cabinets, except in kitchens, vocational shops, and service areas.
- Fire extinguishers are to be OFOI – include in documents for reference only.

- Fire Extinguisher Cabinets
  Manufacturer: Potter Roemer
  Model: "Dana" 7250-7265 series, stainless steel, with duo-vertical panel with rolled radius return, provide fire rated as required
  Mount: Recessed
  Finish: #304 stainless steel with #4 finish
  Lettering: Vertical ascending in red (-VAR)

- Valve Cabinet
  Manufacturer: Potter Roemer
  Model: "Dana" 8260-8265 series, stainless steel, with duo-vertical panel with rolled radius\ return, provide fire rated as required
  Mount: Recessed
  Finish: #304 stainless steel with #4 finish
  Lettering: Red (-RH)

10 51 23 PLASTIC-LAMINATE-CLAD LOCKERS

- Included in 06 41 00.

10 81 13 BIRD CONTROL DEVICES

- Spike Strip System: Nixalite of America, Inc., East Moline, IL, or approved equal.
- Spike Strip System: Nixalite Model S, or approved equal, including all hardware and accessories needed for a complete installation. Stainless steel Type 316, pointed, 4 inches high.
- Locations: all exterior light fixtures and higher architectural openings, elevator parapet roofs.
- See also Section 05 50 00 Metal Fabrications.

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Div 11
EQUIPMENT

11 12 00 PARKING CONTROL EQUIPMENT

- Parking control equipment shall be compatible with, and integrated with, existing campus parking control.

11 24 29 FACILITY FALL PROTECTION

- Comply with California Code of Regulations Title 8, Division 1, Subchapter 7 Group 1, Article 5, Section 3291 Special Design Consideration – Permanent Roof Top Installation.
- Manufacturers: Pro-Bel Enterprises, Summit Anchor System Company, Inc., or equal.
- Safety anchor eye plate: mild steel, Type 300W with yield strength of 44 Ksi (300 MPa), hot dipped galvanized to ASTM A123. Plate to be not less than 7/8" (22 mm) thickness material with 2" (50 mm) eye opening having chamfered edges.
- Securement bolts: mild steel, Type 300W with yield strength of 44 Ksi (300 MPa), hot dipped galvanized to ASTM A123.
- Hollow steel section (HSS) piers: galvanized steel as above with yield strength of 50 Ksi (350 MPa). Wall thickness to suit application.
- Base plate and all other sections: galvanized mild steel as above with yield strength of 44 Ksi (300 MPa).
- Thickness and securement to suit application.
- Miscellaneous bolts, nuts and washers: mild steel, Type 300W with yield strength of 44 Ksi (300 MPa), hot dipped galvanized to ASTM A123 or Type 304 stainless steel with yield strength of 35 Ksi (240 MPa).

Div 12
FURNISHINGS

12 24 13 ROLLER SHADES

- Provide manual, light-filtering shades at all exterior windows unless indicated otherwise.
- Where windows are out of normal reach for manual operation, provide motorized shades.
- In auditoria and large lecture halls, provide motorized double-roller shades with option of light-filtering or total black-out.
- Manual operating, double solar and room darkening blackout shades, independent operation
- Manufacturer: Mechoshades, Mariak, or equal
- Shadecloth: Thermoveil 1600 medium vertical weave, 3% or 5% openness factor
- Blackout material: 0700 group fiberglass-coated fabric
- Location as approved by College

12 30 00 CASEWORK

- Included in 06 41 00.

12 36 00 COUNTERTOPS

- Solid surface
- Epoxy
- Stainless steel
- Or other material approved by College
- No plastic laminate
- Integral curb
- Edge: Squared self edge
- Included in 06 41 00

12 48 13 ENTRANCE FLOOR MATS AND FRAMES

- Employ permanent entryway systems to capture dirt, particulates, etc. from high volume building entries.
- Provide walk-off mats at all exterior doors.
- At major building entrances, provide both recessed grates at exterior side and fiber walk-off mats at interior.

Div 14

CONVEYING SYSTEMS

14 00 00 CONVEYING SYSTEM

This section describes the fundamental design criteria for incorporating new elevators at the public areas of existing and new buildings throughout the San José • Evergreen Community College District (SJECCD).

Guide specifications are included herein that provide the minimum acceptable standards for such conveying equipment. These standards are intended to assist the architects and engineers in integrating these systems into their construction documentation including detailed drawings and specifications.

All document submittals related to this section shall comply with SJECCD submittal requirements described in the following guide specifications and general submittal requirements. Submittal requirements specific to vertical transportation equipment are detailed within these guide specifications.

It shall be noted that San Jose-Evergreen Community College District has undergone a system upgrade to many of the existing elevators within existing buildings. In this program, many of the existing elevators were upgraded with equipment that is compliant with current code requirements including disabled access.

Confirm with your SJECCD representative if such an upgrade has been performed within the area of the proposed renovation.

Where new elevators are desired, specifying the proper elevator speed and capacity is critical and shall be justified via the analysis of interval and handling capacity needs. Elevator cab sizes shall be selected based upon both the ability to transport people and the need to move other materials. This analysis shall take into account other modes of transportation within each building.

The latest, proven conveying technologies shall be considered in systems selection. But, technology, alone, shall not be the driving factor in the selection of equipment. For instance, machine room-less technology is not recommended where the available capacities will not allow satisfaction of handling capacity or material handling needs.

14 00 00 CONVEYING SYSTEM (CONTINUED)

The guide specifications that follow, describe the actual equipment parameters. The system design for such equipment shall be preceded by a thorough analysis of traffic handling needs. This formal analysis shall be approved by SJECCD prior to developing equipment designs. This analysis shall include, but is not limited to:

1. Development of elevator target criteria.

2. Identification of peak period populations and durations derived from class schedules, frequency of building or garage turnover, peak period calculations in administrative buildings, and material movement needs.

3. How populations are assigned to the various types and groups of vertical transport units.

4. Discussion on the effects of all passenger support functions such as parking, security, food courts, and retail/support services.

5. Analysis results shall show, at a minimum:
    a. The frequency of elevator departures from the main terminal floor (Average Interval).
    b. The average individual car load and number of persons, carts, and wheelchairs.
    c. The average group handling capacity of each elevator zone during these peak periods.
    d. Development of population divisions between elevators where applicable.

14 00 00 CONVEYING SYSTEM (CONTINUED)

6. The suggested design criterion for evaluation of the group passenger elevator systems is then:

	Admin Building	Classroom Building	Parking Garage
Average Interval	< 30 seconds	≤ 40 – 45 Seconds	≤ 40 – 45 Seconds
Group Handling Capacity*	15% of buiilding population over 5-minute of am peak	100% of passenger requirements (*based on 10% building population) **Wheelchairs	≤ 8 – 10% of parkers moved
Measurement Period	5-minute, 1-way peak	5-minute, 2-way peak	5-minute, 2-way peak

*Estimated at up to 11% of the peak population to be moved on the elevators in buildings of three stories or less.

**2.5%, 5%, or 10% group handling capacity requirements are also utilized for specific passenger applications.

Note: Criteria can vary by building type and number of floors. Buildings of four stories or more will frequently have more stringent handling capacity requirements as the percentage of population willing to traverse stairs diminishes.

14 00 00 CONVEYING SYSTEM (CONTINUED)

7. Approximate elevator response times shall be reported.

AVERAGE WAITING TIME STANDARDS IN CLASSROOM BUILDINGS

	Average System Response Time* (Seconds)	% Distribution of Waiting Times		
		Under 30 Seconds	Under 60 Seconds	Under 90 Seconds
Excellent	<26	>72	>95	>98
Good	<26-30	>65	>90	>95
Fair	<30-35	>60	>86	>92
Poor	>35	<60	<86	<92

*Define "average system response time" in your report.

NOTE: Typical measurements are for the all-day period, the peak hour, and the peak 1/4hour. The peak 1/4-hour increment should approximate these same standards; during extremely heavy traffic, it may drop one category.

8. Details of analysis input shall be provided. The readers should be aware of equipment acceleration/deceleration rates, door speeds, door open/close times, door dwell times, passenger load/unload times, etc. The analysis input shall reflect the nuances of passenger traffic in the type of building being analyzed. (Example: Classroom Buildings, Administration, etc.)

9. This nominal capacity shall not be based on Code capacity or industry published nominal numbers.

10. Clear recommendations with regard to elevator car size and capacity shall be presented. Recommendations shall include elevator car plans depicting an average car load with people ellipses.

14 00 00 CONVEYING SYSTEM (CONTINUED)

CAB ENCLOSURES/FINISHES:

- Refer to *Section 7 – Space Standards* for elevator cab enclosure finishes. Architect to provide finish floor type and thickness.

CONTROLS: GUIDELINES FOR SERVICE BY ANY COMPANY.

- Provide diagnostic equipment complete with access codes, adjuster's manuals and set-up manuals for adjustment, diagnosis and troubleshooting of elevator system, and performance of routine safety tests.

- Straight-line wiring diagrams of "as-installed" elevator circuits, with index of location and function of components. Provide one set reproducible master. Mount one set wiring diagrams on panels, racked, or similarly protected, in elevator machine room. Provide remaining set rolled and in a protective drawing tube. Maintain all drawing sets with addition of all subsequent changes. These diagrams are Purchaser's property.

MACHINE ROOMS:

- Machine rooms, if required, must be adjacent to the elevator hoistway at the lowest level. (Hydraulic only)

CONTROLLER ROOMS:

- Controller rooms, if required, should be located within 100 feet of the machine.

WHEELCHAIR LIFTS:

- Inclined and vertical platform lifts are usually not allowed in new construction where an accessible route is required. Refer to current building code.

PERMITS:

- Contractor shall be responsible for obtaining and paying fee, either itself or through its subcontractors, for all permits required by Labor Code Section 7301.1. Contractor shall bear all responsibility for, and assumes all risk with regards to any delay associated with the issuance of such permits.

Div 21

FIRE SUPPRESSION

21 00 00 FIRE SUPPRESSION

The District has, by Board Resolution dated February 11, 2014, in accordance with CA Public Contract Code Section 3400, established the following products as District Standards:

1. Fire Alarm System Simplex

PURPOSE:

This section provides the minimum requirements for fire suppression systems used within the District.

DESIGN STANDARDS:

- Fire Sprinklers
  - Fire sprinklers shall be installed in accordance with applicable NFPA standards, California Fire Code. Sprinklers shall be installed by a licensed fire sprinkler contractor and shall be designed by a licensed fire protection engineer. Testing and acceptance of fire sprinklers shall be in accordance with NFPA standards and California Codes.

- Clean Agent Fire Suppression Systems
  - Halon or other CFC/HCFC suppression systems are not acceptable. Clean agent system shall be Inergen, FM-200 or other approved agents. System shall be designed and installed per NFPA standards and California Codes.

GENERAL:

- California Fire Code
- NFPA 13 Standard for the Installation of Sprinkler Systems
- NFPA 14 Standard for the Installation of Standpipes and Hose Systems
- California State Fire Marshal

Div 22

PLUMBING

22 00 00 PLUMBING

PURPOSE:

This standard describes the minimum requirements for plumbing systems installed on the Evergreen Valley College campus.

DESIGN STANDARDS:

- Plumbing Systems
  - Cross connection control shall be employed as required by Code for recycled water system use in water closets. Piping systems (including marking, color and separation) for recycled water shall conform to all codes for use in buildings. Provisions shall be made for domestic water connection to buildings. Provision shall include fabricated spool pieces such as shown in sketch SK-X, or as approved by the Authority Having Jurisdiction. Recycled water is also to be used for central plant uses, such as black water and cooling tower make up.

  - Low flow fixtures (.5 gpm) shall be used for lavatories and sinks.

  - Low flow (1.28 gpf) water closets shall be used.

  - Flush-o-meters for water closets shall be 'dual flush' for 'liquid or solid' waste.

  - Waterless urinals shall be used where possible or approved by campus personnel. Campus standard waterless urinal cutsheets are available upon request. Waterless urinal installations shall include water rough in for future installation of water based urinals. Waterless urinals shall be installed only in banks of urinals wherein at a minimum, the most upstream urinal shall be a water operated unit. Where water urinals are required, utilize low flow (0.125 gpf) type.

  - Waterless urinals shall be placed downstream from the water closets and lavatories to insure the urinal waste piping laterals are flushed.

  - Domestic hot water, when required, shall be produced by instantaneous, gas fired, condensing, 96% efficient minimum, Energy Star®, tankless heaters. When the tankless option is not available or practical, designer shall provide either electric instantaneous hot water heaters or stand alone, natural gas fired water heaters. At no time shall campus HHW from the Central Plant be utilized for domestic hot water as campus HHW will be shut down when space heating is not required.

22 00 00 PLUMBING (CONTINUED)

- Domestic water systems shall be type L copper pipe, with solder joints (grooved fittings unacceptable). Provide main shutoff ball valve for each restroom with access door. Provide one rooftop hose bibb with vacuum breaker for washing down rooftop condensers where applicable.

- Isolation valves shall be installed at all bathrooms to isolate each bathroom for both hot and cold water.

- All floor drains shall be equipped with trap primers, accessible for service. Where ceramic tile is used for flooring, square grate top drains shall be used.

- Sanitary sewer lines and storm drains shall be standard weight cast iron soil pipe, hub-less.

- Provide piped domestic water installed with a cap and tee (unused) behind the wet wall of the urinals for any potential future connection/use.

- Restroom design shall include one (1) fixture per type (lavatory, water closet, and urinal) in each restroom operated manually. Manually operated water closets and urinals shall include 'dual flush' for 'liquid or solid' waste handles for optional level of flushing.

- Provide one (1) keyed hose bibb with vacuum breaker in each restroom.

- All automatic/sensor faucets shall have a local disconnect/toggle switch for custodial services/cleaning.

- All cleanouts shall be accessible for service and snaking. Locate cleanouts for ease of location and cleaning.

- Cleanouts at Exterior Surfaced Areas: Round cast nickel bronze access frame and non-skid cover.

22 00 00 PLUMBING (CONTINUED)

- Cleanouts at Exterior Unsurfaced Areas: Line type with lacquered cast iron body and round epoxy coated gasketed cover. Provide concrete ring for support of cleanout.

- Cleanouts at Interior Finished Floor Areas: Lacquered cast iron body with anchor flange, reversible clamping collar, threaded top assembly, and round gasketed scored cover in service areas and round gasketed depressed cover to accept floor finish in finished floor areas.

- Cleanouts at Interior Finished Wall Areas: Line type with lacquered cast iron body and round epoxy coated gasketed cover, and round stainless steel access cover secured with machine screw.

- Cleanouts at Interior Unfinished Accessible Areas: Caulked or threaded type. Provide bolted stack cleanouts on vertical rainwater leaders.

- Gas piping for the building shall be provided with a readily accessible building shutoff outside the building. Do not run gas piping underneath buildings and minimize routing of piping in ceiling spaces. Utilize accessible pipe chases wherever possible. For gas piping on roof, provide a main shutoff on the roof and shutoffs with stainless steel flexible connections to heating equipment throughout. Gas piping exposed to the weather shall be painted (yellow) black steel.

CAMPUS SPECIFIC INFORMATION:

- Evergreen Valley College - recycled water is available on the campus for use in black water fixtures, such as water closets and urinals. Provisions shall be made anywhere feasible to allow for the use of recycled water in buildings for this purpose.
- San Jose City College - The campus does not currently have recycled water available in the local vicinity. When it becomes available, the design and implementation of the services shall provide cross connection and code required piping as outlined in the PLUMBING SYSTEMS section of this standard.

GENERAL:

- California Plumbing Code

22 42 00 COMMERCIAL PLUMBING FIXTURES

PURPOSE:

This standard describes the minimum requirements for plumbing fixtures installed throughout the District.

DESIGN STANDARDS:

DESCRIPTION		
Water Closets	• Low flow water closets shall, 1.28 gpf. • Flush-o-meters shall be dual flush for liquid or solid waste.	
Urinals	• Waterless urinals shall be used where possible or approved by campus personnel. Campus standard waterless urinal cutsheets are available upon request. Waterless urinal installations shall include water rough in for future installation of water based urinals. Waterless urinals shall be installed only in banks of urinals wherein at a minimum, the most upstream urinal shall be a water operated unit. Where water urinals are required, utilize low flow (0.125 gpf) type. • Waterless urinals shall be placed downstream from the water closets and lavatories to insure the urinal waste piping laterals are flushed.	
Lavatories	• Lavatories shall have low flow fixtures (0.5 gpm).	
Sinks	• Sinks shall have low flow fixtures (0.5 gpm).	
Faucets	• All automatic/sensor faucets shall have a local disconnect/toggle switch for custodial services/ cleaning.	
Showers	• [Requires input from client]	

GENERAL:

- California Plumbing Code

22 45 00 EMERGENCY FIXTURES

DESCRIPTION		
Emergency Eye and Face Wash	• [Requires input from client]	

22 47 00 DRINKING FOUNTAINS

DESCRIPTION		
Drinking Fountains	• [Requires input from client]	

Div 23

HEATING, VENTILATING, + AIR CONDITIONING

23 00 00 HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

The District has, by Board Resolution dated February 11, 2014, in accordance with CA Public Contract Code Section 3400, established the following products as District Standards:

1. Building Energy Management System	Johnson Controls (JCI) -– Metasys System Controllers, Lonmark listed or BacNet JCI

PURPOSE

This section documents the minimum requirements for HVAC Systems designs for the District. Systems shall be designed to maintain temperature and minimize noise to promote a productive learning environment.

DESIGN STANDARDS

- Design Criteria
  - Outdoor Conditions: Summer: 88 Fdb; 68 Fwb; Winter: 33 F
  - Indoor Conditions: As recommended by ASHRAE and/or as required for the program space. Acoustical criteria as per ASHRAE for the program space.
  - Chilled Water and Heating Hot Water
  - All air handlers, pumps, terminal units, etc. shall be sized to meet all heating, cooling, ventilating and flow requirements without creating objectionable noise.

23 00 00 HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC) (CONTINUED)

DESIGN STANDARDS (CONTINUED):

- HVAC Design Considerations
  - HVAC systems for campus buildings shall typically be served with Central Plant chilled water and heating hot water. See appropriates section for details on the Central Plant services.
  - Exceptions to using central plant utilities may be considered for areas with constant internal heat gain (i.e., telecom closets). These spaces should be equipped with hybrid systems, using CHW when available and a D/X coil when CHW is not available.
  - Building connection requirements for HHW and CHW are covered under the CHW/ HHW section.
  - Each classroom, lab, learning space, etc shall have independent zone temperature control.
  - Where offices are served, a maximum of three offices (with similar exposures) shall be served by a single box. All corner offices shall have a dedicated box for zone control.
  - Preferred system type is variable air volume with reheat. Other systems may be considered on a case by case basis.
  - Systems shall be designed with adequate service clearances for maintenance.
  - Filtration shall be minimum MERV 13. Access clearance for filters shall be 1-1/2 times the size of the largest filter element or three feet, whichever is greater.
  - Control valves, damper actuators, etc shall be electric or electronic, utilizing a manufacturer as determined by the District. In the event no other decision is made, actuators shall be Belimo.
  - All distribution piping for HHW and CHW is steel. For use in buildings, either schedule 40 black steel or Type L copper is acceptable (with appropriate dielectric waterways).

GENERAL:

- California Mechanical Code
- California Energy Code
- ASHRAE Handbooks and standards
- NFPA 90A Standard for the Installation of Air-Conditioning and Ventilating Systems
- NFPA 90B Standard for the Installation of Warm Air Heating and Air-Conditioning Systems

23 08 00 HVAC COMMISSIONING

PURPOSE

This standard describes the minimum activities and reporting for the commissioning of HVAC equipment provided to the District. The purpose of commissioning is to ensure the proper control of the equipment as intended by the owner and designer. Another goal of commissioning is to ensure the Owner is familiar with the control and operation of the building and equipment upon completion of the construction.

DESIGN STANDARDS

- An independent Commissioning Authority (CA) shall direct and coordinate all commissioning activities.
- Each subcontractor or installer of a particular system shall be responsible for performing the commissioning activities and cooperating with the CA for the development of the Pre-functional Checklists and Functional Test Procedures.
- Typical equipment to be commissioned: actuated dampers, actuated control valves, control systems, variable frequency drives, sound control devices, vibration control devices and any special ventilation equipment.
- Pre-functional Checklist shall include, at minimum, the following for each type of equipment:
    1. System name.
    2. List of devices:
    3. Step-by-step procedures for testing each controller after installation
    4. Copy of log and field checkout sheets, including spaces for the initial and final values during calibration of each point.
    5. Description of instrumentation required for testing.
    6. Indication of which tests on specific systems shall be completed prior Testing, Adjusting and Balancing (TAB) of HVAC systems.
- Pre-functional checklist, startup reports and trend logs shall be submitted to CA for approval.
- HVAC pipe and duct system testing, flushing, cleaning, equipment startup and TAB schedule shall be provided to the CA.
- All deficiencies in the control of the HVAC equipment shall be corrected and either re-inspected or re-tested as applicable, with no additional cost to the Owner.

GENERAL

- California Mechanical Code

23 11 23 NATURAL GAS DISTRIBUTION

PURPOSE

This standard sets the minimum requirements for natural gas distribution on the campuses.

DESIGN STANDARDS

- Materials
  - Gas piping below grade shall be high density polyethylene ASTM 2513 SDR 11 , yellow gas rated piping, fusion welded.
  - Gas piping above grade shall be black steel, schedule 40, screwed fittings 2” and under, flanged for 2-1/2” and above.
  - All gas piping shall be pressure tested in accordance with code.
  - Valves below grade shall be Nordstrom Poly Gas polyethylene ball valves (SDR 11) with valve boxes and covers marked “GAS”.
  - Valves above grade shall be bronze ball valves through 2”, threaded, 2 piece body, stainless steel ball and AGA listed for gas service. Valves 2-1/2” and over, non lubricated plug valves, AGA listed for gas service.
    - HTPE

SITE SPECIFIC INFORMATION

- EVC currently has one (1) main meter located near the entrance of the Police Department. Distribution pressure is 2.2 psig.
- SJCC currently has a main gas meter located between the Student Services Center and the East Parking structure. Distribution pressure is 5 psig.

GENERAL CODE COMPLIANCE

- NFPA 54
- California Plumbing Code

23 21 13 HYDRONIC PIPING

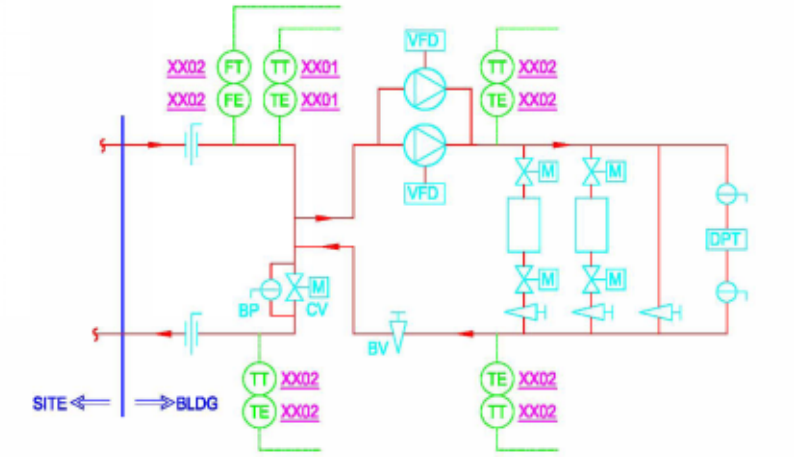
PURPOSE

The purpose of this standard is to provide consistent piping and pumping connections at each building's HHW and CHW connections. In addition, this section includes provisions for consistent metering of the HHW and CHW utilities at each building.

These standards define the standard connection to the Campus-Wide utilities, indicating the type of connection and materials required. This section includes metering and some EMS system information.

DESIGN STANDARDS

- General
  - The Campus heating and chilled water systems are served from central plants employing primary/secondary pumping. Buildings are to be connected utilizing a tertiary pumping scheme as illustrated below (typical for HHW connection also):



CHW INTERCONNECTION
SCHEMATIC

23 21 13 HYDRONIC PIPING (CONTINUED)

- Materials
  - Pipe (above ground): ASTM A53, Grade A or B black steel, seamless or electric resistance welded, schedule 40 through 12", 0.375 wall over 12".
  - Pipe (underground): By utility engineer. Perma Pipe PolyTherm, Prefabricated, Pre-insulated Piping System. Steel carrier pipe, polyurethane insulation, FRP jacket and welded connections.
  - Fittings: Screwed 2" and under, welded over 2", grooved systems allowed where piping is accessible and only on CHW systems.
  - Isolation Valves: Ball valves 2" and under – bronze, two-piece, stainless steel ball; over 2" - lug pattern butterfly valves, lever operated through 4", gear operated over 4". 150 lb.
  - FE-XX01: Provisions for flow meter; coordinate with District and with Johnson Controls (see also EMS standard). Flow element as a part of the design documents.
  - FT-XX01: Flow Transmitter by contractor as a part of the design documents. Coordinate with District and with Johnson Controls (see also EMS standard).
  - TE-XX: 1" thread-o-let and bronze thermowell. Coordinate with District and with Johnson Controls (see also EMS standard).
  - TT-XX: Temperature transmitter. Coordinate with District and with Johnson Controls (see also EMS standard).
  - CV: Secondary control valve – 2 psig drop at design flow. 24 or 120 VAC, Belimo ball or butterfly valve or approved equal.
  - DPT: Differential pressure transmitter, accuracy of 0.5% of differential pressure range including non-linearity and hysteresis. All 316 stainless wetted parts. NEMA 4 cast aluminum enclosure, 4-20 mA output.
  - VFD: ABB, with maintenance bypass for standby pump applications, integral circuit breaker disconnect and N2 communications bus.

23 21 13 HYDRONIC PIPING (CONTINUED)

SITE SPECIFIC INFORMATION

- San Jose City College - the Campus heating and chilled water systems employ primary/ secondary pumping from the Central Plant. Buildings are to be connected utilizing a tertiary pumping scheme.
- Evergreen Valley College – the Campus heating and chilled water systems employ a pumping system at the Central Plant serving both the buildings and the hydronic water piping. In effect, the primary and secondary pumping is housed at the Central Plant, requiring pumps at each building for proper operation of the system.

23 37 00 AIR OUTLETS AND INLETS

PURPOSE

This standard describes the minimum requirements for air inlets and outlets installed at buildings in the District.

DESIGN STANDARDS

DESCRIPTION	
Ceiling Supply Registers/Grilles	• Ceiling supply registers shall be a modular core diffuser, consisting of fixed louver directional modules, capable of being repositioned without tools to provide a one-way, two-way, three-way or four-way discharge. • Fabrication material shall be steel. Manufacturer/Model: Titus Model MCD.
Ceiling Exhaust and Return Registers/ Grilles	• Ceiling exhaust and return grilles shall be an egg crate style with a ½ x ½ x ½ inch grid core. • The grille frame shall have a 1-1/4 inch margin with countersunk screw mounting. • The grid core shall be fabricated from aluminum and the grille frame shall be fabricated from heavy extruded aluminum. Manufacturer/Model: Titus Model 50F.
Wall Supply Registers/Grilles	• Wall supply registers shall have individually adjustable streamlined blades with a ¾ inch minimum depth and spaced at a maximum of ¾ inch. • Register shall be double deflection, allowing for the adjustment of airflow in two directions. • Front deflection blades shall be parallel to the long dimension of the grille. • The register frame shall have a 1-1/4 margin with countersunk screw mounting and gasket. Register corners shall be welded. Manufacturer/Model: Titus Model 300 RL.

23 37 00 AIR OUTLETS AND INLETS (CONTINUED)

Wall Exhaust and Return Registers/ Grilles	• Wall exhaust and return grilles shall have streamlined blades with a ¾ inch minimum depth and spaced at a maximum of ¾ inch. • Blades shall be fixed at a 35 degree angle and parallel to the long dimension of the grille. • The register frame shall have a 1-1/4 margin with countersunk screw mounting and gasket. Register corners shall be welded. Manufacturer/Model: Titus Model 350 RL.
Louvered Penthouse	• Louvered penthouse shall be of aluminum construction with the sides joined at the four corners by stainless steel screw in each louver. The screws shall be countersunk to maintain the appearance of a mitered corner. • Louvers blade shall be aluminum with a 4 inch depth. • Penthouse shall be provided with a 0.5 inch galvanized mesh bird screen. • The penthouse cover shall be hinge open for easy access, with 0.5 inch thick fiberglass insulation. Manufacturer/Model: Greenheck/Model WRH or WIH.

GENERAL

- California Mechanical Code

23 81 23 COMPUTER-ROOM AIR-CONDITIONERS

PURPOSE

This section provides design parameters for new BDF and IDF design for both the Evergreen Valley College campus.

DEFINITION

- A Building Distribution Facility (BDF) is an environmentally controlled centralized space for telecommunications equipment that usually houses a main or intermediate cross-connect. BDF's differ from IDF's in that they are generally considered to serve a building, whereas IDF's serve a floor area of a building. Therefore, BDF's may be connected to backbone pathways that run both within and between buildings.
    - BDFs:
        - Contain terminations, interconnections, and cross-connections for telecommunications distribution cabling.
        - Include work space for telecommunications personnel.
        - Are built and laid out according to stringent requirements because of the nature, cost, size, and complexity of the equipment involved.
    - When designing BDFs, incorporating building information systems other than the traditional voice and data systems (e.g., CATV, fire alarm [FA], life safety facility protection, BAS, security, audio, other building signaling systems) should be considered.

- An Intermediate Distribution Facility (IDF) is an enclosed architectural space for housing telecommunications equipment, cable terminations, and cross-connect cabling. An IDF is generally applied as a subset to the traditional BDF. This room is typically smaller than a BDF and is used to service a specific area of a building floor.
    - There is no maximum number of IDFs that may be provided within a building. The IDFs are the recognized connection points between the backbone and horizontal pathways. The types of cabling facilities that may be housed in the IDFs include:
        - Horizontal cross-connects (floor distributors).
        - Intermediate cross-connects (building distributors).

23 81 23 COMPUTER-ROOM AIR-CONDITIONERS (CONTINUED)

- Components:
  - BDF – The main communications distribution hub for the building where telecommunications systems are housed and connected to the Campus MDF.
  - IDF – The main communications distribution hub for floor or section of a floor where telecommunications systems are housed and connected to the Building BDF.
  - Cable pathways - Shafts, conduits, pullboxes, sleeves, raceways, and floor penetrations, which provide routing space for cables.

23 81 23 COMPUTER-ROOM AIR-CONDITIONERS (CONTINUED)

DESIGN STANDARDS

- Applicable Telecommunications Standards
  - TIA/EIA-568B (Telecommunications Cabling Standards)
  - TIA/EIA-569A (Pathways and Spaces)
  - TIA/EIA-606 (Administration)
  - TIA/EIA-607(Grounding & Bonding)
  - TIA/EIA-758 (Customer Owned Outside Plant)
- Design Considerations
  - Acceptable Size & Location
    - The square footage allocated for the BDF room shall be in proportion to the square feet of useable space and the equipment needed for each specific building. The minimum room size shall be 150 square feet of useable space. The room shall have a minimum width of 10ft. and provide adequate front and rear clearance for communications racks.
    - Size requirements for IDFs (see Table 1) are based on distributing telecommunications services to a work area. Minimum IDF sizes are shown in the following table

Table 1

Serving area is…	IDF dimensions must be…
5000 ft² or less	10’ x 8’
>5000 ft² to 8,000 ft²	10’ x 10’
>8000 ft² to 10,000 ft²	10’ x 12’

Note: When the area served exceeds 20,000 ft² consideration for more than one or several IDF’s must be considered in conjunction with the campus technology staff.

    - There must be at least one BDF or IDF per floor.
    - BDF and IDFs shall be stacked vertically in multi-story buildings.
    - Multiple rooms are required if the cable length between the BDF/IDF and the telecommunications outlet location, including slack, exceeds 90 m (295 ft) or if the usable floor space (see Table 2) to be served exceeds:

23 81 23 COMPUTER-ROOM AIR-CONDITIONERS (CONTINUED)

Table 2

Space type	Usable floor space
IDF	10,000 ft²
BDF	20,000 ft²

- The BDF shall have proximity to external utility service entrance conduits for telecommunications and electrical power.
- Locate the BDF and size the entrance so that it is accessible for the delivery of large equipment throughout its useful life.
- Locate the BDF/IDF far enough away from sources of EMI to reduce the interference.
- The BDF/IDF shall be square or rectangular in order to maximize available space.
- Access through the BDF/IDF to reach other areas shall not be allowed.
- Wall, ceiling, and floors in this room shall be sealed, dust free, and with fire retardant white color paint.
- Clearances and layout of internal racks, cabinets, and equipment shall be in accordance with code and/or manufacturer's recommendations for access.
- The BDF/IDF shall have a dedicated HVAC system that provides air 24/7/365.
- Source of water such as kitchens, rest rooms, etc. shall not be located next to or above the BDF/IDF.
- Shared use of BDF/IDF space with other building facilities shall not be allowed.

• Wall Field
  - Walls shall be provided with fire resistant plywood installed 6" above finished floor.
  - Plywood shall be 4' X 8' sheets, ¾" thick and mounted vertically using properly sized lag bolts to support anticipated loads.
  - Walls shall be painted with white color fire retardant paint also in accordance with local building codes and district standards. The plywood's fire resistant stamps shall be left un-painted.

• Floor
  - Anti-Static Vinyl Coated Tile (VCT) flooring or equivalent shall be installed with appropriate bonding strips as required.
  - A floor drain is required if there is a risk of water entering the facility.
  - Concrete Slab floors without (VCT) shall be sealed and polished.

23 81 23 COMPUTER-ROOM AIR-CONDITIONERS (CONTINUED)

- Ceiling
  - Suspended ceilings shall not be allowed in the BDF or IDF to provide maximum accessibility for management of pathway and cable entrances and support the room. Ceiling shall be sealed to minimize dust.
  - Minimum ceiling height shall be 8'- 9" above finished floor.

- Entrances (doors)
  - The following guidelines should be used when installing doors in telecommunications spaces.
    - Doorways that are planned for use during equipment delivery should have fully opening (e.g., to 180 degrees if local building codes permit), lockable doors that are at least 3 ft wide and 6.6 ft high. Since large equipment is often located in the BDF, a double door (e.g., 6 ft wide by 7.5 ft high) is recommended.
    - Doors shall open outward provide unless prohibited by commercial building codes.
    - Doors shall also have the same fire rating as the walls in the room.
    - Access to the telecommunications space should not be constrained when completed. Access should allow for future equipment changes.
    - Additional doors that are not intended for equipment delivery should have lockable doors that meet building code requirements. Avoid multiple entrances from areas of the building that may compromise security or provide access to unauthorized personnel.

- Security
  - Entry access into the BDF/IDF should be auditable such as a card reader or electronic key system. If this is not possible, a key made specifically for these rooms shall be provided to insure only authorized personnel have access. This equipment is normally owner furnished, owner installed.

23 81 23 COMPUTER-ROOM AIR-CONDITIONERS (CONTINUED)

- Space Allocation & Layout
  - The BDF shall provide enough space for:
    - All planned equipment to support data, voice, video, alarm, BAS and other building signaling systems.
    - Access to the equipment for maintenance and administration.
    - Future growth.
    - Space for any environmental control equipment, power distribution/ conditioners, room cooling equipment, and UPS systems that shall be installed in the room.

- Working Clearances and Electronic Isolation
  - BDF and IDF facilities shall have a layout that is easy to use and maintain.
  - For equipment installation in the United States, NEC Section 110-16 provides requirements for working space and clearances around electrical equipment. (Generally 3 ft.)
  - Clearance from wall field components (66 termination fields, protection blocks, etc) shall be no less than 12” to the adjacent 90-degree walls to the left and right.
  - Isolation kits shall be provided for all floor mounted racks and overhead structural support systems.

23 81 23 COMPUTER-ROOM AIR-CONDITIONERS (CONTINUED)

- Floor Standing Racks and Cabinets
  - Station racks and equipment cabinets shall be secured to the building structure and grounded according to the manufacturer's guidelines. Standard color is Black.
  - Additional bracing shall be required to meet seismic bracing recommendations. Consult Uniform Building Code (UBC) for specific zone four requirements. All racks and cabinets should be most current UL listed for Zone 4 installations. Additional seismic engineering studies or certifications may be required by local building codes.
  - Each rack shall be equipped with a 6 inch (or greater) vertical wire manager on each side.
  - Fiber patch panels shall be placed at the highest point possible in the rack or cabinet. Single mode fiber patch panels will be mounted above the multimode fiber patch panels. Fiber patch panels will have integrated cable management in the front and cable guides in the rear.
  - Copper patch panels will be installed below the fiber patch panels. Wire management will be integrated in the copper patch panels.
  - The horizontal wire managers shall be supplied to route patch cords to the network equipment. One horizontal wire manager is required for each 48-port patch panel or 48- port network switch.
  - All network equipment shall be installed such that wire management is located directly above and below each network switch, alternating down the rack. NOTE: Network equipment shall not be included as part of any construction bid, but the designer shall provide racking and cabinet layout details.
  - Rack mounted dedicated 20amp outlets are to be added along the ladder rack above the freestanding rack. Outlet strips with visible ampere readouts shall be located just above the UPS rack position.
  - Where rack-mount Uninterruptible Power Supplies (UPS) are provided, UPS units shall be installed at the base of the rack. Surge-protected power strips shall be installed midway in the rack/cabinet, above the network equipment, to allow for easy access to equipment power cords. This space shall be provided in each rack, whether or not UPS is anticipated in the project budget, leaving it the prerogative of the District to independently install UPS capability.

23 81 23 COMPUTER-ROOM AIR-CONDITIONERS (CONTINUED)

- Station racks and equipment racks shall meet ANSI/EIA-310 Standards (ANSI/EIA 310-D-1992: Racks, Panels, and Associated Equipment).
- Note: Designs should consider the types of equipment planned for the room and future equipment needs. Space should be allocated to accommodate 24" width x 42" depth equipment cabinets installed in rows. In general, telecommunication racks are preferred over equipment cabinets in both BDF and IDF rooms.

- Labeling of Telecommunication Space
  - The Main Distribution Facility shall be named and numbered with an individual numeric identifier (1.1, 1.2, etc). Current room naming conventions at the campuses use a unique room number that also correlates to the floor and building number.
  - The SJECCD will work with the Telecommunications Consultant to implement a consistent and unique labeling scheme across all buildings. The Contractor shall confirm specific labeling requirements with ITSS or its Representative prior to cable installation or termination.
  - The labeling shall meet the requirements of ANIS/TIA/EIA-606.
    - All labels shall:
      i. Meet the legibility, defacement, exposure and adhesion requirements of UL 969
      ii. Be pre-printed or laser printed type
      iii. Be a label with a vinyl substrate and white printing area and a clear "tail" that self laminates the printed area when wrapped around the cable shall be provided.
      iv. Be a label color different than that of the cable to which it is attached.
      v. Use clear plastic covers to go over label when insert type labels are used.
      vi. The standard is black lettering on a white background.

23 81 23 COMPUTER-ROOM AIR-CONDITIONERS (CONTINUED)

- Cable Pathways
  - When lying out cable pathways entering or within the BDF/IDF, ensure that the layout:
    - Avoids cable congestion.
    - Allows access to the cables.
    - Provides cable slack.
    - Provides a minimum of 10’ service loop for cable.
    - Minimizes cable stress such as tension, twisting, and bending, bend ratios, maximum number of bends.

- Overhead Ladder Rack
  - Ladder racks shall be provided and installed by the contractor for routing of cabling.
  - The minimum size for all ladder rack in the BDF/IDF shall be 12”.
  - This ladder rack shall be installed so that the bottom of the ladder rack is installed on the top of the equipment racks or cabinet. Horizontally, a variance of +/- 6” from plan will be allowed as required to clear lighting fixtures, sprinkler heads, etc. The ladder rack shall be suspended from the ceiling or attached to racks or cabinets and/or securely anchored to the wall. Standard color is Black.
  - Cable support system shall be made of straight sections, fittings, and accessories as defined in the latest NEMA standards publication VE-1. Standard ladder racks shall be UL classified as equipment grounding conductors.
  - Ladder rack shall be installed to support cable groupings 50% larger than planned for the BDF/IDF.
  - Ladder rack shall be installed below the cable sleeves or slots entering the room and provide distribution to the wall field and/or telecommunication racks.
  - Horizontal ladder rack shall be installed directly above the row of racks or cabinets in the room. Electrical outlets shall be mounted outside of the tray and should face the wall and not the floor.
  - Spillways, waterfalls, saddles or “J” hooks are required in all transitions where cable leaves the ladder rack, raceway or ladder rack.

23 81 23 COMPUTER-ROOM AIR-CONDITIONERS (CONTINUED)

- Floor Cores, slots, and sleeves
  - A minimum of four Trade Size 4" conduits shall be provided for entry to the BDF. New buildings OSP require (4) 4 inch size conduits. Maxcell detectable inner-duct product shall be used for all fiber installations. Place (3) three cells for each 4-inch size conduit.
  - Fire Stop sealing is required for wall and ceiling and floor penetrations. EZPATH products for floors, walls and ceilings shall be specified. Duct plugs for all OSP applications shall be required.
  - Terminate conduits that protrude through the structural floor 4 inches above the surface to prevent cleaning solvents or other fluids from flowing into the conduit.
  - Design sleeves with 4-in. diameters unless a structural engineer requires a smaller size or obstructions are present. Smaller diameters do not cost any less, do not save a significant amount of space, and unnecessarily limit the backbone cable capacity.
  - Fill ratios shall not exceed 40% fill or exceed minimum bend radius.

- Wall Cores
  - If required, a minimum of four Trade Size 4" conduits shall be provided.
  - Design sleeves with 4-in. diameters unless a structural engineer requires a smaller size or obstructions are present. Smaller diameters do not cost any less, do not save a significant amount of space, and unnecessarily limit the backbone cable capacity.
  - EZ-PATH products shall be used after core is completed actual required core size shall vary.
  - Fill ratios shall not exceed 40% fill or exceed minimum bend radius.

23 81 23 COMPUTER-ROOM AIR-CONDITIONERS (CONTINUED)

- Power Requirements
  - Telecommunications equipment is sensitive to power fluctuations. Because of this sensitivity, provisions shall be made for:
    - Dedicated power feeders.
    - Individual branch circuits.
    - Back-up power UPS
    - Grounding and bonding.
    - Generator Power
    - PDU or Power Distribution Units
  - Each BDF and IDF shall have its own dedicated panel board to support all communications equipment in the room. Minimum panel and breaker size shall be 225 ampere. The designer is to verify actual anticipated load and provide power panel to accommodate an additional 40 percent capacity in AMPS for future growth. All panel boards placed in telecommunications spaces or that provide service to telecommunications spaces shall be equipped with TVSS (transient voltage suppression). TVSS units shall be contained within the panel board. If the building is provided with an emergency generator, these panel boards shall be connected to the emergency bus supply system.
  - Power shall be mounted on cable trays when installed above equipment. Typically, each equipment rack requires two dedicated 20-amp Nema L520 twist lock receptacle. UPS equipment shall require a dedicated 30amp Nema L630 twist lock receptacle.
  - A minimum of four convenience outlets shall be installed around the room (one per wall).
  - UPS distribution requirements are full N+1 redundancy, Scalable, PDU Distribution, and SNMP manageable.
  - PDUs are not typically required for BDF or IDF installations however if required PDUs shall be mounted on the back or rear of any Telecom rack or Server rack which requires to have a twist lock receptacle to match existing power or new power supplied Nema rated. All PDU units require a digital load amp read out indicator and also SNMP with remote monitored and managed capability.

23 81 23 COMPUTER-ROOM AIR-CONDITIONERS (CONTINUED)

- Requirements for Lighting
  - Install building standard florescent lighting to provide minimum 50 foot candles of illumination three feet above finished floor. Light fixtures shall be arranged to limit shadowed areas affecting working conditions at the front or rear of equipment racks or cabinets. Power for lighting shall be sourced from building electrical service panels and not from dedicated telecommunication space electrical panel boards. The lights shall be under control of a readily accessible switch. Emergency lighting shall be provided.

- Fire Suppression
  - If sprinkler heads are in the area, they shall be designed to operate at more than 212 Degrees Fahrenheit. Sprinkler heads shall be equipped with a guard to prevent accidental operation. A pre-action system is an acceptable method of providing protection.

- Network Switch Requirements
  - Switches shall be rack mountable on standard 19 and/or 23 inch racks or cabinets.
  - All administrative switches shall be Voice over IP capable with QoS support.
  - Switches set with VoIP capability shall have a UPS installed in conjunction with the switch.
  - Coordinate port density with the Campus and District representatives prior to purchasing. Provide additional ports, 10% to 20%, above the buildings outlet count for future installations.

Div 25

INTEGRATED AUTOMATION

25 00 00 INTEGRATED AUTOMATION

The District has, by Board Resolution dated February 11, 2014, in accordance with CA Public Contract Code Section 3400, established the following products as District Standards:

1. Building Energy Management System	Johnson Controls (JCI) -– Metasys System Controllers, Lonmark listed or BacNet JCI

PURPOSE

Energy Management System (EMS):
This provides background and requirements regarding the EMS campus standard.

DESIGN STANDARDS

- General
  - The Campus-Wide (and District-Wide) Energy Management System is Lon-based, digital control system consisting of Johnson Controls (JCI): Metasys System Controllers (MSC's) located in each building and interconnected to the Campus Ethernet and to distributed equipment controllers. Host computers (PC workstations) reside in District Maintenance and Operations (DM&O) buildings on the City College and Evergreen College Campus.
  - In order to maintain a reliable and robust EMS network and EMS communications between the Campus EMS and all control/hardware points, all new HVAC control systems, and power monitoring components shall be Lonmark listed or BacNet JCI, Metasys hardware no equal. Systems installer may be JCI or any JCI value added resellers (VARS). Competitive pricing is required between JCI and JCI VAR's for all

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

projects.

- ISSUE DATE and DURATION: This procedure is effective as of 1/1/11 and shall apply to all EMS-related contracts unless formally waived or modified by the District.

- Metasys System Extended Architecture
  - The Metasys system extended architecture is a Web-based system that allows day-to-day building operation using a Web browser to access the system's User Interface (UI). The Metasys system user experience is a portal into a site.
  - A Metasys site comprises one or more Metasys devices on a continuously connected IP network. A site's primary network consists of one or more Engines. The Engines also provide the Site Management Portal that allows for the configuration of the primary network and user monitoring of all devices on the network. Engines can be Network Automation Engines (NAEs), Network Integration Engines (NIEs), Network Control Engines (NCEs) or LONWORKS Configuration Servers (LCSs).
  - A site can optionally have one or more servers – computer-based devices that add long-term data storage and support for larger Metasys networks. Servers provide the same Site Management Portal as the engines, plus they can host the Ready Access Portal server software. Servers can be either Application and Data Servers (ADSs) or Extended Application and Data Servers (ADXs), which are described in further detail in this document. When a server is connected to a site, it is designated as the Site Director.

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

- *Metasys System Extended Architecture Components*
  - ADS
    - The ADS is a Metasys server running on a computer that consists of two components. The first component is the relational database management system using Microsoft SQL Server™ 2005 Express or SQL Server 2008 Express software to store collected trend data, audit trail messages, and alarm and event messages with operator annotations. The second component is the Web server software that provides Site Management Portal and Ready Access Portal access to data and routes commands to the Metasys system.
    - The ADS also:
      - supports a greater of number engines than an engine supports when designated
    - as the Site Director
      - supports multiple, simultaneous international languages at the

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

user interfaces
- allows a greater number of simultaneous users than is supported by an engine
- provides added storage for memory-intensive Metasys features, such as User Graphics

- ADX
  - The ADX is a version of the ADS with extended capabilities for historical data archiving that expand the multi-user Web access capabilities of the system. The ADX supports the relational database management system, using Microsoft
  - SQL Server 2005 software or SQL Server 2008 software, to store collected trend data, audit trail messages, and alarm and event messages with user annotations.
  - This relational database is also used to store configuration information for site security, trend studies, and other features. The ADX supports the Metasys
  - Advanced Reporting System, which has a Web-based reporting interface and standard report sets that allow users to review the alarm and trend configuration of their site, run summary and detail reports to monitor alarm and event information, view offline information, combine alarm and audit information in a single report, and aggregate trend data at a summary or detailed level. An ADX can also support the optional Energy Essentials reporting feature, which is an extension of the Advanced Reporting System.
  - The ADX can be installed in a split configuration with the ADX software/Site
  - Management Portal UI on one computer (the Web/Application server computer) and the historical trend, audit, and event data on another computer (the Database server) running Microsoft SQL Server software. The

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

SCT, which is used to optionally generate the primary network's database in offline mode and backup and restore these databases, is installed on a separate computer in split configuration. The Metasys Advanced Reporting System is also available in a split configuration if SQL Server is installed on both computers.

- NAE
  - The NAE is a Web-enabled, Ethernet-based supervisory controller that monitors and supervises networks of field-level building automation devices that typically control Heating, Ventilating, and Air Conditioning (HVAC) equipment; lighting; security; fire; and building access. The NAE provides features including alarm and event management, trending, archiving, energy management, scheduling, and password protection through its embedded Site Management Portal. Different models and options support various communications protocols including BACnet over Internet Protocol (IP), BACnet Master-Slave/Token-Passing (MS/TP), N2 Bus, N2 over Ethernet, and LONWORKS® network devices. The NAE55 Series supports a comprehensive set of supervisory features and functions for large facilities and technically advanced buildings and complexes. The NAE35 and
  - NAE45 Series extend the power of the NAE to the smaller buildings (or small areas of larger buildings) and enables the wider distribution of supervisory functions in larger facilities. The NAE85 supports large BACnet/IP integrations.

- NCE
  - The NCE combines the network supervisor capabilities and IP network connectivity of an NAE with the Input/Output (I/O) point connectivity and direct digital control capabilities of a Metasys Field Equipment Controller (FEC). The NCE provides a cost-effective solution designed for central plants and large built-up air handler applications. All NCE models provide IP Ethernet network connectivity, the Site Management Portal, and the network

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

supervisory functions featured on network automation engines, including the BACnet IP integration.
  - Depending on the model, an NCE supports either a BACnet MS/TP trunk, an N2
  - Bus trunk, or a LONWORKS Network trunk.

- NIE
  - The NIE is a Web-enabled supervisory controller for integration of Metasys N1 Networks. The NIE is a specialized version of the NAE and is designed to provide for the migration of existing N1 networks into the Metasys system extended architecture. The NIE provides the same Site Management Portal as the NAE.
  - Unlike the NAE, the NIE does not support integration of BACnet MS/TP or
  - BACnet IP, N2, and LONWORKS networks. Two models of the NIE are available. The NIE55 supports smaller N1 networks, while the NIE85 supports large N1 integrations.

- LCS
  - The LCS85 is a computer-based server that is used to communicate with
  - LONWORKS devices over an IP network. The LONWORKS field devices are normally connected to an IP router. This arrangement allows the Metasys system to be used in a flat LON configuration.

- SCT
  - The System Configuration Tool (SCT) assists in all phases of engineering, installing, and commissioning Engines and Servers in a Metasys system. The SCT can be used offline to create archive databases that can be downloaded to an Engine or Server. The SCT also allows to upload and archive databases that were created or modified online from an Engine or Server. The SCT also provides a Simulation feature, to simulate a functioning Engine and test the database's control logic prior to downloading it.
  - The SCT allows commissioning of N2 devices by allowing HVAC PRO software, GX-Tool software, and XTM Configurator software to access the devices on the N2 Bus of an Engine; and allows commissioning of FEC devices by using Controller Configuration Tool (CCT) Software to access the

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

devices on the Field Bus of an Engine.
  - The SCT Manager is a software tool that allows the use of multiple versions of SCT. This tool is useful when supporting different Metasys sites that have different revisions of installed Metasys software, or a single site that has multiple Engines at different software revisions.

- CCT
  - The Controller Configuration Tool (CCT) is used in conjunction with the Metasys system extended architecture user interface to configure, simulate, and commission FECs, Input/Output Modules (IOMs), NCEs, Variable Air Volume
  - (VAV) Modular Assembly (VMA) 16s, and DIS1710 Local Controller Display on a BACnet MS/TP Bus.
  - The CCT includes the ZFR Checkout Tool (ZCT). The ZCT allows validation of the wireless connectivity and health of wireless devices within a ZFR1800 Series Wireless Field Bus System to help ensure a reliable wireless mesh network is in place.
  - The CCT is a separate software installation included with the SCT software.

- Metasys Database Manager
  - The Metasys Database Manager provides both database management and

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

database monitoring functions, handled in two separate windows. Database management includes summarized information on and methods for backing up, purging, and restoring Metasys system ADS/ADX trend, alarm (event), and audit databases. Monitoring includes an indication of database status compared to three levels of defined database sizes.

- Wireless Solutions
    - Several wireless Metasys solutions are available for integrating wireless connectivity in desired portions of a Metasys network. These solutions provide wireless communication between controllers, thermostats, coordinators, routers, and room sensors.
        - ZFR1800 Series Wireless Field Bus System
        - TEC Wireless Thermostat Control System
        - WRS Series Many-to-One Wireless Room Temperature Sensing System
        - TE-7800 Series One-to-One Wireless Room Temperature Sensing System
        - WRZ-7850 One-to-One Wireless Room Temperature Sensing System
        - These wireless solutions reduce costs by minimizing wiring, provide application mobility and flexibility, and simplify the challenges of difficult or cost-prohibitive installations or renovations. The wireless solutions can coexist with each other, and offer the flexibility of coexisting with hard-wired Metasys

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

solutions.
- Any proposed wireless systems must be tested under similar conditions to those that will occur prior to acceptance as a solution.

- *Metasys System Capabilities*

  - System Configuring, Installing, and Commissioning
    - Metasys system archive databases can be created online through the Site Management Portal connected to an Engine or Server, or offline using the SCT. Configuration wizards help perform complicated operations and present tasks in a consistent format. The configuration wizards present a series of steps, each correlating to a screen presented to the user.
    - In addition to editing databases offline, the SCT assists in all phases of engineering, installing, and commissioning devices that make up the primary Metasys network (Engine and Server databases).
    - Simulation allows to perform commissioning and configuring tasks on simulated devices when the Metasys system is offline. In Simulation mode, test commands and see how a real system reacts if commanded to perform the same action. The same features are used to commission both simulated and online devices.
    - The SCT also provides N2 Tools (M-Tool) support for commissioning N2 devices using HVAC PRO software, GX-Tool software, and XTM Configurator software, and CCT for FEC Series devices.

  - Site Director
    - The Site Director is the device designated to maintain the site information, including the logical organization of data about a facility (called User Views),

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

user password administrative information, and overall master time and date. This function resides in an Engine or, on large installations, a Server. The Site Director provides a uniform point of entry and supports functions such as user logon, user administration, time synchronization, and traffic management.

- Time Management
    - The time and date used by all devices connected to a site are synchronized automatically, preventing errors from manual time entry and clocks that become inaccurate over time. Network-wide time management ensures that scheduling, trending, audit trailing, data collecting, time-stamping of alarms, and other functions requiring accurate time management use the same time and date consistently for all system operations. Because the Site Director is the master time keeper for all Engines and Servers on a single site, all of these devices are assumed to use the same time zone for all time-rated functions.

    - For network-wide time synchronization, the Engine or Server acting as Site Director is the time server for the entire site. All other devices are time clients because they receive the time from the Site Director. The Site Director can be configured to use three different methods of time synchronization: Unicast Simple Network Time Protocol (SNTP) (also known as Microsoft® Windows® time synch), Multicast SNTP, or BACnet time synch. The Site Director can also be configured to synch its time from an external Web site.

- System Navigation
    - Users can create customized system navigation schemes in the form of User Views, a hierarchical method of organizing and displaying some or all of the items within a system. A Metasys system administrator can limit a user's access to the Metasys system by creating User Views and assigning them to specific users. User views provide organizational structure and data filtering for the information displayed in the Advanced Reporting System UI and the Ready Access Portal UI.

- Monitoring and Commanding
    - Monitoring and commanding allows to navigate through items associated

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

with the building operations as well as view, analyze, and modify these items. After creating items with wizards, use these features to:

- access, view, and modify item data
- send commands to items
- run reports to analyze item information

- Preferences
  - The Metasys system provides customized preferences for the Site Management Portal. The preferences allow to configure how the UI behaves, including the sounds and colors, the startup views, alarm priorities, and links from within the UI to external applications. Preferences are divided into two categories: system preferences and user preferences. System preferences apply to all users who log on to the site or device and affect the performance and operation of the system. User preferences apply to a specific Metasys system user and define how information is displayed in the UI. User preferences do not affect the operation of the system.

- Alarm and Event Management
  - The alarm and event feature provides event management for the system and allows to configure the routing of event messages to destinations such as the Server for permanent storage. The Metasys Site Management Portal features a pop-up alarm window, which alerts the operator to potential problems whenever the operator is logged on to the system; and an event viewer, which provides for greater analysis or a history of alarms and events in the system. The Ready Access Portal features an Alert Summary, which allows the user to view and acknowledge recent event history.

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

- The Metasys system allows alarms and events to be configured using either a Metasys alarm extension or a BACnet alarm (intrinsic or algorithmic). Metasys alarm extensions generally provide more feature capability and ease of setup, while the BACnet alarms provide better interoperability with other BACnet systems.

- *Destination Delivery Agents (DDA)*
  - DDAs are the method used for routing and delivering Metasys alarm extension event messages to destinations such as pagers, printers, e-mail, and Network Management systems. The Metasys system extended architecture uses an e-mail DDA, a Pager DDA, a Printer DDA, and a Simple Network Management Protocol (SNMP) DDA. The e-mail DDA supports standard Simple Mail Transfer Protocol (SMTP), Post Office Protocol (POP), and Internet Message Access Protocol (IMAP).

  - SNMP provides IP standard SNMP functionality in the Metasys system extended architecture, enabling network administrators to manage Metasys network performance, find and resolve Metasys system-related issues, and plan for future growth of the Metasys system. SNMP functionality uses standard SNMP Versions 1, 2C, and 3 (excluding SNMP encryption and authentication support). Metasys system extended architecture allows delivery of unsecured SNMP traps for Metasys alarm events from all Engines and Servers to the facility owner's Network Management System (NMS), and allows the NMS to execute SNMP Gets against Engines. This version of SNMP support does not include the SNMP set commands.

  - Johnson Controls has developed a downloadable custom dynamic Management Information Base (MIB) that allows the NMS to monitor Metasys point objects, display attributes, and control sequence objects. The MIB is constructed to accurately reflect the additions and deletions of objects in the supervisory devices as the changes occur. The custom MIB defines explicit traps and associated attributes that align with Metasys alarm messages, making data correlation (parsing/sorting) at the NMS

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

straightforward and seamless.

- *Alarm Printer*
    - Alarms from supervisory devices can be sent automatically to an alarm printer if one is configured and online.

- Scheduling
    - Scheduling provides a graphical user interface that illustrates when events are scheduled to occur. Scheduling automates routine functions such as transferring a room from occupied mode to unoccupied mode for heating and cooling needs and energy optimization. Each schedule consists of a weekly schedule, an exception schedule, a list of items in the schedule, and an effective period. Exception schedules take precedence over the daily schedule only for their configured length and then return the schedule to its typical weekly schedule. Exceptions can include references to Calendars that can, for example, reflect a holiday schedule for the entire facility or show selected tenant spaces in the building. Another view within the schedule, called Today's Schedule, shows the current day's schedule including how each exception schedule affects the current day's schedule.

- Historical Data Management (Trend)
    - The Metasys Historical Data Management capability allows collection, storage, and viewing historical samples of object data.

    - Each Engine has a local buffer where it stores trend samples. The size of this buffer, in number of samples, is configurable by the user. This database supports backup, restore, and archival of data to long-term storage. Trend data can also be copied to the browser computer's clipboard, allowing the data to be transferred to spreadsheets, databases, and Microsoft Word documents.

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

- Using the Site Management Portal, multiple point trends can be shown on a single graph or table, making it easier to detect system-level performance. These multiple trends can either be predefined in a Trend Study, or the user can dynamically select various point trends to display on a single graph using the Trend Viewer.

- Export Utility Software
  - The Export Utility software provides facility managers with the ability to easily build custom reports using historical data from the Metasys system. This data can be used to manage daily building operations. Export Utility software extracts historical trends, alarms, and audit data from an Engine or Server. This data can be collected from the system and stored in up to six different formats desired by the operator for analysis, including Microsoft Word or Microsoft Excel. A scheduling feature is also provided to retrieve and save data based upon user-configurable time intervals.

- Advanced Reporting System
  - The Advanced Reporting System is a standard capability for all ADX configurations when using SQL Server 2005 or SQL Server 2008 with SQL Server Reporting Services (SSRS) installed. The Web-based reporting interface provides standard report sets to allow users to review the alarm and trend configuration of their site, run summary and detail reports to monitor alarm and event information, view offline information, combine alarm and audit information in a single report, and provide summary and detailed

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

trend aggregations. The report information is filtered by the site's All Items or User View navigation tree. Users can customize the date range and data type desired for each report. Once a report is created in the user interface, the option to export the data into common applications, such as Microsoft Excel or Adobe®.pdf formats, is available.

- Energy Essentials
    - Energy Essentials is an optional software feature that can be added to the Advanced Reporting System. It offers seven types of energy reports that provide a high level view of normalized energy use across the site, and presents the daily electrical demand graphically.

- User Graphics
    - User interaction with the Metasys system can be done using a graphic presentation on the Site Management Portal or the Ready Access Portal. The User Graphics Tool (UGT) is used to view, create, and edit user graphics. This provides a way to monitor and control a facility through a graphic representation presented in a functional format.

- Advanced Graphics Software
    - The Advanced Graphics application is an enhanced graphics creation package that provides additional dynamic capabilities, such as custom animation, color changing, and flashing for the Metasys system, which are not supported by Standard Graphics. The package includes a dynamic

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

example stencil library and is an add-on to Microsoft Visio® software. With a more comprehensive representation of facility support systems, building operators can easily monitor the health of the system on a more intuitive interface. Advanced graphics are viewed from the Metasys system Site Management Portal.

- System Security
  - User access to the Metasys system is controlled by user accounts. An account defines which portions of the Metasys data a user can access (for example, all HVAC data or all lighting data from a particular area of the building) and which functions the user can perform on that data, from view-only access to configuring new databases. The Metasys system provides the ability to divide the data into 25 unique categories, including HVAC, fire, and security; and has 10 different levels of user functionality.

  - User accounts can be further limited to operate only at specified times on specified days of the week. All account settings are created by a System Administrator.

  - Each account can also have associated preferences, such as which graphic or trend to display when a user logs on to the Site Management Portal, or which User Views appear in the Navigation Tree.

  - Basic Access offers limited operator access to Site Management Portal features based on the user's assigned permissions in the Security Administrator. Basic Access is offered on all the Metasys system engines and servers but is the primary mode of access for stand-alone NAE3514, NAE3515, NAE3524, and NAE3525 models.

  - Microsoft Active Directory® accounts can be used with the Site Management Portal and Ready Access Portal. In addition to making it easier for system administrators to manage Metasys account access, this feature

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

also provides the ability to use Single Sign-on to access Metasys together with other supported applications on the enterprise network.

- All user activities are recorded in the Audit Log, which allows the System Administrator to monitor user actions.

- MS/TP Communications Bus
  - The MS/TP Bus is a local network that connects NAE/NCEs and field controllers using BACnet MS/TP protocol. Two tiers of MS/TP Buses exist in the Metasys architecture. The Field Controller Bus (FC Bus) consists of BACnet controllers and point interfaces supervised by an NAE/NCE. The Sensor Actuator (SA) Bus consists of point interfaces and networked sensors supervised by a field controller.

- N2 Field Bus
  - The N2 Field Bus is a local network that links controllers and point interfaces to the NAE/NCE. The N2 Bus uses a master/slave protocol, in which the master device (the NAE/NCE) initiates the communication with the N2 Bus devices.

- N2 Tunneling over Ethernet
  - The N2 Tunneling over Ethernet solution is implemented with a Serial

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

Ethernet Converter (SECVT) and a supported NAE (NAE5512 and NAE5513). N2 Tunneling over Ethernet enables N2 devices to be directly connected to the Metasys system through the Ethernet network. This solution cost-effectively extends the Metasys system to remote locations and minimizes N2 communication wiring.

- LONWORKS Enabled Devices
    - The LONWORKS network links LONWORKS enabled devices to the NAE/NCE. The NAE acts as a supervisory controller and communication path to the Metasys system for a network of LONWORKS enabled devices. The NAE supports any LONWORKS enabled device if the network interface follows the current LONMARK® Guidelines and uses the Free Topology Transceiver FTT10, including all current LONMARK certified devices from Johnson Controls such as:
        - LN Series Controllers including programmable controllers, application-specific
    - controllers, and displays and schedulers
        - Terminal Control Units (TCUs)
        - Programmable NexSys® Flexible System Controllers (FSCs)
    - A LNS® plug-in tool, such as LN-Builder 3.x, can be configured to work concurrently with the SCT for commissioning a LONWORKS trunk and creating import files for the NAE to map the LONWORKS objects to NAE objects.

- N1 Integration
    - The N1 integration is based on the NIE. A single NIE or a network of

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

multiple NIE devices are configured to map point objects of all or selected Network Control Module (NCM) devices on one or multiple existing Ethernet N1 networks. The NIE to which an N1 object is mapped provides alarm and event management, trending, energy management, and scheduling capabilities.

- P2000 Security Management System Integration
    - Metasys system extended architecture provides integration with the P2000 Security Management System. The P2000 integration offers the following features:
        - View and interact with all aspects of HVAC facility operation. For example,
    - floor plan graphics can contain dynamic information about environmental conditions and security status in a common display.
        - View P2000 objects in the navigation tree; leveraging the use of a common
    - user browser user interface
        - Control output points and doors
        - View P2000 events in the Metasys system Event Viewer
        - Initiate actions on the Metasys system from P2000 Events

- Logic Connector Tool (LCT)
    - The Logic Connector Tool (LCT) is used to create custom application programs that execute in any Engine. The programs are created using a drag-and-drop editor that allows the programmer to connect real-time point data in the Engine with logic blocks that perform mathematical, logical, and various specialized control functions. LCT programs can be created, edited, and viewed online through the Metasys UI browser, or offline using the SCT. When viewed through the SCT, the finished programs can be simulated to verify proper operation before being downloaded to the Engine.

- Interlocking Programs (Event)
    - The Interlock object provides a means to establish conditional control over

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

one or more other objects. It consists of an If conditional statement, True command statements, and False command statements. Through these statements, the user specifies a set of conditional checks (using one or more points) for which a series of commands is used to control a collection of one or more other objects.

- Optimal Start
  - Optimal Start automatically determines the correct time to start HVAC systems to ensure the facility is ready for occupants at the scheduled time. It adjusts to seasonal variations and minimizes the energy used.

  - The generic standard object screens handle the Optimal Start/Stop object configuration and focus views. The object defines views for configuration and focus, and the generic screens interpret the views to display the proper fields to the user. No custom screens or handlers are needed.

- DLLR
  - The Demand Limiting (DL) feature reduces utility bills by limiting peak energy usage. The DL portion of DLLR selectively turns off (sheds) equipment, such as fans and lights, or adjusts setpoints to limit energy use during peak times.

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

- The Load Rolling (LR) feature helps save money by reducing overall energy consumption. The LR portion of DLLR acts continuously to maintain a specified energy reduction by shedding unnecessary loads. A facility can implement either one or both of these strategies.

- Audit Trails (Transaction Data Management)
  - The Audit Trail feature records events generated either by user actions or system activity. Examples of user actions include logging into the UI or issuing commands to a point. Examples of system activity include device restart initialization settings or internal security changes. An audit message consists of the information that describes a significant event on the Building Automation System (BAS). For each significant event, a new audit message is generated and appears in the Audit Viewer.

  - Once an event is sent to the Audit Trails subsystem, an audit message is generated and stored in an Audit Repository file located on the Server or Engine that detected the condition.

  - Audit messages may be forwarded from the Local Audit Repository to a user specified ADS Audit Repository for permanent storage on a Server (either ADS or ADX), based on user-defined rules.

  - The Site Management Portal contains the Audit Viewer that allows the user to view audit messages. Once a user logs on to the Server Site Director,

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

the user can view all audit messages from the Server or any device that contains a Local Audit Repository. When a user directly logs on to a device not designated as the Site Director, the user can only view audit messages in that device's Local Audit Repository. Any audit messages generated on a Server are placed directly into the ADS Audit Repository.

- Communications, Networking, Dial-in
    - All Engines and Servers communicate using Transmission Control Protocol/ Internet Protocol (TCP/IP). The Engine may reside on an IP/Ethernet network that is part of a facility's Local Area Network (LAN) or inter-networked in a Wide Area Network (WAN) configuration.

    - Engines also support a call-in, call-out configuration, either through an optional internal modem or an externally connected modem. This feature allows remote access to the Engine, allowing Engines to dial out to report specified alarms and trends to a central monitoring location. Or, users can dial in to access the Site Management Portal for normal operation, commissioning, and troubleshooting. Note that a single modem on an Engine cannot be used to both provide remote user access and to dial out alarm notifications.

    - The Engine can coexist on the same network infrastructure as the enterprise network, using the following Information Technology (IT) standard protocols:
        - Simple Network Management Protocol (SNMP) for network management
        - Simple Network Time Protocol (SNTP) for network time synchronization
        - Simple Mail Transfer Protocol (SMTP) for e-mail alarm destinations
        - Hypertext Transfer Protocol (HTTP) for user interface functions
        - Dynamic Host Configuration Protocol (DHCP) and Domain Name Server
    - (DNS) for device naming and addressing
        - Namespace Hierarchy and Name Resolution

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

- System Diagnostics and Serviceability
    - The Engine provides collection and storage of diagnostic data. The Diagnostic view of the Engine device retrieves and displays diagnostic data related to communications, internal component performance, and other areas.

- UL 864 UUKL Ninth Edition Smoke Control Listing and Fire Panel Integration
    - Components of the Metasys system extended architecture are UL 864 UUKL Ninth Edition listed for smoke control. In applications requiring smoke control, this offering provides the protection of a UL 864 UUKL listed smoke control system that has a lower installed cost and leverages the operational efficiencies of using a single system to provide HVAC and Fire Alarm smoke control. Earlier versions of the Metasys system also support UL 864 UUKL Eighth Edition. Eighth Edition and Ninth Edition hardware must be isolated from each other via an Ethernet switch to coexist in a building.

    - The Metasys Smoke Control System consists of a set of hardware components specifically UL Listed for smoke control applications and a smoke control application running in an NAE specifically UL Listed for UL 864 UUKL Ninth Edition smoke control.

    - The smoke control offering provides a configurable yet straightforward application for receiving fire alarm and smoke control inputs from various systems and allows for the automatic triggering of smoke control schemes.

25 00 00 INTEGRATED AUTOMATION (CONTINUED)

The system also enables a designated operator to execute real-time control from an annunciator panel, the Automation Displays, Incorporated (ADI) UL Listed Firefighter's Smoke Control Station (FSCS), or its primary user interface, based on the specific dynamics of a fire/smoke control event in a building. The system ships with a set of preconfigured standard applications.

- Metasys for Validated Environments
    - Metasys for Validated Environments (MVE), extended architecture is a feature designed for facilities that require regulatory compliance for their environmental systems. The MVE feature operates on an ADX, NAE55, NCE25, and NIE55, which are all supported as validated devices.

    - MVE is specifically designed to help customers address United States Food and Drug Administration (USFDA) Title 21, Code of Federal Regulation (CFR) Part 11 compliance. MVE is also compliant with other similar agencies around the world that deal with electronic records and electronic signature requirements, such as Annex 11 of the European Union Good Manufacturing Practice (EU GMP) regulations (European Medicines Agency [EMEA] 1998).

    - The ADX with MVE software provides secure data management and reporting capabilities, traceable electronic records and signatures, and time-stamped audit trails for facilities subject to Part 11 compliance. It manages and protects the long term storage of trend data, audit data, event/alarm messages, annotations, and system configuration data. In addition, complex passwords and message encryption secure the system from unauthorized access and data tampering.

- Installation Practices
    - The following are installation practices, but not be limited to:

- Temperature sensors are required downstream of all heating or cooling components and in mixed air sections. For example, supply air temperatures from air handlers, fan coils and after reheat coils in VAV boxes.

- Monitoring of equipment status is also a requirement.

- Pressure sensors installed in ductwork used to control variable frequency drives on the fans shall be installed 2/3 the way down the ductwork. Location shall be marked on the drawing and a mark or tag provided to provide the location in the building.

- Differential pressure sensor/transmitters for hydronic systems shall be 2/3 of the way down the main piping runs. Location shall be marked on the drawing and a mark or tag provided to provide the location in the building.

- Any packaged equipment provided with electronic controls shall be provided with an interface to communicate the same parameters as if it was controlled by the BAS. Start/stop functions and temperature control setpoints (and resets) shall be available at the BAS.

- Training
  - During system commissioning, and at such time as the acceptable performance of the BAS hardware and software has been established, the BAS contractor and the integrations contractor shall provide on-site operator instruction to the Owner's operating personnel. Operator instruction shall be done during normal working hours and shall be performed by a competent representative familiar with the system hardware, software and accessories.
  - Upon the first installation of the BAS GUI, the BAS contractor shall provide 40 hours of combined instruction to the Owner's designated personnel on the operation of the BAS and describe its intended use with respect to the programmed functions specified. Operator orientation of the BAS shall include, but not be limited to; the overall operation program, equipment functions (both individually and as part of the total integrated system), commands, systems generation, advisories, and appropriate operator intervention required in responding to the system's operation.
  - The training shall be in three sessions as follows:

- Initial Training: One day session (8 hours) after system is started up and at least one week before first acceptance test. Instruction & Operations manuals shall have been submitted at least two weeks prior to training so that the Owners' personnel can start to

familiarize themselves with the system before classroom instruction begins.

- First Follow-Up Training: Two days (16 hours total) approximately one months after conclusion of the functional performance test but before formal acceptance. These sessions will deal with more advanced topics and answer questions from the users

- Warranty Follow Up: Two days (16 hours total) in no less than 4 hour increments, to be scheduled at the request of the Owner during the one year warranty period. These sessions shall cover topics as requested by the Owner such as; how to add additional points, create and gather data for trends, graphic screen generation or modification of control routines.

- The contractor shall provide an agenda and the content covered in writing and /or power point one week before the training session. Informal training sessions without detailed agenda and appropriate documentation about topics covered are not acceptable.

- Commissioning
  - The contractors are to coordinate the Demonstration of the system with Owner's representative present during the activities.
  - Prior to acceptance, the control system shall undergo a series of performance tests to verify operation and demonstrate compliance with this specification. The Demonstration shall occur after the contractors have completed their tests. The Owner's Representative shall be present to observe and review the Demonstration.
  - The Demonstration process shall utilize the forms and follow the processes as part of the contractor's submittals approved by the engineer. The approved checklists and forms shall be completed for all systems as part of the Demonstration.
  - The contractor shall provide an adequate number of personnel, each equipped with two-way communication, and shall demonstrate actual field operation of each control and sensing point for all modes of operation including, but not limited to; day, night, occupied, unoccupied, fire/smoke alarm, seasonal changeover, and power failure modes. The purpose is to demonstrate the calibration, response, and action of every point/object and system. Any test equipment required to prove the proper operation shall be provided by and operated by the contractors.

- As each control input and output is checked, a log shall be completed showing the date, technician's initials, and any corrective action taken or needed.
- Demonstrate compliance with sequences of operation through all modes of operation.
- Additionally, the following items shall be demonstrated:

- DDC Loop Response. The contractor shall supply trend data output in a graphical form showing the step response of each DDC loop. The test shall show the loop's response to a change in set-point, which represents a change of actuator position of at least 25% of its full range. The sampling rate of the trend shall be from 10 seconds to 3 minutes, depending on the speed of the loop. The trend data shall show for each sample the set-point, actuator position, and controlled variable values. Any loop that yields unreasonably under-damped or over-damped control shall require further tuning by the appropriate Division 23 or Division 26 contractor.

- Demand Limiting. The contractor shall supply a trend data output showing the action of any demand-limiting algorithm. The data shall document the action on a minute by minute basis over at least a 30-minute period. Included in the trend shall be building kW, demand limiting set-point, and the status of load shedding equipment outputs.

- Optimum Start/Stop. The contractor shall supply a trend data output showing the capability of the algorithm. The hour-by-hour trends shall include the output status of all optimally started and stopped equipment, as well as temperature sensor inputs of affected areas.

- Operational logs for each system that indicate all set-points, operating points, valve positions, mode, and equipment status shall be submitted to the engineer and Owner's Representative. These logs shall cover three 48-hour periods and have a sample frequency of not more than 10 minutes. The logs shall be provided in a printed graphical format.
  - Any tests that fail to demonstrate the operation of the system shall be repeated as soon as possible. The contractor shall be responsible for any necessary repairs or revisions to the hardware or software they each have provided to successfully complete all tests.

Div 26

ELECTRICAL

26 00 00 ELECTRICAL

The District has, by Board Resolution dated February 11, 2014, in accordance with CA Public Contract Code Section 3400, established the following products as District Standards:

1. Lighting Controls	Wattstopper
2. Exterior Lighting – EVC only	Bega

PURPOSE

The purpose of this section is to provide minimum requirements for electrical systems in buildings.

DESIGN STANDARDS

- Campus minimum of ¾” conduit
- Campus electrical and telecommunications is distributed via 4” conduit
- Campus material standard for electrical cabling/conductors is copper only. Aluminum cabling is not acceptable
- Campus standard for all electrical equipment bussing is copper only. Aluminum is not acceptable. Accepted Manufacturers: Eaton, IEM, or approved equal per campus mandate.
- Campus standard is to provide electrical metering for incoming service. Metering shall be accessible via Internet/Ethernet. Acceptable Manufacturers: Eaton, Square D or approved equal per campus mandate.
- Renewable Energy Connectivity - designer shall provide the necessary connectivity for each new building such that adjacent PV, Solar, Solar Thermal, or other renewable energy sources the school decides to utilize in the future can be connected at the adjacent services. A spare 3-phase breaker shall be indicated at the 120/208V service for connectivity and the associate metering (as required).
- Telecommunications Connectivity – designer shall provide the necessary fiber and copper required by the campuses. 4” conduit is the minimum allowed for telecommunications utility conduit.

26 00 00 ELECTRICAL (CONTINUED)

SITE SPECIFIC INFORMATION

- Evergreen Valley College
  - Buildings are served primarily via a 21 kV, primary selective distribution system. Buildings are equipped with transformers for electrical service. Typical building services are 480/277V, 3 phase, and 120/208, 3 phase.
  - Selector switches are primarily housed in electrical rooms of the campus. Submersible selector switches may be considered with spacing constraints are present or other requirements mandate alternative installations.
  - Electrical conduits for the NORTH part of campus will connect to existing manholes serviced through the utility tunnel. Conduits will be direct buried, concrete encased, 4” conduits with full height manholes where required.
  - Electrical conduits for the SOUTH part of campus will connect to existing manholes routed directly to the Central Plant . Conduits will be direct buried, concrete encased, 4” conduits with full height manholes where required.
  - Feeder #1 provide service to the Campus Solar/PV Arrays
  - Feeders #2 & #3 provide service to North Campus
  - Feeders #4 & #5 provide service to the Central Plant & Police Station
  - Feeders #6 & #7 provide service to the South Campus
  - Telecommunications are routed from the Campus MDF to all buildings utilizing fiber optic cabling.

- San Jose City College
  - Buildings are served from a 12 kV, primary selective distribution system. Buildings are equipped with transformers for electrical service. Typical building services are 480/277V, 3 phase, and 120/208, 3 phase.
  - Electrical conduit is typically direct buried, concrete encased, 4” conduits with full height manholes
  - Feeders #1 & #2 provide service to the Central Plant and Parking Garage Only
  - Feeders #3 & #4 provide service to the Northeast Quadrant
  - Feeders #5 & #6 provide service to the Northwest and Southwest areas of campus
  - Telecommunications are routed from the Campus MDF to all buildings utilizing fiber optic cabling.

26 00 00 ELECTRICAL (CONTINUED)

GENERAL

- National Electric Code
- California Electrical Code
- BICSI/TIAA

26 51 00 INTERIOR LIGHTING

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provision of materials, installation and testing of:
   1. Luminaires
   2. Ballasts and Power Supplies
   3. Lamps

B. Provide wiring for complete and operating lighting system.

1.02 RELATED SECTIONS

A. Contents of Division 26, Electrical and Division 01, General Requirements apply to this Section.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by Section 26 00 00, Electrical Basic Requirements and Division 01, General Requirements.

B. In addition, meet the following:
   1. NECA 500 - Commercial Lighting

26 51 00 INTERIOR LIGHTING (CONTINUED)

1.04 SUBMITTALS

A. Submittals as required by Section 26 00 00, Electrical Basic Requirements and Division 01 General Requirements.

B. In addition, provide:

1. Submit:
    a. Luminaires: Include electrical ratings, dimensions, mounting, material, required clearances, terminations, wiring and connection diagrams, photometric data, diffusers, and louvers.
    b. Ballasts and Power Supplies
    c. Lamps
2. Submittal Cutsheets: Highlight, circle or otherwise graphically indicate which option(s) are being selected for the products submitted. Cutsheets that are not edited to indicate which products and options are submitted for this project or that list only catalog numbers to identify submitted options are not acceptable.
3. Specified manufacturers are approved to submit bid. However, inclusion does not relieve manufacturer from supplying product as described.
4. Provide the following operating and maintenance instructions as required by Section 26 00 00, Electrical Basic Requirements:
    a. Luminaires
    b. Ballasts and Power Supplies
    c. Lamps
5. HID Recycling Program: As part of closeout documentation, include information for Owner indicating terms of HID lamp manufacturer's recycling program, including factory contact information and how lamps may be shipped back to factory for recycling at end of their life.

26 51 00 INTERIOR LIGHTING

1.05 QUALITY ASSURANCE

A. Quality assurance as required by Section 26 00 00, Electrical Basic Requirements and Division 01, General Requirements.

B. In addition, meet the following:

1. Provide luminaires acceptable to code authority for application and location installed.
2. Comply with applicable ANSI standards.
3. Comply with applicable NEMA standards.
4. Provide luminaires and lampholders that comply with UL standards and have been listed and labeled for location and use indicated by a testing agency acceptable by the AHJ (e.g. UL, ETL, and the like).
5. Comply with CEC as applicable to installation and construction of luminaires.
6. Comply with fallout and retention requirements of CBC for diffusers, baffles, and louvers.
7. Provide similar lamps and ballasts from common manufacturer (e.g. all fluorescent lamps from Osram/Sylvania, and all MR lamps from Ushio) unless indicated otherwise in the Luminaire Schedule.

1.06 WARRANTY

A. Warranty as required by Section 26 00 00, Electrical Basic Requirements and Division 01, General Requirements.

B. In addition, provide:

1. Ballast Manufacturer's Warranty: Not less than 5 years for electronic type ballasts, based on date of substantial completion. Include normal cost of labor for replacement of ballast.
2. Linear T8 and T5 Lamp and Ballast Combination Warranty: Provide ballast and lamp combinations which will result in written factory warranty covering lamps for 3 years and ballasts for 5 years, based on date of substantial completion.
3. Lamp Warranty: 1 year for compact fluorescent, 3 years for linear fluorescent and 1 year for HID lamps, based on date of substantial completion.
4. Warranty: LED systems and complete luminaires must have manufacturer's warranty of 5 years from date of substantial completion, including driver.

26 51 00 INTERIOR LIGHTING (CONTINUED)

1.07 ADDITIONAL MATERIAL

A. Furnish 2 percent extra lens or louvers for each size and type of fluorescent luminaire.
B. Furnish 10 percent extra lamps for each size and type installed.
C. Furnish 5 percent extra ballasts for each size and type.

26 51 00 INTERIOR LIGHTING (CONTINUED)

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. As specified in Articles below.
B. Or approved equivalent.

2.02 LUMINAIRES

A. Luminaires: Reference description and manufacturers in Luminaire Schedule on drawings.

B. Where recessed luminaires are installed in cavities intended to be insulated, provide IC rated luminaires or other code approved installation.

C. UL label luminaires installed under canopies, roof or open porches, and similar damp or wet locations, as suitable for damp or wet location.

D. Suspended luminaires: Provide minimum 24-inch adjustability in aircraft cable length where used.

E. Recessed Luminaires: Frame compatible with ceiling material installed at particular luminaire location. Provide proper factory trim and frame for luminaire to fit location and ceiling material. Verify with Architectural Reflected Ceiling Plan prior to submittals.

F. Finishes:
   1. Manufacturer's standard finish (unless otherwise indicated) over corrosion resistant primer.
   2. Interior Light Reflecting Finishes: White or specular finish with not less than 85 percent reflectance.
   3. Exterior Finishes: As detailed in luminaire schedule or on drawings. Refer cases of uncertain applicability to Architect for resolution prior to release for fabrication.

26 51 00 INTERIOR LIGHTING (CONTINUED)

G. Light Transmitting Components:
   1. Plastic diffusers, molded or extruded of 100 percent virgin acrylic.
   2. Prismatic acrylic, extruded, flat diffusers, 0.125-inch overall thickness, unless otherwise noted.

H. Fluorescent Luminaires:
   1. Provide open lamp fluorescent luminaires without diffusers or guards with turret type, spring loaded sockets.
   2. To facilitate multilevel lamp switching, wire lamps within luminaire with outermost lamp at both sides of luminaire on same ballast, the next inward pair on another ballast and so on to innermost lamp (or pair of lamps).
   3. For T5HO lamps, provide twist and lock design sockets, socket body rated to 110 degrees C and socket rotor rated to 140 degrees C.
   4. Provide wire guards on exposed lamp fluorescent luminaires.

26 51 00 INTERIOR LIGHTING (CONTINUED)

2.03 BALLASTS AND POWER SUPPLIES

A. General:
   1. Provide ballasts UL rated for specified lamps.
   2. Thermal Protection: Internal UL Class 'P' with automatic reset.
   3. Sound Ratings: Class 'A'. Where not available as standard product from any specified manufacturer, provide quietest rating available.
   4. Total Harmonic Distortion: Not to exceed 20 percent of input current unless otherwise indicated.
   5. Input Voltage: Provide universal voltage ballast matching branch circuit supply voltage.
   6. Provide quantity of ballasts to provide switching as indicated on drawings.
   7. Provide factory printed wiring diagram on ballast housing.
   8. Type 1 construction for ballasts used in enclosed and gasketed luminaires.
   9. Comply with FCC rules and regulations Part 18, Class A concerning generation of both electromagnetic interference and radio frequency interference.

B. Ballasts for Linear Fluorescent Lamps:
   1. Power Factor: Minimum 97 percent.
   2. Do not provide magnetic fluorescent ballasts.
   3. Linear T8 ballasts: Anti-striation circuitry, and UL type CC rated for arc protection. Compliant with NEMA/CEE high performance T8 lighting system specifications and listed with NEMA Premium Electronic Ballast program.

26 51 00 INTERIOR LIGHTING (CONTINUED)

4. Non-dimming Electronic:
    a. Tandem wiring between luminaires may be used to minimize number of ballasts while accomplishing switching requirements shown on drawings. Provide label in lamp compartment of luminaire to identify function of ballast. Label not visible from room.
    b. Provide ballasts that meet requirements of UL 935, ANSI C82.11 and bear appropriate UL label.
    c. Provide ballasts that withstand input power line transients as defined in ANSI C62.41, Category-A and IEEE 587.
    d. Provide series wired programmed start ballast unless noted on drawings.
    e. High frequency operation: Not less than 42kHz.
    f. Integral “end of lamp life” detection and shutdown circuit with automatic reset.
    g. Lamp Crest Factor: Maximum 1.7 for programmed rapid start ballasts and maximum 1.85 or less for instant start ballasts.
    h. Average Ballast Factor (BF): Minimum 88 percent or as indicated in luminaire schedule.
    i. Provide 0 degree F minimum starting temperature ballasts for luminaires installed where exposed to anticipated ambient temperature less than 55 degrees F.
    j. Manufacturers of Ballasts for T8 lamps: Philips Optanium Series, Universal Lighting Technologies Accustart Series, Osram Sylvania Quicktronic Series, or approved equivalent.
    k. Manufacturers of Ballasts for T5 and T5HO lamps: Philips Centium Series, Universal Lighting Technologies Accustart Series, Osram Sylvania Quicktronic Series, or approved eqivalent.
5. Dimming Electronic:
    a. Meet requirements of nondimming electronic ballasts.
    b. Do not use tandem wiring between luminaires.
    c. Ballast starts lamp at any preset light output setting and provide continuous, square law dimming from 100 percent to specified low-end output.
    d. Manufacturers: Lutron, Philips, Osram Sylvania, or approved equivalent.

26 51 00 INTERIOR LIGHTING (CONTINUED)

C. Ballasts for Compact Fluorescent Lamps:
   1. Power Factor: Minimum 97 percent.
   2. Provide ballasts which meet requirements of UL 935, ANSI C82.11 and bear appropriate UL label.
   3. Integral end of lamp life detection and shutdown circuit with automatic reset.
   4. Non-dimming Electronic:
      a. Series wired, programmed rapid start circuitry.
      b. High frequency operation: Not less than 42kHz.
      c. Lamp Crest Factor: Maximum 1.5.
      d. Average Ballast Factor (BF): Minimum 98 percent.
      e. 0 degree F minimum starting temperature.
      f. Manufacturers: Philips Smartmate Series, Osram Sylvania Quicktronic Prostart Series, or approved equivalent.
   5. Dimming Electronic:
      a. Must meet requirements of nondimming electronic ballasts.
      b. Ballast starts lamp at any preset light output and provide continuous, square law dimming from 100 percent to specified low-end output.
      c. Supply line voltage controls with air-gap disconnect.
      d. Manufacturers: Lutron, Philips, Osram Sylvania, or approved equivalent.

26 51 00 INTERIOR LIGHTING (CONTINUED)

D. High Intensity Discharge (HID) Ballasts:
   1. Power Factor: Minimum 90 percent.
   2. Provide HID ballasts with end of life anti cycling protection technology where available.
   3. Do not use tandem wiring between luminaires.
   4. Provide proper ANSI-series designation for specified lamp.
   5. Average Ballast Factor (BF): Minimum 98 percent.
   6. Minus 20 degrees F minimum starting temperature.
   7. Pulse-start types specifically for pulse-start lamps.
   8. Provide electronic pulse-start ballast for Metal Halide lamps up to 150 watts.
   9. Constant Wattage Autotransformer (CWA):
      a. With fully wired, integral dry-film type capacitor and potted ignitor (where applicable).
      b. Lamp Crest Factor: Maximum 1.6.
      c. Metal Halide (MH) lamps: Ballasts tolerate input voltage variation of plus or minus 10 percent with less than plus or minus 5 percent variation in output voltage.
      d. Manufacturers: Philips Series, Venture, Universal Lighting Technologies.
   10. Electronic:
      a. Integral end of lamp life detection and shutdown circuit with automatic reset.
      b. High frequency operation: Not less than 170Hz.
      c. Ballast tolerate input voltage variation of plus or minus 10 percent with less than plus or minus 0.5 percent variation in output voltage.
      d. Lamp Crest Factor: Maximum 1.3.
      e. Manufacturers: Osram Sylvania, Robertson, Philips, Lightech, Universal Lighting Technologies, Panasonic, or approved equivalent.

26 51 00 INTERIOR LIGHTING (CONTINUED)

2.04 LAMPS

A. Provide lamps for luminaires.
B. Provide lamp catalogued for specified luminaire type.
C. Manufacturers: Osram Sylvania, General Electric, Philips, Venture, Ushio (MR only), EYE (MR only), or approved equivalent unless specific manufacturer is indicated in Luminaire Schedule.
D. Incandescent Lamps: Not allowed.
E. Fluorescent:
   1. Provide 3500K fluorescent lamps unless otherwise noted in luminaire schedule.
   2. Linear Fluorescent:
      a. T-8: Provide following:
         i. Bi-pin base, tri-phosphor coated.
         ii. Initial 3100 lumen output.
         iii. CRI equal to or exceeding 85.
         iv. 36000 hours rated on 3 hour switching cycle and 42000 hours rated on 12 hour switching cycle when used with programmed start ballast.
         v. Compatible with dimming ballasts.
         vi. Length and wattage as indicated in luminaire schedule.
      b. T-5: Provide following:
         i. Bi-pin base, tri-phosphor coated.
         ii. CRI equal to or exceeding 85.
         iii. 20000 hours average life rated on 3 hour switching cycles.
         iv. Compatible with dimming ballasts.
         v. Length and wattage as indicated in luminaire schedule.
      c. T-5HO: Provide following:
         i. Bi-pin based, tri-phosphor coated.
         ii. CRI equal to or exceeding 85.
         iii. 25000 hours average life rated on 3 hour switching cycles and 35000 hours average life rated on 12 hour switching cycles.
         iv. Compatible with dimming ballasts.
         v. Length and wattage as indicted in Luminaire Schedule.
      d. Manufacturers: Osram Sylvania, General Electric, Philips, or approved equivalent.

26 51 00 INTERIOR LIGHTING (CONTINUED)

3. Compact Fluorescent:
    a. Single ended, four-pin plug-in base, tri-phosphor coated, CRI exceeding 82, wattage and configuration as indicated in the luminaire schedule.
    b. Manufacturers: Osram Sylvania, General Electric, Philips, or approved equivalent.

F. High Intensity Discharge (HID):
1. Rate lamps used in open luminaires for such use.
2. Provide coated or clear lamps as recommended by luminaire manufacturer for maximum luminaire efficiency and distribution.
3. Lamps Installed in Common Interior Areas: Provide from the same manufacturer's production run.
4. Provide self extinguishing lamps or lamps with protective shroud in open luminaires
5. Ceramic arc tube metal halide:
    a. Color Temperature: 4000K.
    b. CRI equal to or exceeding 80.
    c. Maximum plus or minus 150 Kelvin color shift over rated lamp life.
    d. Wattage, configuration, and base style and type as indicated in luminaire schedule.
    e. Provide lamp base and orientation compatible to luminaire.
6. Quartz arc tube metal halide:
    a. Color Temperature: 4000K.
    b. CRI equal to or exceeding 64.
    c. Maximum plus or minus 600 Kelvin color shift over rated lamp life.
    d. Wattage, configuration and base style and type as indicated in luminaire schedule.
    e. Provide pulse-start type.
    f. Provide lamp base and orientation compatible to luminaire.
7. Manufacturers: Osram Sylvania, General Electric, Philips, Venture.

26 51 00 INTERIOR LIGHTING (CONTINUED)

G. LED (Light Emitting Diode):
   1. LED manufacturer will include, but not be limited to, light source, luminaire, power supply and control interface with added components as needed for complete and functioning system.
      a. Comply with ANSI chromaticity standard for classifications of color temperature. See luminaire schedule for specified LED lamp color and color temperature. UL or ETL listed and labeled.
      b. Luminaire testing per IESNA LM-79 and LM-80 procedures.
      c. Lamp life for white LEDs: 50,000 plus hours with lamp failure occurring when LED produces 70 percent of initial rated lumens.
      d. Lamp life for color LEDs: 30,000 plus hours with lamp failure occurring when LED produces 50 percent of its initial rated lumens.
      e. LED Drivers: reverse polarity protection, open circuit protection, require no minimum load. Minimum 80 percent efficiency. Class A noise rating.
      f. Dimming: LED system capable of full and continuous dimming.
      g. LED light source manufacturers: Nichia, Cree, Osram Sylvania, GE Lumination.
   2. Special types as indicated in luminaire schedule.

26 51 00 INTERIOR LIGHTING (CONTINUED)

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install luminaires securely, in neat and workmanlike manner.
B. Install luminaires of types indicated where shown and at indicated heights in accordance with manufacturer's written instructions and with recognized industry practices to ensure that luminaires comply with requirements and serve intended purposes.
C. Align, mount and level luminaires uniformly. Use ball hangers for suspended stem mounted luminaires.
D. Avoid interference with and provide clearance from equipment. Where indicated locations for luminaires conflict with locations for equipment, change locations for luminaire by minimum distance necessary as directed by Architect.
E. Suspended Luminaires: Mounting heights indicate clearances between bottom of luminaire and finished floors.
F. Interior Luminaire Supports:
   1. Support Luminaires: Anchor supports to structural slab or to structural members within a partition, or above a suspended ceiling.
   2. Maintain luminaire positions after cleaning and relamping.
   3. Support luminaires without causing ceiling or partition to deflect.
   4. Provide recessed fluorescent luminaires with two support wires as outlined in IBC or four support wires as required by DSA.
G. Wiring:
   1. Recessed luminaires to be installed using flexible metallic conduit with luminaire conductors spliced to branch circuit conductors in nearby accessible junction box over ceiling. Junction box fastened to building structural member within 6-feet of luminaire.
   2. Luminaires for lift out and removal from ceiling pattern without disconnecting conductors or defacing ceiling materials.
   3. Flexible connections where permitted to exposed luminaires; neat and straight, without excess slack, attached to support device.
   4. Install junction box, flexible conduit and high temperature insulated conductors for through wiring of recessed luminaires.
H. Relamp luminaires which have failed lamps at substantial completion.
I. Replace ballasts deemed as excessively noisy by Architect, Engineer, or Owner.

26 51 00 INTERIOR LIGHTING (CONTINUED)

J. Install suspended luminaires and exit signs using pendants supported from swivel hangers. Provide pendant length required to suspend luminaire at indicated height.
K. Support luminaires larger than 2- by 4-foot size independent of ceiling framing.
L. Locate recessed ceiling luminaires as indicated on architectural reflected ceiling plan.
M. Install surface mounted luminaires and exit signs plumb and adjust to align with building lines and with each other. Secure to prevent movement.
N. Exposed Grid Ceilings:
    1. Support surface mounted luminaires in grid ceiling directly from building structure.
    2. Provide auxiliary members spanning ceiling grid members to support surface mounted luminaires.
    3. Fasten surface mounted luminaires to ceiling grid members using bolts, screws, rivets, or suitable clips.
O. Install recessed luminaires to permit removal from below.
P. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating.
Q. Install clips to secure recessed grid-supported luminaires in place.
R. Install wall mounted luminaires, emergency lighting units, and exit signs at height as indicated on Architectural Drawings.
S. Install accessories furnished with each luminaire.
T. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.
U. Bond products and metal accessories to branch circuit equipment grounding conductor.
V. Install specified lamps in each emergency lighting unit, exit sign, and luminaire.
W. Where manufactured wiring assemblies are used, insure that wiring assembly manufacturer sends components to appropriate luminaire manufacturer for respective installation of proper components.

26 51 00 INTERIOR LIGHTING (CONTINUED)

3.02 COORDINATION

A. Coordination of Conditions: Coordinate ceiling construction, recessing depth and other construction details prior to ordering luminaires for shipment. Refer cases of uncertain applicability to Architect for resolution prior to release of luminaires for shipment. Where luminaires supplied do not match ceiling construction, replace luminaires at no cost to Owner.
B. Electrical drawings are schematic, identifying quantity and type of luminaires used and their approximate location, but are not to be used for dimensional purposes. Reference architectural drawings for exact locations, including mounting heights.
C. Provide lighting indicated on drawings with luminaire of the type designated and appropriate for location.
D. Provide fluorescent and HID luminaires with ballast compatible to lighting control system as shown in drawings and as specified.
E. Where remote ballasts are required, insure adequate accessibility to ballast. Upsize conductors between luminaire and ballast to accommodate voltage drop.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection in accordance with Division 01, General Requirements.
B. Operate each luminaire after installation and connection. Inspect for proper connection and operation.

3.04 ADJUSTING

A. Aim and adjust luminaires as indicated.
B. Focus and adjust floodlights, spotlights and other adjustable luminaires, with Architect, at such time of day or night as required.
C. Align luminaires that are not straight and parallel/perpendicular to structure.
D. Position exit sign directional arrows as indicated.

3.05 CLEANING

A. Clean electrical parts to remove conductive and deleterious materials.
B. Remove dirt and debris from enclosures.
C. Clean paint splatters, dirt, dust, fingerprints, and debris from luminaires.
D. Clean photometric control surfaces as recommended by manufacturer.
E. Clean finishes and touch up damaged finishes per by manufacturer's instructions.

3.06 CLOSEOUT ACTIVITIES

A. Demonstrate luminaire operation for minimum of two hours.

Div 28

ELECTRONIC SAFETY + SECURITY

28 31 11 DIGITAL ADDRESSABLE FIRE ALARM SYSTEM

PURPOSE

This provides basic system requirements and contacts associated with the Fire Alarm System. The District has standardized around the Simplex 4100 ES system.

DESIGN STANDARDS

- Each fire alarm control panel shall be capable to dial-up a central monitoring station, and shall also be equipped with a communication card for future networking with other fire alarm control panels.
- Each campus building will have its own panel which will be networked in a ring topology.
- Each building will connect to the Master Fire Alarm panel in the Central Plant. This network architecture allows each panel capability to share information or to dedicate specific functions to nodes such as general or selective alarms.
- The systems should be addressable and connected to any fire suppression systems in the building (i.e. as necessary to provide maximum safety; and in compliance with CSFM, CFC and NFPA 72 requirements, and be fully approved by the Division of State Architect (DSA) prior to construction).

GENERAL

- NFPA 72 National Fire Alarm and Signaling Code
- California Fire Code
- California Electrical Code
- California State Fire Marshal
- Department of the State Architect (DSA)

Div 32

EXTERIOR IMPROVEMENTS

The District has, by Board Resolution dated February 11, 2014, in accordance with CA Public Contract Code Section 3400, established the following products as District Standards:

1.	Irrigation Controller & Cable	Rainmaster
2.	Irrigation Controller Inspection and Certification	John Deere/United Green Tech
3.	Quick Coupling Valve	Rainbird
4.	Remote Control Valve	Griswold

32 80 00 IRRIGATION

IRRIGATION EQUIPMENT RECOMMENDATIONS	
SATELLITE CONTROLLER	• Rainmaster-Evolution Dx2 with radio and antenna connectivity to central computer • Pro Max Remote Control Receiver • Flow board for use with flow sensor • Flip top stainless steel enclosure • Supplied by John Deere/United Green Tech • Electrical grounding per manufacturers requirements • Installation to be inspected and certified by John Deere/ United Green Tech
FLOW SENSOR	• Rainmaster FS Series - Connect to controller with rainmaster ev-cab-sen cable housed in 1.25” Conduit
MASTER CONTROL VALVE	• Superior 3100 normally open
REMOTE CONTROL VALVE	• Griswold DWS OR DW-PRV Series - Provide NIBCO BTU ball valve for each RCV
QUICK COUPLING VALVE	• Rainbird 33DNP - Provide 1 QC key and hose swivel per 5 QCV’s
ISOLATION VALVE	• Aqua 313 brass ball valve (up to 2.5”) • NIBCO MJ-619-RW-SON (3” and larger) - Provide 1 operating key for 5 GV’s installed
MAINLINE PIPING	• Class 315 purple PVC pipe, NSF approved (2” and larger) • Schedule 40 purple PVC pipe, NSF approved (1.5” and smaller) - 24” cover in planting areas - 36” cover under fire lanes and pavements
MAINLINE FITTINGS	• Harco epoxy coated deep bell ductile iron with joint restraints (2” and larger) • PVC schedule 80 (1.5” and smaller)

32 80 00 IRRIGATION (CONTINUED)

LATERAL LINE PIPING	• Schedule 40 purple PVC pipe, NSF approved - 18” cover in planting areas - 36” cover under fire lanes and pavements
LATERAL LINE FITTINGS	• PVC Schedule 80
SLEEVES	• Schedule 40 purple PVC pipe, NSF approved, 3” minimum size - Provide two separate sleeves in each location - 36” cover under fire lanes and pavements
ELECTRICAL CONDUIT	• -Schedule 40 PVC conduit, 3” minimum size - To house all low voltage control wiring - 24” cover in planting areas - 36” cover under fire lanes and pavements - Provide splice boxes at splices/changes in direction
LOW VOLTAGE WIRING	• Single conductor, copper, type uf, ul listed for direct burial • 14 AWG for hot wire, red or black insulation • 12 AWG for common wire, white insulation • Connections made with 3M DBR/Y-6 waterproof connector kits
VALVE BOXES	• Rainbird VB Series, black body and lid, size as required - Install Christy’s #3800 recycled water valve box nameplate
SPRAY HEADS	• Toro 570Z-PRX-COM Series with Toro Precision Series spray nozzles
TREE BUBBLER	• Rainbird RWS-B-C-1402 - Two per tree or as required for larger box trees
SHRUB BUBBLER	• Rainbird 1401 - Install on Salco flexible PVC riser - One per shrub
ROTOR HEADS	• Hunter I-20-04-SS-R Series
DRIP SYSTEMS	• Rainbird XFS Subsurface Dripline and Accessories • Rainbird XCZ-PRB-100/150-COM Drip Zone Kit

END OF SECTION 8

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